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**Ragnar Frisch: An
annotated bibliography**

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PART I

Introduction

The main part of the bibliography is a compilation of references to written contributions, first and foremost by Ragnar Frisch himself, but also by others who have produced books, articles, notes etc, either *on Ragnar Frisch* or *on his authorship*. It also includes references to written contributions which are rather closely *related to works by Ragnar Frisch*. The decisions of inclusion in these cases are based on the present writer's own judgement and discretion. The basic motive has been to include references to works which supposedly are of interest for the users of the bibliography, especially for Frisch researchers.

A number of references are supplied with *annotations*, the purpose of which is twofold: to give some glimpses of the content of the writing in question, and to give cross-references to other and somehow related works within the bibliography.

The bibliography is organized in four parts, and the actual bibliographical matter is found in **Part II** and **Part III**. These parts consist of references to works which are either *published* in some way or another, or which are not published but which satisfy specific requirements to readability and availability etc; more about this later. **Part II** consists of references to works by Ragnar Frisch, while **Part III** consists of references to works by other authors, on Ragnar Frisch or related to his authorship.

In **Part II** five separate lists are presented, in the respective Chapters II.1, II.2, II.4, II.5 and II.6.

In Chapter II.1: Published scientific works on economics, mathematics, and statistics, by Ragnar Frisch, either alone or with co-author(s). The list comprises references to works which are *properly published*, in books, journals, proceedings etc.

In Chapter II.2: Memoranda and other non-published works on economics, ..., by Ragnar Frisch, alone or with co-authors. In this chapter there will also be recorded works that are not published at all, but where copies have been handed out to a small circle of people, if at all. The criterion for inclusion in such cases has been that the writing is an elaborated and clearly readable product which the writer of this bibliography believes will prove to be of interest for Frisch researchers. Copies of such works are in most cases available at DE-UO, for reading and copying, but not for lending. Such cases are duly explained in the annotations.

In Chapter II.3 most of the references from the Chapters II.1 and II.2 are repeated, however now spread over eight different subjects.

Chapter II.4 contains references to papers on bee-keeping. Although self-taught, Frisch was recognized an authority on apiculture, with queen rearing as speciality. He left a number of articles on this subject.

Chapters II.5 and II.6 contain references to works by Ragnar Frisch published in newspapers and other non-scientific publications.

Part III contains - as already mentioned - references to works by *other authors, about* or somehow *related to* Ragnar Frisch and/or his authorship.

*

Memorandum is the name chosen for working papers from the Department of Economics, University of Oslo - in the present bibliography abbreviated to memo from DE-UO (a list of adopted abbreviations is found at the end of this introduction). The memoranda series started in May 1947. Before that point of time working paper-like contributions by members of the Economic Section of the University of Oslo (the group of scholars and administrative staff who later constituted the Department of Economics) were mimeographed and distributed to a limited circle of people and institutions. References to works by Ragnar Frisch of the working paper-type from the period prior to May 1947 are included in the reference list of Chapter II.2.

The memoranda are - with very few exceptions - written either in English or in Norwegian. The English-language memoranda have been distributed to a number of scientists and scientific institutions - universities, libraries, economic departments, research units - around the world. Besides there have regularly been distributed lists of recently produced memoranda to other scientists and scientific institutions, with invitation to order copies of interest. For many decades the number of regular addresses have been around 70-80. And the average number of copies of each English-language memorandum distributed abroad has been somewhere between 80 and 130. Thus, although it may be claimed that works distributed as memoranda from DE-UO should not be reckoned as properly published, it can be counter-argued that memoranda from DE-UO have been distributed to so many within the scientific world that, when it comes to the degree of distribution, they can compete with many properly published papers. The same argument holds good for the degree of elaboration, at least for the bulk of Frisch's memoranda-distributed contributions. Olav Bjerkholt has made the following observations in Bjerkholt 1995a ID 2034 (that is the way references are identified in this bibliography, by date and by ID-number, identification number; more on this below), p xvi: "Some papers became influential and read by many, although they were never properly published. Many of Frisch's unpublished papers acquired a semi-published status as Memoranda from the Institute of Economics at the University of Oslo. Even for the Memoranda, Frisch applied strict standards of approval!" And in the note no 9, p xli: "As a source for the development of Frisch's thought, the memoranda are invaluable." Finally it can be mentioned that DE-UO has as a rule not made any reservation for memoranda similar to those made for e.g. Cowles Foundation Discussion Papers, that they are "preliminary materials circulated to stimulate discussion and critical comment", and that "References in publications to Discussion Papers should be cleared with the author to protect the tentative character of these papers."

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When I undertook the task of working out an annotated Ragnar Frisch bibliography, my initial aim was to produce a *complete* bibliography in the following sense: It should include references to (1) *all writings* by Ragnar Frisch - published in print, issued as memoranda and other working paper-like mimeographed papers, mimeographed or typed writings that are not even circulated (the decision of inclusion taken by myself), newspaper articles and press notices; (2) *all papers of significance* - issued in print or otherwise - produced by others about Ragnar Frisch or on his authorship. Of course I realized soon that this task was of such a magnitude that a bibliography of that kind can neither be fully comprehensive (reckoned per the closing date of my work) nor free from errors. I had to realize that it is absolutely impossible for any team, not to mention a single individual, to trace and examine all literature potentially relevant.

As regards the reference list presented in Chapter II.1 - Published scientific works ... by Ragnar Frisch - my first source was a list appended to (*inter alia*) an article by myself, 1970 ID 1949. That list comprised two parts: a former list of 119 items, important contributions up to 1959, prepared for Frisch's 65th birthday by Professor Trygve Haavelmo and the DE-UO, and a supplementary list of 31 items, subsequent important contributions, prepared by Professor Leif Johansen and the DE-UO. This list was further extended to 159 items by the DE-UO. My second source was an annotated bibliography prepared (in type-written form) by Olav Bjerkholt (with assistance of Robin Choudhury and Thomas Lie), dated 1995-12-21. As regards memoranda from DE-UO, I have had access to a complete collection of copies available at the department. Besides these sources I have exploited the archives and records at the department, and not to forget the research sources available at the University of Oslo Library, especially the Faculty of Social Sciences Library.

A few words on how works are recorded in the bibliography.

Example:

25 1931b

The interrelation between capital production and consumer-taking, *The Journal of Political Economy*, Vol 39, 646-654.

Criticism of statements from J. Maurice Clark and others..... Clark replied 1931 IDa, Frisch gave a rejoinder 1932a IDb, Clark a further word 1932 IDc and Frisch a final word 1932b IDd. Frisch's article contributed to elucidating the "acceleration principle" and its role in explaining the trade cycle. In 1933i IDe Frisch expanded his viewpoints from his debate with Clark into a mathematically elaborated theory of trade cycles.

IDa: 1748 IDb: 30, 953 IDc: 1761 IDd: 31, 964 IDe: 50, 968

This is a reference to a *properly published scientific article on economics by Ragnar Frisch*. When a work has these qualities, the reference will occur in Chapter II.1. If the work in addition deals with one of the subjects of Chapter II.3, the reference will be found also there. In such a case we say that the reference comes in two *entries*, one in Chapter II.1 and one in the relevant sub-chapter of Chapter II.3. A corresponding rule applies for a reference to a *scientific work on economics by Frisch either issued in a working paper-like form, say as a memorandum, or not circulated at all* : In such a case the work will have an entry in Chapter II.2, and also one in the relevant sub-chapter of Chapter II.3 if it deals with one of the subjects there. In both cases it might happen that the work in question deals with more than one of the subjects of Chapter II.3, and accordingly has more than only two entries.

A reference to to a work on bee-keeping will have a single entry, in Chapter II.4. A reference to a contribution in a newspaper or another non-scientific publication will have a single entry, in Chapter II.5 if it is on economics, otherwise in Chapter II.6. A reference to a contribution by another author will have a single entry, in Chapter III.1 if the contribution is related to Frisch's authorship, in III.2 if it is a writing about Ragnar Frisch.

The first number of the first line of an entry is called an *identification number*, abbreviated to ID. *There is one ID for each entry, and an ID occurs only once*. The work with the entry in the Example above is classified as a work on dynamic economics, thus the reference comes in two entries, ID 25 in Chapter II.1 and ID 959 in sub-chapter II.3.5. The identification numbers constitute a sequence of natural numbers, from 1 for the very first entry, 2 for the second one, and so on all through **Part II** and **Part III**. The ID system is chosen in order to make it easier to localize entries within the bibliography. All references in the bibliography, including those in the index chapters, **Part IV**, are done by using IDs.

As mentioned at the beginning, one of the intentions for having annotations is to give cross-references to other somehow related works. We find such cross-references in the Example

above, the first of them in the sentence "Clark replied 1931 IDa". Here the letter "a" is a stand-in for the factual ID, which we find on the line just below the proper annotation: "IDa: 1748". Now it is easy to find the entry shown to by just finding the ID-number 1748. The next reference appears in the sentence : "Frisch gave a rejoinder 1932a IDb". Thus the reference is to the work Frisch 1932a, which has two ID-numbers, 30 and 953, meaning that the reference comes in two entries, one in Chapter II.1 and one in the sub-chapter II.3.5, Dynamic economics. The somewhat circumstantial procedure was chosen because it made the programming considerably easier.

The second item on the first line of an entry gives the date of the work in question. As can be seen the entries are arranged chronologically, thus according to the date. If there are more than one contribution by one and the same author on one date, the references are arranged alphabetically within the date, and the order is marked by one or two letters added to the date. There are eight contributions by Ragnar Frisch in 1931. The first two are

- | | | |
|----|-------|------------------------------------|
| 24 | 1931b | Der Einfluss von Veränderungen ... |
| 25 | 1931b | The interrelation between ... |

These two and 1931c, d, e, and g are found in Chapter II.1, while 1931f and h are found in Chapter II.2.

Note that the alphabetic ordering is based on the Norwegian alphabet, which is identical with the English alphabet extended with the three letters æ, ø and å. These three letters come at the end of the Norwegian alphabet.

*

The following abbreviations are adopted in the bibliography:

- | | |
|------------|---|
| DE-UO | Department of Economics, University of Oslo |
| memo DE-UO | Memorandum from the Department of Economics, University of Oslo |
| UB | Universitetsbiblioteket, Oslo [the University of Oslo Library] |
| UF | Universitetsforlaget [Scandinavian University Press] |
- No, nr, p, pp, and Vol are written without abbreviation point.

*

I wish to express my gratitude to those who have helped me with this work. A special thanks to Professor Tore Thonstad with whom I have been free to discuss any problem, from the trivial ones to the important questions of principle. I have also had useful discussions with Professor Olav Bjerkholt. Both of them have in addition read earlier working out-prints and have given a number of useful remarks. I also want to express a special thanks to my part-time assistant Ida Wolden Bache, who have indeed been very helpful, in searching for papers, in writing references and not least in correcting mistakes. Needless to say, nobody but myself is to blame for remaining faults and weaknesses.

Looking back to the time when I decided to produce a Ragnar Frisch bibliography, I have to admit that by then I was pitifully short of much of the kind of knowledge that belongs to the domain of the libraries. Fortunately I recognized soon my shortcoming, and also how to deal with it: to ask for help from the librarians. And help I got. Thinking of the many times I had to discuss my problems with librarians at the Social Sciences Library, I am glad for having this opportunity to express my gratitude. A special thanks goes to Deputy Librarian Bredo Berntsen who read through the

preliminary issue of the bibliography and gave useful criticism.

An invaluable aid in my work has been a data base - Bibliography system Ragnar Frisch - worked out by Tore Flisen Abildgaard, system consultant at WebCom AS, according to detailed requirements specified by me. The data base has proved an indispensable tool, and the cooperation with Mr. Tore Abildgaard has been very useful, for which I express my sincere gratitude.

PART II

**SCIENTIFIC AND NON-SCIENTIFIC WORKS BY RAGNAR
FRISCH**

II.1

PUBLISHED SCIENTIFIC WORKS ON ECONOMICS, MATHEMATICS AND STATISTICS

Published in books, journals, proceedings etc.

- 1 1923b Remarque sur le calcul numérique des fonctions symétriques élémentaires, *Norsk Matematisk Forenings Skrifter*, Oslo, Serie 1 nr 14, 83-86.
- 2 1923c Statistiske iakttagelser av fjær-fæholdet i Schweiz [Statistical observations of poultry keeping in Switzerland], *Tidsskrift for Fjærfæavl*, Kristiania (Oslo), Vol 40, 196-198.
- 3 1924a Solution d'un problème du calcul des probabilités, *Skandinavisk Aktuarietidskrift*, Vol 7, 153-174.
- 4 1924b Sur un problème du calcul des probabilités, *Comptes rendus des séances de l'Académie des Sciences*, Séance du 17 novembre 1924, Paris, 1031-1033.
- 5 1925a En ny metode i sandsynlighetsregningen [A new method in probability calculus], *Norsk Matematisk Tidsskrift*, Vol 7, 50-56.
Review of Millot, S. 1925: *Théorie nouvelle de la probabilité des causes*, Paris, Gauthier-Villars, 35 pp.
- 6 1925b Recurrence formulae for the moments of the point binomial, *Biometrika*, Vol 17, 165-171.
- 7 1925c Sur les semi-invariants de Thiele, *Comptes rendus des séances de l'Académie des Sciences*, Séance du 15 juillet 1925, Paris, Tome 181, 274-276.
- 8 1926a Impossibilité de resserrer l'inégalité de Markov dans le cas général, *Den sjette skandinaviske matematikerkongres i København*, 31 aug. - 4 sept. 1925, Copenhagen, Det Hoffensbergske Etablissement, 203-206.
- 9 1926b Kvantitativ formulering av den teoretiske økonomikks lover [Quantitative formulation of the laws of economic theory], *Statsøkonomisk Tidsskrift*, Vol 40, 299-334.
Frisch presents his vision that economics has to proceed along the lines which the natural sciences, especially physics, have gone, towards a quantitative science. See also Frisch 1926h IDa (Sur un problème) and his inaugural lecture 1932i IDb.
IDA:12, 811, 1008 IDb:38
- 10 1926f Semi-invariants de Thiele et moments d'ordre supérieur, *Den sjette skandinaviske matematikerkongress i København*, 31 aug.- 4 sept. 1925, Copenhagen, Det Hoffensbergske Etablissement, 365-374.
- 11 1926g *Sur les semi-invariants et moments employés dans l'étude des distributions statistiques*, Skrifter utgitt av Det Norske Videnskaps-Akademi i Oslo, II. Historisk-Filosofisk Klasse, No 3, 87 pp.
Ragnar Frisch's doctoral thesis. Presented at the annual meeting in the Norwegian Scientific Academy 3 May 1926 by Professor O. Jæger. The defence was held on 13 October 1926; the trial lecture, prescribed topic (Frisch 1926i IDa), on 7 October 1926.
IDA:325, 865
- 12 1926h Sur un problème d'économie pure, *Norsk Matematisk Forenings Skrifter*, Oslo, Series 1 No 16, 1-40.
In this article, which is Frisch's first work on economics and his first work in his own quantification programme, he formulates axioms, of "the first" and of "the second kind",

of the consumer's choice, which imply the existence of an ordinal resp. a cardinal utility function. Then he uses the cardinal approach in an empirical study for determining the marginal utility of money for several consumer groups. Reissued as Frisch 1954-05-03 IDa and 1957d IDb. An English translation is published (in Chipman et al) as Frisch 1971d IDc and republished (in Bjerkholt) as Frisch 1995aj IDd. See also *New methods...* 1932h IDE. A line from these early works of Frisch's extends forth to his article "A complete scheme ..", 1959a IDf, see the annotations.

Ida:599, 843, 1090 IDb:144, 845, 1096 IDc:218, 852, 1115 IDd:287, 864, 1129 IDE:37, 815, 1020 IDf:147, 849, 921

- 13 1927b Sammenhengen mellem primærinvestering og reinvestering [The relationship between primary investment and reinvestment], *Statsøkonomisk Tidsskrift*, Vol 41, 117-152.
A profound and complete theoretical analysis of the role of reinvestment in cyclical fluctuations. Comments by Johansen 1969 IDa p 314. Issued in English translation as Frisch 1965f IDb.
Ida:1969 IDb:803
- 14 1927c Sur le calcul numérique des moments ordinaires et des moments composés d'une distribution statistique, *Skandinavisk Aktuarietidskrift*, Vol 10, 81-91.
- 15 1927d Sur le théorème des déterminants de M. Hadamard, *Comptes rendus des séances de l'Académie des Sciences*, Séance du 5 décembre 1927, Paris, Tome 185, 1244-1245.
- 16 1928 Changing harmonics and other general types of components in empirical series, *Skandinavisk Aktuarietidskrift*, Vol 11, 220-236.
The second of three papers in English reporting results of Frisch's research on time series methods, see Frisch 1927a IDa (mimeo) and 1931e IDb. Refer also to Morgan 1990a IDc pp 83 and further.
Ida:326, 1009 IDb:28, 962 IDc:2034
- 17 1929a Correlation and scatter in statistical variables, *Nordic Statistical Journal*, Vol 1, 36-102.
Ragnar Frisch's first important study in the field of econometric methodology. Later important works in the same field are 1933g IDa, 1934f IDb and the UN memorandum 1938-07-17 IDc; see the annotations. The present study was published simultaneously with Frisch 1929b IDd and republished as Frisch 1995g IDE (in Bjerkholt). Also reproduced as memo from DE-UO Frisch 1951-05-08 IDf. See the annotations to Frisch 1948d IDg for more references.
Ida:49, 1024 IDb:58, 1026 IDc:355, 1034 IDd:18, 1013 IDE:255, 1123 IDf:542, 1074 IDg:102, 1044
- 18 1929b Correlation and scatter in statistical variables, *Nordisk Statistisk Tidsskrift*, Vol 8, 36-102.
Also as Frisch 1929a IDa, see the annotation. Reproduced as memo from DE-UO Frisch 1951-05-08 IDb.
Ida:17, 1012 IDb:542, 1074
- 19 1929c On approximation to a certain type of integrals, *Skandinavisk Aktuarietidskrift*, Vol 12, 129-181.
- 20 1929d Statikk og dynamikk i den økonomiske teori [Statics and dynamics in economic theory], *Nationaløkonomisk Tidsskrift*, Vol 67, 321-379.
The treatise is an elaboration of a lecture delivered at Sosialøkonomisk Samfund, Oslo, December 1928. It is assessed as a pioneering contribution in which Frisch develops dynamics as a new way of analysing economic phenomena, an alternative to statics. An English translation by Peter Thomas of the sections 1-3 is issued as Frisch 1992 IDa and reissued as Frisch 1995bk IDb (in Bjerkholt). Frisch's work on dynamic economics won through internationally through his Cassel-Festschrift thesis 1933i IDc and an article on equilibrium and disequilibrium 1936d IDd. A simpler version of the 1929d treatise was made for teaching purpose and issued as excursus 6 in *Notater til økonomisk teori [Notes on economic theory]*, see e.g. 1947w IDE. Frisch gave lectures on the topic at Yale University in 1930, from which unpublished lecture notes are available at UB Oslo

- (DE-UO, not for lending), see Frisch 1930a IDf. An extract from pp 321-323 and 326-327 of the original treatise was issued as Frisch 1995bl IDg. A reprint was issued from Universitetsforlaget, Oslo, in 1930.
IDa:246, 987 IDb:316, 998 IDc:50, 968 IDd:65, 971 IDe:391, 973 IDf:328, 958 IDg:317, 999
- 21 1929e Sur un formule générale de moyenne, *Comptes rendus des séances de l'Académie des Sciences*, Séance du 22 avril, Paris, Tome 188, p 1081 (3 pp).
- 22 1929f Økonomisk teori [Economic theory], *Statsøkonomisk Tidsskrift*, Vol 43, 229-272.
 A thorough criticism of a German textbook, Engländer, O. 1929: *Theorie der Volkswirtschaft, Erster Teil, Preisbildung und Preisaufbau*, Vienna, Verlag von Julius Springer. It is an attack on a certain way of explaining and discussing economic theory in textbooks, a way that, though used by the old Austrians, did not in Frisch's opinion satisfy the standards that should be set for scientific thinking and reasoning. An account of Frisch's critique is given in Andvig 1986 IDa pp 26-28. See also Frisch 1932d IDb with annotations.
IDa:2013 IDb:33, 870, 896
- 23 1930c Necessary and sufficient conditions regarding the form of an index number which shall meet certain of Fisher's tests, *Journal of the American Statistical Association*, Vol 25, 397-406.
 Frisch demonstrates that if prices and quantities are chosen arbitrarily, there exists no relative index number, comparing situations at two points of time, that satisfies simultaneously several of the tests presented by Fisher 1922 IDa. A comment to Frisch's article is given by Subramanian 1934 IDb and a reply by Frisch 1934d IDc. The article is reissued as Frisch 1995å IDd (in Bjerkholt). Some remarks about Fisher's tests and references to later literature on the subject are given by Chipman 1998 IDe pp 72-73.
IDa:1741 IDb:1776 IDc:56, 816 IDd:277, 863 IDe:2091
- 24 1931a Der Einfluss von Veränderungen des Preisniveaus auf den Grenznutzen des Geldes, *Zeitschrift für Nationalökonomie*, Vol 2, 625-631.
- 25 1931b The interrelation between capital production and consumer-taking, *The Journal of Political Economy*, Vol 39, 646-654.
 Criticism of statements from J. Maurice Clark and others about the relation in a postulated model between consumption per unit of time and the culmination of capital production. Clark replied 1931 IDa, Frisch gave a rejoinder 1932a IDb, Clark a further word 1932 IDc and Frisch a final word 1932b IDd. Frisch's article contributes to elucidating the "acceleration principle" and its role in explaining the trade cycle. In 1933i IDe Frisch expanded his viewpoints from his debate with Clark into a mathematically elaborated theory of trade cycles. A reprint of the present article is issued as Frisch 1995q IDf (in Bjerkholt). See also Frisch 1951-09-26 IDg. Chipman 1998 IDh gives a discussion of the Frisch-Clark debate on pp 88-90, considering it in association with earlier as well as later works by Frisch and others. Andvig deals with the same in his dissertation 1986 IDi pp 73-76.
IDa:1748 IDb:30, 963 IDc:1761 IDd:31, 964 IDe:50, 968 IDf:265, 989 IDg:551, 978 IDh:2091 IDi:2013
- 26 1931c Johan Åkerman: Om det ekonomiska livets rytmik [Johan Åkerman: On the rhythm of economic life], *Statsvetenskaplig Tidsskrift*, Vol 34, 281-300.
 Review of Johan Åkerman's doctoral dissertation based on remarks by Frisch in the capacity of faculty opponent.
- 27 1931d Konjunkturbevegelsen som statistisk og som teoretisk problem [The business cycle as a statistical and a theoretical problem], in *Förhandlingar vid Nordiska Nationalekonomiska Mötet i Stockholm 15-17 juni 1931*, Stockholm, Ivar Häggströms Boktryckeri och Bokförlag AB, 127-147.
 Frisch presents for the first time the basic lines of his ideas of business cycle research. The discussion which followed is reported on pp 147-168. Appendix IIIa, pp 224-227, gives J. Åkerman's summary in Swedish of Frisch's lecture, and Appendix IIIb, pp 228-234, gives some excerpts of the lecture.

- 28 1931e A method of decomposing an empirical series into its cyclical and progressive components, *Journal of the American Statistical Association* - March Supplement: Papers and proceedings of the 92nd Annual Meeting held at Cleveland, Ohio, Vol 26, 73-78.
The third of three papers in English reporting results of Frisch's research on time-series methods. The first and second ones are 1927a IDa (mimeo) and 1928 IDb. In her survey of the development of econometrics Mary S. Morgan gives a description and an assessment of Frisch's work on time series in Morgan 1990a IDc pp 83 and further. Also Jens Chr. Andvig surveys Frisch's time series studies, see Andvig 1986 IDd pp 67-71. The paper is reissued as Frisch 1995w IDe (in Bjerkholt).
Ida:326, 1009 IDb:16, 956, 1011 IDc:2034 IDd:2013 IDe:271, 1125
- 29 1931g Statistical correlation and the theory of cluster types, *Journal of the American Statistical Association*, vol 26, 375-392.
With Bruce D. Mudgett. A correction in Frisch 1932c IDa. The article is reissued as Frisch 1995bn IDb (in Bjerkholt). See the annotations to Frisch 1948d IDc for more references.
Ida:32, 1018 IDb:319, 1134 IDc:102, 1044
- 30 1932a Capital production and consumer-taking - A rejoinder, *Journal of Political Economy*, Vol 40, 253-255.
See Frisch 1931c IDa and Clark 1931 IDb.
Ida:25, 959 IDb:1748
- 31 1932b Capital production and consumer-taking: A final word, *Journal of Political Economy*, Vol 40, 694-694.
See Frisch 1931c IDa, Clark 1931 IDb, Frisch 1932a IDc and Clark 1932 IDd.
Ida:25, 959 IDb:1748 IDc:30, 963 IDd:1761
- 32 1932c A correction, *Journal of the American Statistical Association*, Vol 27, 187-187.
With Bruce D. Mudgett. A correction to 1931g IDa.
Ida:29, 1017
- 33 1932d Einige Punkte einer Preistheorie mit Boden und Arbeit als Produktionsfaktoren, *Zeitschrift für Nationalökonomie*, Vol 3, Heft 1, 62-104.
Frisch was incited during his study of Oscar Engländer's book *Theorie der Volkswirtschaft* ... to write the present article, see Frisch 1929f IDa. He still considered his criticism of Engländer's book correct, and announced that he planned to write a critical study for *die Zeitschrift für Nationalökonomie*. But first he wanted to make clear his own understanding of how a constructive theory in this field should be. That was the object of the present article. The criticism, he said, will be given in a later article. That article did never appear. See Andvig 1986 IDb pp 26-28.
Ida:22, 867, 895 IDb:2013
- 34 1932e Konjunkturrene [The business cycles], in Keilhau, Wilhelm, Ingvar Wedervang, and Ragnar Frisch: *Verdensøkonomien i etterkrigstiden*, Oslo, Universitetets radioforedrag Serie B Nr. 6 - H. Aschehoug & co (W. Nygaard), 79-139.
See 1932m IDa (*Verdensøkonomien* ...). A slightly revised reprint of the present article is issued as the main part of Frisch 1947ae IDb (*Noen trekk av konjunkturlæren* ...), see the annotations.
Ida:42, 966 IDb:95, 830, 974
- 35 1932f Méthodes nouvelles pour mesurer l'utilité marginale, *Revue d'Économie Politique*, Vol 46, 1-28.
With Jacques Moret. The article consists of two parts. Part II (14-28) is Frisch's presentation at the Econometric Society meeting, Lausanne 1931, while part I (1-14) is Jacques Moret's introduction to Frisch's work. See also Frisch 1932g IDa, (*New methods...*).
Ida:37, 815, 1020
- 36 1932g En metode til å beregne lokale trafikkintensiteter [A method of calculating local traffic densities], *Nordisk Järnbanetidskrift*, Vol 58, 1-16.

- 37 1932h *New methods of measuring marginal utility*, Tübingen, Verlag von J. C. B. Mohr (Paul Siebeck), 142 pp.
Dedicated: "To Irvin Fisher - the pioneer of utility measurement". Reissued as 1978 IDa. Italian translation 1937g IDb. Discussed *inter alia* in Bilimovic 1933 IDc, Burk 1936 IDd and Bergson 1966 IDE (pp 93-122). Rewied by Schultz 1933 IDf and Bowley 1932 IDg. Considerable criticism has been levelled against the idea of measurable utility and assumptions of want-independence. A thorough and critical discussion, based on a purely ordinalistic point of view, is found in Samuelson, Paul Anthony 1947: *Foundations of economic analysis*, Harvard University Press, Cambridge. The matter is also mentioned by Arrow 1960b IDh (p 177), which caused Samuelson to give a new thorough discussion of it in his obituary article 1974 IDi. Critical discussions directed specifically towards Frisch's *New methods...* are given by Allen 1933 IDj, Fagan 1938 IDk, and Vinci 1933 IDl. See also Chipman 1998 IDm pp 60-67 for an elucidation of basic points of the measurable utility controversy.
IDA:242, 856, 1118 IDb:71, 822, 1031 IDc:1767 IDd:1786 IDE:1958 IDf:1768 IDg:1760 IDh:1923 IDi:1984 IDj:1766 IDk:1797 IDl:1770 IDm:2091
- 38 1932i New orientation of economic theory. Economics as an experimental science, *Nordic Statistical Journal*, Vol 4, 97-111.
The inaugural lecture 1932j IDa translated, see the annotations. A reprint of the present English version is published (in Bjerkholt) as Frisch 1995aa IDb. Refer also to the newspaper article Frisch 1931-10-05 IDc.
IDA:39 IDb:278 IDc:1604
- 39 1932j Nyorientering av den økonomiske teori. Økonomikken som eksperimentalvitenskap [New orientation of economic theory. Economics as an experimental science], *Statsøkonomisk Tidsskrift*, Vol 46, 1-15.
The inaugural lecture delivered at the University of Oslo 8 February 1932. Reprints are published as Frisch 1932j IDa, 1965c IDc (in *Sosialøkonomen*) and 1995br IDc (in *Troen på nøkken*). An English translation is published as 1932h IDd and reprinted (in Bjerkholt) as 1995aa IDE. The inaugural lecture and 1926b IDf convey the same basic message: that economics has to proceed towards a quantitative science.
IDA:40 IDb:188 IDc:323 IDd:38 IDE:278 IDf:9
- 40 1932k Nyorientering av den økonomiske teori. Økonomikken som eksperimentalvitenskap [New orientation of economic theory. Economics as an experimental science], *Nordisk Statistisk Tidsskrift*, Vol 11, 97-111.
The same as 1932j IDa. See the annotations.
IDA:39
- 41 1932l On the use of difference equations in the study of frequency distributions, *Metron*, Vol 10 No 3, 35-59.
- 42 1932m *Verdensøkonomien i etterkrigstiden [The world economy in the post-war time]*, Oslo, Universitetets radioforedrag Serie B Nr. 6, H. Aschehoug & co (W. Nygaard), 140 pp.
With Wilhelm Keilhau and Ingvar Wedervang. See 1932e IDa.
IDA:34, 965
- 43 1933a Constitution of the Econometric Society, *An International Society for the Advancement of Economic Theory in its relation to Statistics and Mathematics*, *Econometrica*, Vol 1, 106-108.
With Frederick C. Mills and Charles F. Roos. See Frisch 1933e IDa on the organization of the Econometric Society, December 1930.
IDA:47
- 44 1933b Depresjonens problem [The problem of the depression], *Statsøkonomisk Tidsskrift*, Vol 47, 95-100.
Rejoinder to Åkerman 1933 IDa.
IDA:1770
- 45 1933c Editorial, *Econometrica*, Vol 1, 1-4.
The first editorial in *Econometrica*. Reproduced as Frisch 1994a IDa.

IDA:247, 1121

- 46 1933d **Monopole - Polypole - La notion de force dans l'économie, *Tillægshæfte til Nationaløkonomisk Tidsskrift*, Vol 71, 241-259.**
 Tillægshæftet [The supplement] is issued as Festschrift at the eightieth anniversary of Harald Westergaard. Reissued in English as 1951c IDa and 1995y IDb (Bjerkholt), and in German as 1965b IDc and 1968b IDd. An assessment of Frisch's work is given by Keppler, J. 1994: *Monopolistic competition theory*, Baltimore and London, The Johns Hopkins University Press, pp 92-93. It is also assessed by Arrow 1960b IDe, where this work and Frisch 1949b IDf (Prolegomena to a pressure analysis ...) are regarded as important contributions on economic dynamics.
IDA:115, 917, 977 IDb:273, 990 IDc:187, 923, 982 IDd:208, 924, 984 IDe:1923 IDf:104, 975
- 47 1933e **The organization of the Econometric Society in Cleveland, Ohio, December 1930, *Econometrica*, Vol 1, 71-72.**
 "On Monday evening, December 29, 1930, a group of economists, statisticians and mathematicians, ... , met in Cleveland, Ohio, U.S.A., at the invitation of the Professors Irving Fisher, Ragnar Frisch, and Charles F. Roos, to form a new society to be called The Econometric Society," See also Frisch 1933a IDa: The final constitution of the Econometric Society.
IDA:43
- 48 1933f **Partial time regressions as compared with individual trends, *Econometrica*, Vol 1, 387-401.**
 With Frederick V. Waugh. Olav Reiersøl generalized the main theorem of this article - called the Frisch-Waugh theorem - and applied the generalized theorem to facilitate some computations in confluence analysis, see Reiersøl 1945b IDa and Frisch 1934f IDb. The F-W theorem was later applied by Lovel, Michael C. 1963: Seasonal adjustment of economic time series and multiple regression analysis, *Journal of the American Statistical Association*, Vol 58, 993-1010. It is presented in Davidson, Russel and James G. MacKinnon 1993: *Estimation and Inference in Econometrics*, New York, Oxford University Press, pp 19-24, and in Chipman 1998 IDc pp 84-86. It has been further developed and generalized by Fiebig et al 1996 IDd (see the annotations). The Frisch-Waugh article is reissued as Frisch and Waug 1970d IDe (in Hooper and Nerlove), 1984 IDf and 1995aq IDg (in Bjerkholt).
IDA:1815 IDb:58, 1026 IDc:2091 IDd:2083 IDe:213, 1114 IDf:244, 1120 IDg:294, 1130
- 49 1933g **Pitfalls in the statistical construction of demand and supply curves, in *Veröffentlichungen der Frankfurter Gesellschaft für Konjunkturforschung, Neue Folge Heft 5*, Leipzig, Hans Buske Verlag, 1-39.**
 During the late 1920s and the early 1930s considerable progress was made in methods of estimating demand and supply curves. Of great importance was Working's article 1927 IDa, see the annotations. Also Leontief made an attempt in his article 1929 IDb. This article provoked Frisch into writing the present monograph. Here he first provides a cogent criticism of a method suggested by Pigou 1930 IDc (see Morgan 1990a IDd, p 183). Next he discusses the identification problem, referring favourably to Working 1927. Finally he gives (this was his primary concern) a severe criticism of Leontief 1929, which led to an acrimonious debate with Leontief. Leontief's response 1934b IDe, Frisch's reply 1934c IDf (see the annotations) and Leontief's final word 1934a IDg. See also Marschak 1934 IDh. Frisch's monograph is reissued as Frisch 1995ar IDi (in Bjerkholt). Accounts of the "Pitfalls debate" are given in Morgan 1990 pp 183-187, in Hendry and Morgan (eds) 1995 IDj pp 257-270, and in Chipman 1998 IDk pp 78-84. In addition Chipman gives a glimpse of later influences from Frisch's monograph. See also Qin 1989 IDl.
IDA:1744 IDb:1746 IDc:1747 IDd:2034 IDe:1774 IDf:55, 1025 IDg:1773 IDh:1775 IDi:295, 1131 IDj:2064 IDk:2091 IDl:2031
- 50 1933i **Propagation problems and impulse problems in dynamic economics, in *Economic essays in honour of Gustav Cassel*, London, George Allen & Unwin Ltd., 171-205.**
 A macroeconomic trade cycle model, written for the Gustav Cassel Festschrift after having been presented in a lecture to the Econometric Society autumn meeting 1933, see *Econometrica* Vol 2 (189-192). Also as Publikasjon nr 3 from DE-UO 1933j IDa.

Republished 1966i IDb, 1995az IDc and 1995aæ IDd. Selected parts 1995ay IDE. Presented and discussed in Blatt 1980 IDf, Andvig 1981b IDg and 1986 IDh (Ch. 4, 85-114), Morgan 1990a IDi, and Chipman 1998 IDj (90-95). Parts of it are analyzed and discussed in depth (with parts of Frisch's autonomy memorandum 1938-07-17) in Boumans 1995 IDk. A considerably shortened Norwegian translation (by Andvig), in which mathematical discussions are omitted, 1995be IDl. See also Frisch 1951-09-26 IDm. Reconsidered (and severely criticized) in Zambelli 1991 IDn. Sketched and shortly discussed in Bodkin, R. G., L. L. Klein, and K. Marwah 1991: *A history of macroeconomic model-building* (12-14), Edward Elgar, Aldershot. Discussed in Mullineux 1990 IDo 19-29, see also 12-19. Reconsiderations by Thalberg 1990 IDp and 1997 IDq.

IDA:51, 969 IDb:200, 983 IDc:303, 995 IDd:304, 996 IDE:302, 994 IDf:1999 IDg:2003 IDh:2013 IDi:2034 IDj:2091 IDk:2061 IDl:310, 997 IDm:551, 978 IDn:2039 IDo:2036 IDp:2037 IDq:2087

- 51 1933j *Propagation problems and impulse problems in dynamic economics*, Oslo, DE-UÖ, Publikasjon nr 3, 35 pp.
The same as 1933i IDa, see the annotations.
IDA:50, 968
- 52 1933k La Réunion de la Société d'Econométrie, Lausanne, Septembre, 1931, *Econometrica*, Vol 1, 73-
M. Frisch fait le discours d'ouverture, 74-76. Pour un compte rendu complet, voir la *Revue d'Économie politique*, janvier 1932.
- 53 1933i *Sparing og sirkulasjonsregulering [Saving and circulation regulation]*, Oslo, Fabritius og Sønners Forlag, 37 pp.
Frisch traces *inter alia* the mechanism through which a rise in (private) saving will lead to reduced production and employment, not to increased real investment. Refer to Frisch, 1934a IDa and 1951-01-11 IDb. See also Andvig 1986 IDc (on saving fictions pp 305-312). The Swedish economist Johan Åkerman expressed disagreement with Frisch on the role of private saving, in Åkerman 1933 IDd. Frisch's rejoinder 1933b IDE. A critical review by Ole Colbjørnsen 1933-02-28 IDf. See also Munthe 1995 IDg, p 279.
IDA:54, 1136 IDb:527, 1178 IDc:2013 IDd:1770 IDE:44 IDf:1771 IDg:2071
- 54 1934a Circulation planning: Proposal for a national organisation of a commodity and service exchange, *Econometrica*, Vol 2, 258-336 and 422-435.
This "one of Frisch's most striking contributions was born out of the experiences of the Great Depression" (Chipman 1998 IDa p 95). Frisch attributes the great depressions to an organizational defect, which would create situations where groups "are forced to undermine each other's position." They would be squeezed into a "meaningless vicious circle...", Frisch p 259. He succeeds in giving a disaggregated explanation of the mechanism of great depressions. In the bulk of the article he works out his proposal for a policy to revive the economy from a deep depression. Johansen 1969 IDb gives (pp 308-309) an informative discussion of Frisch's article. The same is done by Chipman 1998 (pp 95-97). Later Frisch extended ideas from Circulation planning to the problem of improving the balance of the international economy, cf. Frisch 1947ai IDc, 1948c IDd and particularly 1963d IDE. Pp 422-435 of the present article is a mathematical appendix. A reprint of pp 258-336 is published as Frisch 1995e IDf (in Bjerkholt). See also Frisch 1935-01-26 IDg and 1933i IDh.
IDA:2091 IDb:1969 IDc:96, 1139 IDd:101, 1143 IDE:176, 1315 IDf:253, 1368 IDg:348 IDh:53
- 55 1934c More pitfalls in demand and supply curve analysis, *The Quarterly Journal of Economics*, Vol 48, 749-755.
See the annotations to Frisch 1933g IDa. Selected parts of the several contributions in the "Pitfalls debate" are reprinted in Hendry and Morgan (eds) 1995 IDb pp 257-270. A reprint of the present contribution: Frisch 1994b IDc.
IDA:49, 1024 IDb:2064 IDc:248, 857
- 56 1934d Reply to Mr. Subramanian's note, *Journal of the American Statistical Association*, Vol 29, 317-317.
See Subramanian 1934 IDa.
IDA:1776

- 57 1934e Robert Schmidt's definition of skewness and kurtosis, *Econometrica*, Vol 2, 221-223.
- 58 1934f *Statistical confluence analysis by means of complete regression systems*, Oslo, DE-UO, Publikasjon nr 5, 192 pp.
 Frisch's work on confluence analysis consists largely of two publications: Frisch 1929a IDa and the present one. A central theorem, previously proved by Gini, C. 1921: "Sull' interpolazione di una retta quando i valori della variabile indipendente sono affetti da errori accidentali", *Metron*, Vol 1, 63-82, was stated and proved by Frisch (p 60) in the two-variable case, generalized by Koopmans 1937 IDb, Reiersøl 1941 IDc and Willassen 1987 IDd. Malinvaud 1966 IDE claimed (p 48) that Reiersøl had used a very indirect method, while a more natural proof was given (in French) by Dhondt 1960 IDf, who also generalized Frisch's theorem. Reprint of pp 5-8 of Frisch's treatise is issued as Frisch 1995bm IDg. Related publications: Reiersøl 1940 IDh, 1945a IDi and 1945b IDj, and Teghem 1959 IDk. A re-analysis of the confluence analysis is made by Hendry and Morgan 1989 IDl, see the annotations. Refer also to Aldrich 1989 IDm (on autonomy), Qin 1989 IDn (on identification theory), and Haavelmo 1938 IDo. A review of Frisch 1934f: McIntyre 1936 IDp. More references in the annotations to Frisch 1948d IDq. See also Geraci 1987 IDr.
Ida:17, 1012 IDb:1793 IDc:1808 IDd:2019 IDE:1959 IDf:1924 IDg:318, 1133 IDh:1805 IDi:1814 IDj:1815 IDk:1919 IDl:2028 IDm:2023 IDn:2031 IDo:1798 IDp:1787 IDq:102, 1044 IDr:2016
- 59 1935b The characteristic solutions of a mixed difference and differential equation occurring in economic dynamics, *Econometrica*, Vol 3, 225-239.
 With Harald Holme. The equation in question arose in Frisch's propagation and impulse problems article, 1933i IDa. This type of equation has previously not been solved in mathematical literature. Reprints: Frisch 1990 IDb and 1995d IDc.
Ida:50, 968 IDb:245, 986 IDc:252, 1498
- 60 1935f The meaning of money, in Riegel, E. C.: *Irving Fischer's world authorities on the meaning of money*, New York, Empire Books.
 See the annotations to Riegel 1935 IDa.
Ida:1783
- 61 1935g Open market operations og deres virkninger på banksystemet [Open market operations and their effects on the banking system], in: Bilag 4 til [Appendix 4 to] *Innstilling om markedsoverasjoner fra kniteen til utredning av økonomiske og pengepolitiske spørsmål [Proposal on open market operations from the Monetary Committee]*, Oslo, Finans- og Tolldepartementet, 43-60.
 Copies of correspondence related to the proposal on open markets operations are available at DE-UO, "Frisch-rommet", Box 32, file labelled 'Open Market Operations og deres virkninger på banksystemet' (bilag til Innstilling om Markedsoperasjoner, 1935). Not for lending.
- 62 1935h The principle of substitution. An example of its application in the chocolate industry, *Nordisk Tidsskrift for Teknisk Økonomi*, Vol 1, 12-27.
 The contribution is probably the first known example of using a specific technique, later known as establishing an engineering production function (see Førstund 1995-11 IDa and 1999-03 IDb). The article is reissued as Frisch 1995at IDc (in Bjerkholt).
Ida:2081 IDb:2116 IDc:297, 894
- 63 1936a Annual survey of general economic theory: The problem of index numbers, *Econometrica*, Vol 4, 1-38.
 Errata on p 192. This survey paper gives a thorough summing-up, corrections and systematic amplifications of contemporary ideas on the subject. A central point is an analysis of inequalities bounding the cost-of-living index by the Laspeyres and Pasche price indices. Frisch based on second-hand access to a work by Konüs (later in English, 1939 IDa) and on Haberler 1927 IDb and 1929 IDc and gives corrective comments on a number of other contributions. An exposition by Schultz 1939 was astonishing in making no mention of Frisch or Haberler, while praising less trustworthy works. "From then on it seems that ... the Haberler-Frisch propositions ... were buried alive ..." (Chipman 1998 IDd pp 69-70). Rediscoveries did not come until the 1970s and early 1980s (Pollak 1971

- IDe, Afriat 1972 IDf, Samuelson and Swamy 1974 IDg, Samuelson 1974 IDh, Diewert 1981 IDi and 1990 IDj), "although Frisch and Haberler were still not given their full due" (Chipman *loc cit*). Comments: Bowley 1938 IDk, Mendershausen 1938 IDl, Rao 1947 IDm and 1949 IDn. See also Frisch 1938a IDo. (Continue as annotations to Frisch 1938a).
IDa:1802 IDb:1743 IDc:1745 IDd:2091 IDE:1975 IDf:1976 IDg:1985 IDh:1984 IDi:2004 IDj:2032 IDk:1796 IDl:1799 IDm:1823 IDn:1852 IDo:74, 824
- 64 1936c Konjunkturreguleringe statsinngrep i bankvirksomhet [Countercyclical governmental interventions in banking], *Økonomisk Revue*, Vol 19, 524-529. A report of a discussion between Professor Frisch and Director Koefoed on the Norwegian radio.
- 65 1936d On the notion of equilibrium and disequilibrium, *The Review of Economic Studies*, Vol 3, 100-105. See the annotations to Frisch 1929d IDa (Statikk og dynamikk ...). The article is reissued as memo from DE-UO, Frisch 1950-02-04 IDb, *IDa:20, 957 IDb:497, 976*
- 66 1936e *Plan til en Økonomisk strukturoversikt for Norge [Plan for an Economic Structural Survey of Norway]*, Oslo, Fabritius & Sønners boktrykkeri, 33 pp. With Wilhelm Keilhau and Ingvar Wedervang. The publication was a research proposal written in response to a suggestion from the foundation Norsk Varekrigsforsikrings Fond, which considered it a task of utmost importance to provide a survey of the production possibilities and the internal connections in the national economy. The work was to be organized in three industrial departments - two of them directed by Keilhau and Wedervang - and a fourth department for coordination purposes directed by Frisch. This department was to do research in the sectors of banking, other financial institutions and insurance, including a systematic coordination work in the form of national accounts. (The national accounts are discussed on p 29 et seq.) Finally it would do consumption and market analyses. Preliminary work started in 1937 and the project was envisaged to be brought to completion during the next three years. For a number of reasons only parts of the plan were accomplished, see Frisch 1939-10-22 IDa, 1940b IDb and 1941a IDc, and Johnsen 1942 IDd. *IDa:357 IDb:82, 932 IDc:84 IDd:1810*
- 67 1936f Skillet mellom sak og vurdering [The distinction between scientific statements and value judgements], Chapter II in Frisch, Ragnar, Wilhelm Keilhau og Ingvar Wedervang: *Plan til en økonomisk strukturoversikt for Norge [Plan for an economic structural survey of Norway]*, Oslo, Fabritius og Sønners Boktrykkeri, 7-12. A scientific-theoretical discussion. The subject matter is treated in most issues of Frisch's Theory of production, e.g. the Norwegian issue 1962c IDa pp 17-20, the French issue 1963c IDb pp 5-8, and the English issue 1965k IDc pp 5-8. A slightly shortened reprint is published as Frisch 1995bg IDd (in *Troen på nøkken* pp 44-48). See also Andvig et al 1995a IDE p 22 (in *Troen på nøkken*) and Andvig 1977-04-21 IDf (on the historical background for Frisch's involvement in the subject). *IDa:169, 889 IDb:175, 890 IDc:192, 891 IDd:312 IDE:2056, 2160 IDf:1993*
- 68 1937a General choice-field theory, in *Report of the Third Annual Research Conference on Economics and Statistics, held by Cowles Commission for Research in Economics 28 June - 23 July 1937*, Colorado Springs, Colorado, 64-69. The paper made manuscript for three lectures, given 14, 21 and 22 July 1937. A fourth lecture on choice-field theory, "Price-of-living comparisons between different countries", was given 23 July 1937 and is shortly referred to on p 95 of the conference report. The same matter was treated in a paper presented at the international congress of mathematicians, Oslo 1936, Frisch 1937h IDa. *IDa:72, 823*
- 69 1937c An ideal programme for macrodynamic studies, *Econometrica*, Vol 5, 365-366. The ideal programme was developed in a colloquium in the Oxford meeting of the Econometric Society 1936. The minutes of the meeting by E. H. Phelps Brown.

- 70 1937f Note on the phase diagram of two variates, *Econometrica*, Vol 5, 326-328.
- 71 1937g Nuovi metodi di misura del l'utilità marginale, in Guiseppe Bottai e Celestino Arena (eds): *Economia pura della Nuova Collana di Economisti*, Torino, Unione Tipografico-Editrice Torinese, 385-512.
Translation of 1932h IDa.
IDA:37, 815, 1020
- 72 1937h Price index comparisons between structurally different markets, *Comptes rendus du Congrès International des Mathématiciens Oslo 1936*, Oslo, A. W. Brøggers Boktrykkeri A/S, Vol 2, 220-222.
See the annotations to Frisch 1937a IDa.
IDA:68, 820
- 73 1937i A summary of the Neyman-Pearson theory of testing hypotheses, *Econometrica*, Vol 5, 369-371.
At the sixth European meeting of the Econometric Society, held at Oxford, England, 25 - 29 September 1936, Dr. Jerzy Neyman gave a "Survey of recent work on correlation and covariation". In the course of the presentation he developed "the Neyman-Pearson theory of testing hypotheses", of which the summary had been prepared by Frisch. The minutes of the meeting written by E. H. Phelps Brown.
- 74 1938a The double-expenditure method, *Econometrica*, Vol 6, 85-90.
In 1936a IDa Frisch developed - following a suggestion by A. L. Bowley - the double expenditure method for constructing index numbers, aiming at giving an approximation to the exact indifference-defined price index. An objection was raised by Wald 1939 IDb and in a way rejected by Frisch in a footnote (as editor) to Wald's article. A short discussion of the method is given by Chipman 1998 IDc, pp 70-72. Reproductions of 1936a: Frisch 1952-10-03 IDd (the first twelve pages) and 1995a IDe (in Bjerkholt). A Portuguese translation of 1936a: Frisch 1950e IDf. In the present note some numerical examples are presented to illustrate the closeness of the approximation. Reproduction: Frisch 1995h IDg (in Bjerkholt).
IDA:63, 819 IDb:1803 IDc:2091 IDd:564, 837 IDe:249, 858 IDf:109, 832 IDg:256, 860
- 75 1938b Efterspørselen efter melk i Norge [The demand for milk in Norway], *Statsøkonomisk Tidsskrift*, Vol 52, 1-62.
With Trygve Haavelmo. The work made a partial result (from the Co-ordination Department) of the comprehensive Plan for an economic structural survey of Norway, see Frisch (et al) 1936e IDa.
IDA:66, 1137
- 76 1938c Fra førkrigstid til efterkrisetid i sosialøkonomikken [From pre-war time to post-depression time in economics], in Brochmann, Georg (ed): *Studentene fra 1913*, Oslo, Bokkomiteen for studentene fra 1913, 34-39.
- 77 1938d On the inversion of a moving average, *Skandinavisk Aktuarietidskrift*, Vol 21, 218-225.
Remarks on Wold, Herman 1938: *A study in the analysis of stationary time series*, Stockholm, Almqvist & Wiksell.
- 78 1939a The Dupuit taxation theorem, *Econometrica*, Vol 7, 145-150.
A comment on Hotelling, Harold 1938: The general welfare in relation to problems of taxation and of railway and utility rates, *Econometrica*, Vol 6, 242-269. Frisch objected to a conclusion in Hotelling's article. He found a slip in Hotelling's argument and deduced the right solution. Hotelling agreed. Hotelling's response 1939b IDa. Frisch's further note 1939b IDb and Hotelling's final note 1939a IDc. Frisch's first comment was reprinted (in Bjerkholt) as Frisch 1995i IDd. Chipman 1998 IDe elucidates the Frisch-Hotelling debate on pp 74-76.
IDA:1801 IDb:79, 899 IDc:1800 IDd:257, 929 IDe:2091
- 79 1939b A further note on the Dupuit taxation theorem, *Econometrica*, Vol 7, 156-157.
Frisch's rejoinder to Hotelling 1939b IDa. Hotelling gives a final note in 1939a IDb.
IDA:1801 IDb:1800

- 80 1939d A note on errors in time series, *The Quarterly Journal of Economics*, Vol 53, 639-640.
Correction of a misunderstanding in Tintner, G. 1939: A note on economic aspects of the theory of errors in time series, *The Quarterly Journal of Economics*, Vol 53, 141-149.
- 81 1940a Befolkningsoptimum [Optimum population], *Statsøkonomisk Tidsskrift*, Vol 54, 157-219.
A statement in a footnote (translated): "This treatise is written primarily with a view to students in economics at the University. It might, however, be of interest also for others who are occupied with population problems. It treats only fundamental matters of principle. Most of them can be set and treated by using the formal apparatus of the general theory of production. Let this be my excuse for having dealt with the topic at all. I do not in any respects consider myself a theoretician in demography." Leif Johansen gives the following assessment in Johansen 1969 IDa (p 316): "Frisch's paper... is one of the clearest and most complete theoretical treatments of the problem of optimum population to be found in the literature." Further, Johansen claims, it seems as Frisch is on the way to solving the problem of "optimal saving" nearly as it is approached in later theoretical literature, as he regards the population problem in relation to the accumulation of capital. An excerpt of the treatise is published as Frisch 1995c IDb.
IDA:1969 IDb:251
- 82 1940b *Nasjonalregnskapet [The national accounts]*, in *Beretning om det 3. nordiske statistikermøte [Transactions of the 3rd Nordic meeting of statisticians] i Oslo den 28.og 29 juni 1939*, Oslo, Grøndahl & Sønns Boktrykkeri, 1940, 141-149.
The article is based on a lecture Frisch gave in the meeting, and made a part of work done by the Co-ordination Department under the comprehensive Plan for an Economic Structural Survey of Norway, see Frisch 1936e IDa with annotations. An extract of the article was published as 1995ø IDa (in *Troen på nøkken* 169-174).
IDA:66, 1137 IDb:276, 955
- 83 1940c *Sosialøkonomiske utsnitt. Originaltekster utgitt med innføringer og forklaringer [Selected economic readings. Classical texts with introductions and explanations]*, Oslo, H. Aschehoug & co. (W. Nygaard), 234 pp.
With Wilhelm Keilhau. The selection of texts is done by Wilhelm Keilhau, who has also written the introductions and the explanations. Two excursions are written by Ragnar Frisch. "However, we have both of us gone through the whole book" (a passage in the introduction, translated). The selection comprises texts by Adam Smith, Thomas Malthus, David Ricardo, Friedrich Engels, Karl Marx, Carl Menger, Eugen von Böhm-Bawerk, Irving Fisher, Knut Wicksell, John M. Keynes, two Norwegians Anton Martin Schweigaard and Einar Einarsen and the Dane Laurits Birck. In the two excursions, presented as supplements to the pieces from Adam Smith and David Ricardo, the classical texts on value theory and distribution are explained by using a modern terminology and symbolic language.
- 84 1941a Forord og Innledning [Preface and Introduction], in Wold, Knut Getz: *Kosthold og levestandard. En økonomisk undersøkelse [Nutrition and standard of living. An economic investigation]*, Oslo, Fabritius og Sønners Forlag, i-ii and 1-23.
Frisch supervised the investigation and wrote the preface and the introduction. Wold's work made a partial result of the comprehensive Plan for an Economic Structural Survey of Norway, see Frisch et al 1936e IDa with annotations. In the preface Frisch presents a formal analysis of finding the optimal diet for a consumer, i.e. the diet which has the lowest cost among the available diets which meet a given standard of "physiological efficiency". The problem is first formulated in terms of a neoclassical production function and then as a linear programming problem. Both approaches are remarkable, the first one by applying the method of production theory to a consumer problem, the second one by formulating a linear programming problem as early as in 1941. See Sandmo 1993 IDb for a thorough discussion of Frisch's contribution. A reprint of pp 1-19 (with minor omissions) is issued as Frisch 1995bi IDc.
IDA:66, 1137 IDb:2050 IDc:314
- 85 1941d Priskartellisk prisdannelse [Price formation under price cartels],

- Statsøkonomisk Tidsskrift*, Vol 55, 270-274.
- 86 1943a Byggekostnad, byggestandard og byggesum [Building costs, building standard and total building expense], *Forsikringstidende*, Vol 47, 108-109.
- 87 1943b En byggekostnadsindeks grunnlagt på de faktiske byggeforhold til enhver tid [A cost-of-building index based on the current building conditions], *Statsøkonomisk Tidsskrift*, Vol 57, 1-220.
Assisted by Helge Seip, Sven Vigger and Magne Lund. Also issued as Publikasjon nr 16 from DE-UO.
- 88 1943c Økosirk-systemet (Det økonomiske sirkulasjonssystem) [The ecocirc system (The system of economic circulation)], *Økonomisk Tidsskrift*, Vol 45, 106-121.
Also as reprint No 112 from DE-UO. Frisch worked on national accounting and the related problems of developing a system of macroeconomic concepts and bookkeeping equations - i.e. an ecocirc (economic circulation) system - through a number of stages over a period of twenty years. He made the very first known sketch as early as in 1928-1929. Most of his contributions on the subject were presented with the aid of bookkeeping equations in real as well as in financial variables, accounting tableaux and ecocirc graphs (his own invention). The present article gives a brief presentation. The finally developed system is presented more carefully in Frisch et al 1948-03-08 IDa. For a thorough exposition of Frisch's effort in this development, see Bjerve 1986 IDb. Other contributions: Frisch 1947p IDc, Bergan 1955-02-01 IDd, Frisch 1940b IDe (Nasjonalregnskapet), Bjerve 1944 IDf (reprinted in Samfunnsøkonomiske Studier 59, Statistics Norway, Oslo 1985). Some introductory remarks in Frisch 1942 IDg.
IDA:434, 936 IDb:2014 IDc:384, 935 IDd:1904 IDE:82, 932 IDf:1811 IDg:362, 933
- 89 1945b En statistisk analyse av bakeprøver [A statistical analysis of bakery samples], in *Kristiania Brødfabrikk A/S og A/S Rosenborgkomplekset gjennom 25 år, A jubilee publication*, Oslo, Beretning om selskapenes anlegg, organisasjon og drift, 172-181.
Also as Frisch 1948-05-05 IDa and 1954c IDb (Publikasjon nr 19 from DE-UO).
IDA:440, 1046 IDb:127, 1089
- 90 1945c Økonomisk forskning og undervisning i Norge [Economic research and education in Norway], *Statsøkonomisk Tidsskrift*, Vol 59, 101-112.
Written originally as a report after some consideration at DE-UO. The introductory lines read (translated here): "This plan for further development of economic research and education has been worked out through discussions with the research scholars Petter Jakob Bjerve and Stein Johnsen, executive officer Knut Getz Wold and Dr. Olav Reiersøl, who have all been fellow workers at the Department of Economics, University of Oslo." Reproduced as Frisch 1995bs IDa (in *Troen på nøkken*). The second chapter (immediately after the introduction), headed "Generelt om behovet for sosialøkonomer og sosialøkonomisk forskning" [Generally on the need for economists and economic research], was issued as Frisch 1945-12-07 IDb (article in the Oslo newspaper *Arbeiderbladet*).
IDA:324 IDb:1638
- 91 1946j The responsibility of the econometrician, *Econometrica*, Vol 14, 1-4.
Frisch's work as Editor-in-Chief in *Econometrica* became considerably more difficult after the German attack on Norway in April 1940 and completely impossible from the moment the United States entered the war in December 1941. Frisch was arrested in October 1943, when the Nazi government closed the University of Oslo, and he sat imprisoned for about one year. Oskar Lange was appointed Acting Editor in 1942 and edited the journal until Frisch could resume his duties. The present article marked his return to the Editor's chair in January 1946. A reprint of the article is published (in Bjerkholt) as Frisch 1995bc IDa.
IDA:309, 1132
- 92 1947ø Irving Fisher at eighty, *Econometrica*, Vol 15, 71-74.
The same as 1947an IDa (except for the title) and as 1947å IDb. Frisch's tribute pp 71-73, Fisher's response pp 73-74.
IDA:98 IDb:93
- 93 1947å Irving Fisher at eighty, *Stimulator*, Vol 1 No 4, 5-8.

- Frisch's tribute to Fisher pp 5-7, Fisher's response pp 7-8. The same as 1947ø IDa and, except for the title, as 1947an IDb.
IDa:92 IDb:98
- 94 1947ad Mål og midler i økonomisk politikk i etterkrigstiden [Ends and means in economic policy in the post-war time], *Samtiden*, Vol 56, 26-38.
 A reproduction of Frisch 1946-12-30 IDa and 1947-01-02 IDb.
IDa:1646 IDb:1647
- 95 1947ae *Noen trekk av konjunkturlæren (Med et tillegg om levestandard og prisindeks)* [Some elements of the business cycle theory (With a supplement on standard of living and price index)], Oslo, H. Aschehoug & co (W. Nygaard), 107 pp.
 The bulk of the book (all but the supplement) is a slightly revised reprint of 1932e IDa. The first part gives a purely descriptive exposition of trade cycles. Later chapters deal with several factors which might contribute towards explaining trade cycles. Chapter 7 (pp 47-57) surveys briefly explanations put forward by older scholars such as Malthus, Ricardo, John Stuart Mill, Jean Baptiste Say, Karl Marx, Tugan-Baranovskij and others, and also theories by newer theoreticians like Knut Wicksell and John M. Keynes. The book is reviewed by *Farmand*. Edit. 1947-08-23 IDb.
IDa:34, 965 IDb:1831
- 96 1947ai On the need for forecasting a multilateral balance of payments, *The American Economic Review*, Vol 37-1, 535-551.
 Critical comments by Polak 1948 IDa, and Meier 1948 IDb. Hinshaw 1948 IDc gives an exposition of Frisch's contribution. Also comments by Chipman 1998 IDd pp 97 and further. Frisch's article is reprinted (in Bjerkholt) as Frisch 1995ak IDe and (considerably shortened) as 1959b IDf. In Bodkin, Ronald G., Lawrence R. Klein and Kanta Marwah 1991: *A history of macroeconomic model-building*, Edward Elgar, Aldershot, the present paper of Frisch is sketched on pp 14-15 (in a chapter by Bert G. Hickman), being considered among antecedents to the so-called Project LINK.
IDa:1835 IDb:1834 IDc:1833 IDd:2091 IDe:288, 1375 IDf:148, 1243
- 97 1947am Den samfunnsmessig optimale arbeidsinnsats [The socially optimum employment], *Stimulator*, Vol 1 No 7, 5-16.
 The present paper was originally issued as memo from DE-UO, Frisch 1947-08-15 IDa, see the annotations.
IDa:409
- 98 1947an Tribute to Irving Fisher, *Journal of the American Statistical Association*, Vol 42, 2-5.
 Addresses at testimonial dinner of the American Statistical Association at its 106th Annual Meeting, Atlantic City, January 25 1947. Frisch's tribute pp 2-4, Fisher's response pp 4-5. The same, except for the title, as 1947ø IDa and 1947å IDb.
IDa:92 IDb:93
- 99 1948a Den optimale arbeidsinnsats [The optimum employment], *Økonomisk Tidsskrift*, Vol 50, 63-80.
 A popularized presentation of a work presented as a memorandum to the United Nations' Subcommittee on Employment and Economic Stability (Document E/CN.1/Sub.2/6), Frisch 1947-12-04 IDa. The present version is also published as memo from DE-UO, Frisch 1948-01-02 IDb, and parts of it as Frisch 1995an IDc (in *Troen på nøkken*).
IDa:420 IDb:422 IDc:291
- 100 1948b Overdeterminateness and optimum equilibrium, *Nordisk Tidsskrift for Teknisk Økonomi*, Vol 12 No 37, 95-105.
 The entire issue was "Dedicated to Dr.F. Zeuthen on his sixtieth birthday, September 9 1948, in gratitude for his work and the interest he has devoted to this journal".
- 101 1948c The problem of multicompensatory trade. Outline of a system of multicompensatory trade, *The Review of Economics and Statistics*, Vol 30, 265-271.
 The problem was first treated in 1947ai IDa. Comments: Hinshaw 1948 IDb and Chipman 1998 IDc (pp 97-99). Reprinted (in Bjerkholt) as Frisch 1995av IDd.
IDa:96, 1139 IDb:1833 IDc:2091 IDd:299, 1378

- 102 1948d Repercussion studies at Oslo, *The American Economic Review*, Vol 38 I, 367-372.
Frisch puts forward basic ideas from the ongoing work at DE-UO, the main feature of which being the analysis and numerical determination of high-autonomous structural relations. Thus ten years after his critique of Tinbergen (1938-07-17 IDa, see the annotations) Frisch considers again the problems of determining numerically a structural equation with a high degree of autonomy. There goes a line from his first work on econometrical methodology, the Correlation and scatter article (1929a IDb), to the present one, the main works along this road being 1931f IDc, 1931g IDd, 1933f IDE, 1933g IDf, 1934f IDg and 1938-07-17. The present article is also issued as memo from DE-UO, Frisch 1949-04-20 IDh, and reproduced as Frisch 1995bb IDi (in Bjerkholt).
IDA:355, 1034 IDb:17, 1012 IDc:331, 1016 IDd:29, 1017 IDE:48, 1023 IDf:49, 1024 IDg:58, 1026 IDh:469, 1056, 1154 IDi:308, 1381
- 103 1949a On the zeros of homogeneous functions, *Econometrica*, Vol 17, 28-29.
Criticism of Patinkin, D. 1949: 'The indeterminacy of absolute prices in classical economic theory', *Econometrica*, Vol 17, 1-27.
- 104 1949b Prolegomena to a pressure-analysis of economic phenomena, *Metroeconomica*, Vol 1, 135-160.
Also issued as reprint No 113 from DE-UO. An excerpt from the article is published as Frisch 1995aw IDa (in Hendry and Morgan). Reproduced (in Bjerkholt) as Frisch 1995ax IDb. Section 2 is reproduced (with minor modifications) as Frisch 1961-02-01 IDc. The article is assessed by Arrow 1960b IDd.
IDA:300, 992 IDb:301, 993 IDc:757, 979 IDd:1923
- 105 1949c Work done and work planned at the University Institute of Economics Oslo, *Stimulator*, Vol 3 No 5, 4-10.
Also as reprint No 1 from DE-UO.
- 106 1950a Alfred Marshall's theory of value, *The Quarterly Journal of Economics*, Vol 64, 495-524.
The publication is an English translation of Frisch 1947m IDa. Also as reprint No 114 from DE-UO.
IDA:381, 877, 903
- 107 1950c L'emploi des modèles pour l'élaboration d'une politique économique rationnelle, *Revue d'Économie Politique*, Vol 60, 474-498 and 601-634,
An article in two parts based on lectures and colloquia held in Paris and Rome in the autumn 1950. The article deals with the problem of the Government's obligation to perform adequate regulation of the country's liquidity circulation, thus the problem which was originally dealt with in the confidential note "written down in haste" in 1932 and issued as memo 1951-01-11 IDa ('Statens plikt ...'). The article gives a more comprehensive treatment than the note, in accordance with the understanding of the problem complex Frisch had reached in 1950. Reissued as memo from DE-UO, Frisch 1951-09-20 IDb.
IDA:527, 1178 IDb:550, 1180
- 108 1950d On the distribution of a sum of squares over a linear subspace, *Zeitschrift für Ökonometrie*, Vol 1, 105-110.
- 109 1950e O problema dos números-índice, *Revista Brasileira de Estatística*, Vol 11, 187-214.
Originally issued in English: 1936a IDa, see the annotations.
IDA:63, 819
- 110 1950f Quelques souvenirs personnels sur un grand homme, *Économie Appliquée*, Vol 3, 407-412.
In memory of Joseph Schumpeter. English translation: 1951f IDa.
IDA:117
- 111 1950g Samfunnsøkonomi og økonomisk demokrati [Economics and economic democracy], *Kontakt*, Vol 4 No 9, 30-37.

- Refer to Frisch 1951g IDa.
IDA:118, 1177
- 112 1950h Sosialøkonomisk forskning og studium [Economic research and the study of economics], *Kontakt*, Vol 4 No 1, 34-37.
A speech made to students of economics at UO. Reprinted and issued as 1995I IDa (i *Troen på nøkken*).
IDA:260
- 113 1951a Erkjennelsesmåter og vurderinger [Cognitive inferences and value judgements], *Stimulator*, Vol 5 No 4, 5-9.
Comments: Arne Næss 1951 IDa. Rejoinder by Frisch 1952e IDb. Reprinted as Frisch 1995k IDc (in *Troen på nøkken*).
IDA:1892 IDb:121 IDc:259
- 114 1951b Krav til eksamensbesvarelser i økonomisk teori [Requirements to examination papers in economic theory], *Stimulator*, Vol 5 No 5, 7-10.
Some reflections made under marking of upper grade's examination papers in economic theory.
- 115 1951c Monopoly - Polypoly - The concept of force in the economy, *International Economic Papers*, No 1, 23-36.
Originally issued in French: 1933d IDa, see the annotations. Translated into English by W. Beckerman. Also issued in German: 1965b IDb and 1968b IDc. A reprint of the English version is issued as Frisch 1995y IDd (in Bjerkholt).
IDA:46, 897, 967 IDb:187, 923, 982 IDc:208, 924, 984 IDd:273, 990
- 116 1951e Rasjonell økonomisk politikk [A rational economic policy], *Kontakt*, Vol 5 No 2, 30-38.
Refer to Frisch 1951g IDa. Reissued as Frisch 1995aø IDb.
IDA:118, 1177 IDb:305, 1379
- 117 1951f Some personal reminiscences on a great man, *Econometrica*, Vol 19, 87-91.
In memory of Joseph Schumpeter. See Frisch 1950f IDa.
IDA:110
- 118 1951g *Økonomisk demokrati [Economic democracy]*, Oslo, Arbeidernes Aktietrykkeri, 20 pp.
The articles 1950g IDa and 1951e IDb are put together into the present pamphlet.
IDA:111, 1171 IDb:116, 1176
- 119 1952c Frisch on Wicksell, in Spiegel, Henry William (ed): *The development of economic thought. Great economists in perspective*, New York, John Wiley & Sons, 652-699.
This homage to Knut Wicksell was first issued as memo from DE-UO, Frisch 1951-12-15 IDa.
IDA:554
- 120 1952d A note on Pierre Gorra's contribution on index numbers, *Econometrica*, Vol 20, 687-687.
- 121 1952e Vitenskap og vurdering [Science and judgement], *Stimulator*, Vol 6 No 2, 5-7.
A rejoinder to Næss 1951 IDa. See Frisch 1951a IDb.
IDA:1892 IDb:113
- 122 1953b Kortsyntheten opphøyd til juridisk kriterium [The short-sightedness raised to a juridical criterion], *Stimulator*, Vol 7 No 2, 6-9.
- 123 1953c Replik til Borgs foredrag i Sosialøkonomisk Samfunn 9. april 1953 [A reply to a speech by Asbjørn Borg in Sosialøkonomisk Samfunn April 9 1953], *Stimulator*, Vol 6 No 4, 15-19.
The subject in focus was the content of the study of economics at the University of Oslo.
- 124 1953d Samfunnsmodell anvendt i en analyse av hvordan de økonomiske faktorer griper inn i hverandre [An economic model of the society used in an analysis

- of how the economic factors interact], *Stimulator*, Vol 7 No 3, 5-19.
Lecture given at the annual meeting in Norges almenvitenskapelige forskningsråd April 8 1953.
- 125 1954a Linear expenditure functions. An expository article, *Econometrica*, Vol 22, 505-510.
Also as memo from DE-UO, Frisch 1954-08-05 IDa. A reprint of the article is published (in Bjerkholt) as Frisch 1995r IDb.
Ida:605, 844 IDb:266, 862
- 126 1954b Some basic principles of price of living measurements. A survey article, *Econometrica*, Vol 22, 407-421.
The introductory sentences read: "The following is an attempt to discuss some basic principle of cost of living measurements in a form which is stripped of mathematical technicalities. Emphasis is placed on the *meaning* of the magnitudes that enter into the computations and on a discussion of *why* we perform certain computational operations on these magnitudes." The lines of thought of the present paper were presented originally to economics students at Oslo. In 1947 they were given in an address to students and faculty members at Harvard and Princeton. The paper was originally published as Frisch 1953-06-25 IDa.
Ida:581, 838
- 127 1954c *En statistisk analyse av bakeprøver [A statistical analysis of bakery samples]*, *Publikasjon No 19*, Oslo, DE-UO, 12 pp.
Originally 1945b IDa. Also 1948-05-05 IDb.
Ida:89, 1037 IDb:440, 1046
- 128 1954d La théorie de l'avantage collectif et les régions de Pareto, *Économie Appliquée*, Vol 7, 211-280.
Translated from the original English text, memo from DE-UO 1953-08-17 IDa, by Georges T. Guilbaud. The English version was published in print in 1959c IDb, see the annotations. The French text was reissued as reprint No 116 from DE-UO.
Ida:582, 919 IDb:149, 922
- 129 1955a Arbeid med metodeproblemer ved økonomisk planlegging i India [Work on problems of method in economic planning in India], *Stimulator*, Vol 8 No 4, 4-21.
A causerie in Sosialøkonomisk Samfunn, Oslo, April 21 1955.
- 130 1955b From national accounts to macro-economic decision models, in Gilbert, M. and R. Stone (eds): *Income and wealth - Series IV*, London, Bowes & Bowes Publishers Ltd., 1-26
A paper presented at the Third Conference of the International Association for Research in Income and Wealth, held at Castelgandolfo, near Rome, 1-6 September 1953. A memo by Ragnar Frisch 1953-08-27 IDa made manuscript for the article. It is headed as the article, but with the under-heading: "A synopsis of ideas to be presented at the meeting of the International Association for Research in Income and Wealth, Rome, September 1953". See also Frisch 1956-01-02 IDb.
Ida:583, 946, 1190 IDb:636, 1215
- 131 1955c Hard thinking and hard work, *Stimulator*, Vol 9 No 1, 4-6
The same as 1955g IDa (in Sankhyá). With an introduction by the editor.
Ida:135
- 132 1955d Litt om å fraråde individuell sparing [Short on advising against individual saving], *Stimulator*, Oslo, Vol 9 No 6-7, 18-22.
- 133 1955e Market price versus factor cost in national income statistics, *Sankhyá: The Indian Journal of Statistics*, Vol 15, 1-8.
Comments: Ezekiel 1956 IDa. Frisch's rejoinder 1956e IDb.
Ida:1910 IDb:140, 951
- 134 1955f The mathematical structure of a decision model: The Oslo Sub-Model, *Metroeconomica*, Vol 7, 111-136.

- A footnote on p 111: "This study was first presented as a mimeographed appendix to a United Nations memorandum: "Price-Wage-Tax-Subsidy Policies as Instruments in Maintaining Optimal Employment. A memorandum on analytical machinery to be used in discussions on causes of and remedies to unemployment", E/CN.I/Sub.2/13, 18 April 1949. The present study, giving a complete account of the mathematics, appears here for the first time in print." The memorandum mentioned in the footnote is Frisch 1949-09-23 IDa. See also Frisch 1949-03-28 IDb, 1949-09-28b IDc, 1949-04-18 IDd (the UN Document) and 1953-02-12 IDE. The present article is reproduced as Frisch 1995v IDf (in Bjerkholt).
IDa:475, 1157 IDb:467, 1152 IDc:478, 1160 IDd:468, 1153 IDE:576, 1187 IDf:270, 1371
- 135 1955g Speech by Professor Ragnar Frisch, *Sankhyá: The Indian Journal of Statistics*, Vol 16, 186-187.
 A speech delivered at the Twentythird Anniversary of the Indian Statistical Institute, Calcutta, December 12 1954. Also issued as Frisch 1955c IDa (in *Stimulator*).
IDa:131
- 136 1955h Uttalelse om dr. philos. Trygve Haavelmos vitenskapelige kvalifikasjoner og hans kompetanse for det ledige professorat i statsøkonomi og statistikk [A statement on D. Phil. Trygve Haavelmo's scientific qualifications and his level of competence for the vacant chair in economics and statistics], *Universitetet i Oslo - Årsberetning 1. juli 1947 - 30. juni 1948*, Oslo, Akademisk Forlag, 173-184.
 The statement was dated 24 February 1948. Frisch 1947-11-30 IDa made manuscript for the statement.
IDa:416
- 137 1956a Formulazione di un piano di sviluppo nazionale come problema di programmazione convessa (Il caso del piano indiano), *L'Industria*, 1956, 1-12.
- 138 1956b Macroeconomics and linear programming, in *25 economic essays in honour of Erik Lindahl 21 November 1956*, *Ekonomisk Tidskrift*, 1956, 38-67.
 The article describes the logarithmic potential method and also links it to the general problem of macroeconomic planning. It is fairly similar to Frisch 1956-01-10 IDa. The latter, however, contains more detailed discussions on several points. The article is reprinted (in Bjerkholt) as Frisch 1995u IDb. See the annotations to Frisch 1954-10-18 IDc for references to other works by Frisch in which the logarithmic potential method is dealt with.
IDa:638, 1216, 1445 IDb:269, 1370, 1499 IDc:613, 1432
- 139 1956d Programme convexe et planification pour le développement national, *Colloques internationaux du Centre National de la recherche scientifique LXII*, Les modèles dynamiques. Conférence à Paris mai 1955, Publiée 1956, 47-80.
- 140 1956e A rejoinder, *Sankhyá: The Indian Journal of Statistics*, Vol 17, 246-246.
 Frisch's rejoinder to Ezekiel 1956 IDa.
IDa:1910
- 141 1956f La résolution des problèmes de programme linéaire par la méthode du potentiel logarithmique, in: *Cahiers du Séminaire D'Économétrie: No 4 - Programme linéaire - Agrégation et nombres indices*, 13 Quai Anatole-France Paris-7e, Centre National de la Recherche Scientifique, 1956, 7-23.
 Published under the direction of René Roy, Membre de LiInstitut, Inspecteur Général des Ponts et Chaussées. An introduction by R. R. on p 7. A report of a discussion (with Ragnar Frisch and René Roy among the participants) on pp 20-23. The logarithmic potential method is described in Frisch 1956b IDa, where it moreover is linked to the general problem of macroeconomic planning, see the annotations for more references.
IDa:138, 1213, 1442
- 142 1957b The multiplex method for linear programming, *Sankhyá: The Indian Journal of Statistics*, Vol 18, 329-362.

The article is, except for minor corrections, identical with the memo from DE-UO, Frisch 1955-10-17 IDa. A reprint is issued (in Bjerkholt) as Frisch 1995æ IDb. A memo Frisch 1958-09-12 IDc has the same title, but gives a different treatment of the subject, see the annotations.

Ida:635, 1440 IDb:275, 1501 IDc:683, 1461

- 143 1957c Om målsettingsformuleringen ved nasjonal planlegging [On the formulation of objectives in national planning] *Nationaløkonomisk Tidsskrift*, Vol 95, 125-130.
The content of the article is, except for some minor textual changes and some added footnotes, identical with the content of the memo of 1956-03-16 from DE-UO IDa. See also 1956a IDb (Formulazione ..), 1956d IDc (Programme convex..) and 1956b IDd (Festschrift to Erik Lindahl). Reissued as Frisch 1995ae IDE.
Ida:642, 1219 IDb:137, 1212, 1441 IDc:139, 1214 IDd:138, 1213, 1442 IDE:282, 1374
- 144 1957d Sur un problème d'économie pure, *Metroeconomica*, Vol 9, 79-111.
A reissue of 1926h IDa, see the annotations. An English translation: 1971d IDb.
Ida:12, 811, 1008 IDb:218, 852, 1115
- 145 1958a Aggregeringsproblemet fra produksjonsteoretisk synspunkt [The aggregation problem from the standpoint of the theory of production], in Milhøj, P. (ed): *Festskrift til Frederik Zeuthen*, Copenhagen, Nationaløkonomisk Forening, 91-106.
Issued as an annex to *Nationaløkonomisk Tidsskrift*, Vol 96, 1958. Originally issued as Frisch 1951-06-18 IDa.
Ida:546, 884
- 146 1958b Økonomikkens landevinninger i nyere tid [The progress of economics in recent time], *Statsøkonomisk Tidsskrift*, Vol 72, 263-286.
From a speech delivered at a gala meeting at the University of Oslo October 25 1958 at the fiftieth anniversary of the first degree in economics. Reprint No 117 from DE-UO. An excerpt from the article is issued under the title "Om desisjonsmodeller [On decision models]" as Frisch 1995ad IDa (in *Troen på nøkken*).
Ida:281, 1373
- 147 1959a A complete scheme for computing all direct and cross demand elasticities in a model with many sectors, *Econometrica*, Vol 27, 177-196.
Frisch develops methods for estimating all elasticities in a complete system of demand functions. The approach is based on the assumption of want-independence, thus there is a clear line from his earlier works on utility theory and measurement, 1926h IDa (Sur un problème ..) and 1932h IDb (New methods ...), to the present one. Frisch's "complete scheme" has been widely applied and has obtained great practical importance. In Norway it was in the first place used by Professor Leif Johansen in his doctoral thesis (the MSG model), which in turn provided the basis for much of the work of planning carried out under the auspices of the Ministry of Finance. Frisch's system or systems inspired by his work have been applied in several other countries as well. A reprint is published (in Bjerkholt) as Frisch 1995f IDc. Chipman 1998 IDd gives an explanation of the "complete scheme" on pp 76-78. Hylland 1982-01-14 IDE presents Frisch's results "in a hopefully more accessible form".
Ida:12, 811, 1008 IDb:37, 815, 1020 IDc:254, 859, 928 IDd:2091 IDE:2006
- 148 1959b On the need for forecasting a multilateral balance of payments, in Allen, William R. and Clark Lee Allen (eds): *Foreign trade and finance*, New York, The Macmillan Company, 410-425.
A considerably shortened reprint of 1947ai IDa.
Ida:96, 1139
- 149 1959c On welfare theory and Pareto regions, *International Economic Papers*, No 9, 39-92.
The paper was worked out in the main in the autumn of 1950; it was subsequently revised and presented as an appendix to the paper "From national accounts ...", read at the meeting of the International Association for Research in Income and Wealth, Castelgandolfo (near Rome), September 1953. That paper appeared in *Income and wealth - Series IV*, 1955b

- IDa. The appendix, although originally written in English, was first published in print in French translation, 1954d IDb. The original English version was issued as memo from DE-UO, 1953-08-17 IDc, and now reproduced in the present article (from a footnote on p 39). A reprint is published (in Bjerkholt) as Frisch 1995am IDd. A review of *International Economic Papers* No 9 (including Frisch's article) appeared in *The Economic Journal*, 1960, Vol 70, 564-568; the criticism of Frisch's article: 565-566.
IDa:130, 949, 1200 IDb:128, 920 IDc:582, 919 IDd:290, 930
- 150 1959d The principle of recurrent planning, in Bergvall, John et al (eds): *Ekonomi Politik Samhälle*, Stockholm, Bokförlaget Folk och Samhälle, 67-74.
 Editors: John Bergvall, Erik Dahmén, Olle Dahlén, Gunnar Gerdner and Birger Lundström. Dedicated to Bertil Ohlin on his sixtieth anniversary, 23 April 1959.
- 151 1959e Recept på investeringspolitik för stabil framstegstakt [Recipe for an investment policy for a steady rate of progress], *Ekonomien*, Vol 35, 6-13.
- 152 1960a Generalities on planning, *L'Industria*, 1960, 1-23.
 First issued as Frisch 1957-02-26 IDa.
IDa:659, 1227
- 153 1960b The infra effect of investments, in Bombach, G. (ed): *Stabile Preise in wachsender Wirtschaft. Das Inflationsproblem*, Tübingen, Verlag von J. C. B. Mohr (Paul Siebeck), 105-114.
 Festschrift at the sixtieth anniversary of Erich Schneider.
- 154 1960c Market prices vs. factor costs and the constancy of production coefficients, in Pfouts, R. W.: *Essays in economics and econometrics. A volume in honor of Harold Hotelling*, Chapel Hill, The University of North Carolina Press, 191-215.
- 155 1960d *Maxima et minima. Théorie et applications économiques*, Paris, Dunod, Finance et économie appliquée volume VIII, 178 pp.
 In collaboration with A. Nataf; translated from Norwegian by M. Gilliard. Reissued in English translation as 1966f IDa. Originally issued as Frisch 1953-10-15 IDb.
IDa:197, 1495 IDb:584, 1418
- 156 1960e Oskar Jæger - Kåseri for sosialøkonomiske studenter 28. april 1960 [Oskar Jæger - Causerie to students in economics 28 April 1960], *Sosialøkonomen*, Vol 14 No 5, 17-19.
 The Norwegian term "skinn-problemer" is a key term in Frisch's causerie. A "skinn-problem" means something which from superficial observations appears to be a problem, but which after a closer inspection turns out not to be any problem at all. "Pseudo problems" might be a proper English term; or maybe "apparent problems"? (He also used terms like "fiksjoner" and "fiksjonstenkning" - "fictions" and "fiction thinking".) Then the main message Frisch wants to convey in this causerie might be phrased "beware of the apparent problems"! In his opinion every well educated economist should take responsibility for clearing up - as far as she/he is able to - serious and widespread misunderstandings within the economic sphere. Reissued as Frisch 1995ao IDa.
IDa:292
- 157 1960f *Planning for India: Selected explorations in methodology*, *Indian Statistical Series No. 8*, Calcutta, Statistical Publishing Society, 86 pp.
 A foreword by P. C. Mahalanobis, Indian Statistical Institute. The chapters by Ragnar Frisch are: ii: Preface; 1 Planning in underdeveloped economy; 2 Organization of information and the mathematical method; 3 Some applications: The experimental plan-frame no.1. Finally an appendix: A flow chart for automatic computation according to the multiplex method, based on the memorandum of 12 September 1958 from the University Institute of Economics and on the report F-375, March 1959, by Ole-Johan Dahl, Norwegian Defence Research Establishment. See Frisch 1958-09-12 IDa. The appendix is identical with Frisch 1959-04-23 IDb.
IDa:683, 1461 IDb:699, 1464
- 158 1960g Speed with safety through national planning, *L'Egypte Contemporaine*, Cairo, National Planning Committee, 1960, 5-43.

Frisch 1960-04-21 IDa made manuscript for the present article. Also as reprint No 118 from DE-UO.

Ida:742, 1287

- 159 1961a Economic planning and the growth problem in developing countries, *Statsøkonomisk Tidsskrift*, Vol 75, 115-135.
The article was presented at a seminar held in October 1960 at the Norwegian Institute of International Affairs in Oslo. It includes a report from a succeeding discussion (135-138) with contributions by H. J. Kreyberg, M. Kaser, L. Johansen, K. E. Svendsen, Y. Sadek, R. Krengel and comments by R. Frisch. A reprint is issued (in Long) as Frisch 1976b IDa. Also issued as reprint No 10 from DE-UO. See the annotations to 1961b IDb.
Ida:235, 1364 IDb:160, 1295
- 160 1961b Economic planning and the growth problem in developing countries, *Øst-Økonomi*, Oslo, special issue 1961, 51-71.
This special issue of *Øst-Økonomi* gives a report of discussions and presentations at a seminar held on 8 and 9 October 1960 at the Norwegian Institute of International Affairs in Oslo. The report is a reprint, with some additions, from *Statsøkonomisk Tidsskrift* No 4 1960 and Nos 1 and 2 1961. Frisch's lecture is reprinted unchanged from 1961a IDa, see the annotations.
Ida:159, 1294
- 161 1961f Litt om desisjonsmodeller i regional planlegging [Some reflections on decision models in regional planning], *Sosialøkonomen*, Vol 15 No 8, 5-6.
Issued as memo from DE-UO, Frisch 1961-06-28 IDa.
Ida:765, 1302
- 162 1961g Mixed linear and quadratic programming by the multiplex method, in Hegeland, H. (ed): *Money, growth and methodology and other essays in economics*, Lund, CWK Gleerup, 373-392.
The volume is a Festschrift to Johan Åkerman, published as No 20 in the Lund Social Science Studies. The article is also published as memo from DE-UO 1960-11-07 IDa and as reprint No 12 from DE-UO. Memo DE-UO 1960-08-27a IDb (with the same title) gives detailed computing instructions on how to use the multiplex method for solving programming problems with linear bounds and a quadratic objective function whose quadratic form need not be non-singular. A reprint of Frisch 1961g is published (in Bjerkholt) as Frisch 1995x IDc.
Ida:751, 1476 IDb:749, 1474 IDc:272, 1500
- 163 1961i Numerical determination of a quadratic preference function for use in macroeconomic programming, *Giornale Degli Economisti e Annali di Economica*, Vol 20, 3-43.
The first printed issue. Reissued in print 1963f IDa and 1995ac IDb. The very first issue is the memo from DE-UO of 1957-02-14 IDc. Also as reprint No 11 from DE-UO. The subject is treated in a number of other works by Frisch. See also Johansen 1974b IDd.
Ida:178, 1106, 1316 IDb:280, 1127, 1372 IDc:658, 1097, 1226 IDd:1982
- 164 1961j The Oslo Refi interflow table, *Bulletin de L'institut International de Statistique*, Paris, 33e Session, 1961, 1-12.
In co-operation with Hans Heli, Tore Johansen, H. J. A. Kreyberg, Per Schreiner, Jan Serck-Hanssen and Tore Thonstad. Pp 10-12 is an appendix presenting a list of 39 memoranda written by staff members of DE-UO, treating several sides of the Oslo decision models. The article is reissued as reprint No 13 from DE-UO.
- 165 1961k Quadratic programming by the multiplex method in the general case where the quadratic form may be singular, *Bulletin of the International Statistical Institute*, Vol 38, 283-332.
Refer to Frisch 1960h IDa and 1960-04-09 IDb.
Ida:718, 1471 IDb:741, 1473
- 166 1961l A reconsideration of Domar's theory of economic growth, *Econometrica*, Vol 29, 406-413.
A reprint is published (in Bjerkholt) as Frisch 1995ba IDa. Also issued as reprint No 14 from DE-UO.

IDA:307

- 167 1961n Verdifaste låneformer [Indexed loan forms], *Statsøkonomisk Tidsskrift*, Vol 75, 198-212.
A reprint of Frisch 1961-05-05 IDa. Also as reprint No 119 from DE-UO. Refer to *Dagbladet* 1961-03-06 IDb.
IDA:762 IDb:1930
- 168 1962a Address delivered at the Britain-Commonwealth-EFTA Conference July 17, 1962, in Report of the conference: *Britain should stay out, The Britain-Commonwealth-EFTA Conference, July 16-19, 1962*, House of Commons, Westminster, London, S. W. I., The Forward Britain Movement, 102-107.
The sole issue of the conference was to discuss whether Britain should join the European Common Market or stay out. In his address Frisch advocated his idea of organizing the economic interdependence between all nations by establishing a multilateral trade clearing agency, and gave a brief verbal sketch of how such an agency in his opinion should be based and put to work. For a more thorough presentation of the trade clearing idea, see e.g. Frisch 1963d IDa. Frisch's address to the conference was reproduced as Frisch 1962-07-20b IDb. See also Robinson 1962 IDc. Address for loan of the conference report: The British Library Document Supply Centre, Boston Spa, Wetherby, West Yorkshire, United Kingdom, LS23 7BQ.
IDA:176, 1315 IDb:773, 1311 IDc:1933
- 169 1962c *Innledning til produksjonsteorien, 9. utgave [Introduction to the theory of production, ninth edition]*, Oslo, UF, 252 pp.
The first printed issue of Frisch's theory of production. It is presented in the preface as the first volume. See 1937d IDa with annotations. Reprinted in 1971. Expanded French, English and Italian translations were issued as 1963c IDb, 1965k IDc and 1966e IDd respectively. See also 1941b IDe with annotations. Reprint of pp 15-42 as Frisch 1995p IDf (in *Troen på nøkken*).
IDA:353, 874 IDb:175, 890 IDc:192, 891 IDd:196, 892 IDe:359, 875 IDf:264, 893
- 170 1962e Note generali sulla pianificazione, in Caffè, F. (ed): *Economisti moderni*, Milan, Geranzi Editore, 202-235.
Translation of 1960a IDa.
IDA:152, 1262
- 171 1962f La pianificazione economica ed il problema della crescita nei paesi in sviluppo, *L'Industria*, 1962, 5-?.
The article is an Italian translation of Frisch 1961a IDa. An added note: M.Talamona: Note in margine al saggio di Ragnar Frisch, su alcuni problemi dellapianificazione, p 25.
IDA:159, 1294
- 172 1962g Preface to the Oslo Channel Model - A survey of types of economic forecasting and programming, in Geary, R. C. (ed): *Europe's Future in Figures*, Amsterdam, North-Holland Publishing Company, 248-286.
In a classification wellknown among his students Frisch distinguishes between four stages in economic forecasting and planning: The *on-looker approach*, the *ad hoc instrument approach*, the *feasible instrument approach*, and finally the *optimization approach* which includes a preference function and a mathematical programming technique for locating the (or an) optimal solution. The better part of the paper gives a survey of problems to face within the optimization approach and hints on how to handle them. An appended numerical input-output table presents the actual flows in value figures for Norway 1956. Reprints: Frisch 1976g IDa (in Long) and 1995as IDb (in Bjerkholt). First issued as memo from DE-UO 1961-10-20 IDc. See the fairly similar contribution 1961-05-13 IDd. Also as reprint No 15 from DE-UO.
IDA:240, 1367 IDb:296, 1376 IDc:768, 1304 IDd:763, 1301
- 173 1962h Den sosialøkonomiske vitenskaps utvikling [The development of the economic science], *Sosialøkonomen*, Vol 16 No 8, 2-6.
Public lecture given at the University of Oslo September 28 1962. Republished as Frisch 1965h IDa.
IDA:191

- 174 1963b An implementation system for optimal national economic planning without detailed quantity fixation from a central authority, *Extrait des Actes de la 3^e conference internationale de recherche operationelle, Oslo 1963*, Paris, London, Dunod and English Universities Press Ltd, 20-59.
The article gives a broad and mostly verbal presentation of the selection problem. One section gives a discussion of a coalition preference function. First issued as 1963-01-03 IDa. Republished as Frisch 1976e IDb (in Long) and as Frisch 1995o IDc (in Bjerkholt). Also issued as reprint No 18 from DE-UO.
Ida:779, 1317 IDb:238, 1366 IDc:263, 1369
- 175 1963c *Lois techniques et économiques de la production*, Paris, Dunod, Finance et économie appliquée volume 14, 362 pp.
Translated from Norwegian by Marc Gilliard. The book comprises the content of both first volume (1946c IDa) and second volume (1953-11-20 IDb) of *Innledning til produksjonsteorien [Introduction to the theory of production]*. An English translation 1965k IDc, and an Italian translation 1966e IDd.
Ida:364, 876 IDb:588, 885 IDc:192, 891 IDd:196, 892
- 176 1963d A multilateral trade clearing agency, *Statsøkonomisk Tidsskrift*, Vol 77, 1-10.
Prepared for the All Nations Trade and Economic Discussion Conference under the title "Towards a world economic conference", initiated by The Forward Britain Movement, held in London March 1963. Originally issued as 1963-02-03 IDa, later as 1964d IDb and slightly revised as 1967b IDc. Frisch suggested the basic ideas of a trade clearing agency in 1947ai IDd, 1948c IDe, 1948-03-04 IDf, and 1959b IDg. A mathematical theory for a multilateral trade clearing is presented in Frisch 1963-02-07 IDh, Alstadheim 1963-04-04 IDi and Alstadheim 1967 IDj. For a brief popularized presentation, see Frisch 1962a IDk. Frisch 1967b is reissued together with Alstadheim 1967 as reprint No 36 from DE-UO.
Ida:780, 1318 IDb:182, 1327 IDc:205, 1351 IDd:96, 1139 IDe:101, 1143 IDf:432, 1145 IDg:148, 1243 IDh:781, 1319 IDi:1951 IDj:1962 IDk:168, 1305
- 177 1963e The nonplex method in its subconditional form. Main points of the theory, *Economics of Planning*, Vol 3, 221-238.
Assisted by Håvard Alstadheim. First issued as a memorandum, Frisch 1963-11-14 IDa, see the annotations for further references. Reissued as reprint No 16 from DE-UO. Published (in Bjerkholt) as Frisch 1995ab IDb.
Ida:785, 1486 IDb:279, 1502
- 178 1963f Numerical determination of a quadratic preference function for use in macroeconomic programming, in *Studies in honour of Gustavo del Vecchio*, Padova, Cedam, 311-351.
A reprint of Frisch 1961i IDa, see the annotations for other references.
Ida:163, 1105, 1298
- 179 1964a Dynamic utility, *Econometrica*, Vol 32, 418-424.
An analysis written in reaction to a lecture by Sir Roy Harrod at the University of Oslo 27 November 1962. Originally issued as memo from DE-UO, Frisch 1962-11-28a IDa. A reprint published (in Bjerkholt) as Frisch 1995j IDb. Also issued as reprint No 21 from DE-UO.
Ida:777, 850, 980 IDb:258, 861, 988
- 180 1964b Economic planning and the role of econometrics, *Statsøkonomisk Tidsskrift*, Vol 78, 1-7.
A reprint issued as Frisch 1965g IDa.
Ida:190, 1110, 1337
- 181 1964c Die grundlegenden Züge des zwischenzweiglichen Modells "Oslo", in Förster, E., K. König, and G. Wintgen (eds): *Mathematische Methoden in der Wirtschaft*, Berlin, Verlag die Wirtschaft, 383-472.
Translated from Russian by Birgitte Berthold, Erhard Förster, Heinz Geißler, Karl König, Herbert Kluge, Wolfgang Salecker and Joachim Ulbricht. Original title of the book of readings (in Russian): *Primeniye matematiki v ékonomicheskikh issledovanijakh*.
- 182 1964d A multilateral trade clearing agency, in *On political economy and*

- econometrics - Essays in honour of Oskar Lange*, Warszawa, PWN-Polish Scientific Publishers, 165-172.
Also issued as 1963d IDa, 1963-02-03 IDb and slightly revised as 1967b IDc. See the annotations to 1963d.
IDa:176, 1315 IDb:780, 1318 IDc:205, 1351
- 183 1964e Optimal skewness in international economic cooperation, *Economics of Planning*, Vol 4, 65-75.
Also as reprint No 20 from DE-UO.
- 184 1964f Parametric solution and programming of the Hicksian model, in *Essays on econometrics and planning - Presented to Professor P. C. Mahalanobis on the occasion of his 70th birthday*, Oxford, London, New York, Paris, Frankfurt, Calcutta, Pergamon Press, 45-82.
Assisted by Ashok K. Parikh. The present issue is the first printed one. Reprint: Frisch 1995ap IDa (in Bjerkholt). Originally issued as memo from DE-UO 1962-07-29 IDb. Also asreprint No 17 from DE-UO.
IDa:293, 1503 IDb:774, 1483
- 185 1964g Planning for The United Arab Republic, *L'Egypte Contemporaine*, LVème annee, 5-17.
Public lecture delivered on 8 February 1964 in the Egyptian Society for Political Economy, Legislation and Statistics, at the invitation of Cairo University. A revised version published as Frisch 1965d IDa.
IDa:189, 1336
- 186 1964-06-17 *Utdrag av forelesninger i teoretisk statistikk. Fra kompendier av Ragnar Frisch og Trygve Haavelmo [Extract of lectures in theoretical statistics. From memoranda by Ragnar Frisch and Trygve Haavelmo*, Oslo, Universitetsforlaget, 81 pp.
- 187 1965b Monopol - Polypol - der Begriff der Kraft in der Wirtschaft, in Ott, Alfred Eugen (ed): *Preistheorie*, Köln, Berlin, Kiepenheuer & Witsch, 17-32.
Originally issued in French: 1933d IDa; later in English translation: 1951c IDb.
Translated from French to German by Alfred Eugen Ott. Reprinted in a second German book of selected works, 1968b IDc.
IDa:46, 897, 967 IDb:115, 917, 977 IDc:208, 924, 984
- 188 1965c Nyorientering av den økonomiske teori. Økonomikken som eksperimentalvitenskap [New orientation of economic theory. Economics as an experimental science] *Sosialøkonomen*, Vol 19 No 2, 2-7.
Reprint of Frisch 1932j IDa, see the annotations.
IDa:39
- 189 1965d Planning for the United Arab Republic, *Economics of Planning*, Vol 5, 29-42.
Public lecture delivered on 8 February 1964 in the Egyptian Society for Political Economy, Legislation and Statistics, at the invitation of Cairo University. The present publication is a revised version of Frisch 1964g IDa. Also issued as reprint No 24 from DE-UO.
IDa:185, 1328
- 190 1965g Selection and implementation - The econometrics of the future, in *Semaine d'Étude sur le Rôle de l'analyse économétrique dans la formulation de plans de développement*, Pontificiae Academiae Scientiarvm Scripta Varia - 28, Rome, 1197-1204.
A speech delivered as an introduction to a paper presented October 10 1963 in a study week organized in the Vatican by the Pontifical Academy of Science. Frisch's complete contribution to the conference, included various mimeographed documents which he distributed among the participants, was not included in the proceedings. A footnote on p 1204 might indicate that he intended to publish his contribution elsewhere. In the discussion after Frisch's oral presentation the following workshop members participated: M. Allais, R. Dorfman, T. C. Koopmans, P. C. Mahalanobis, F. Fisher, H. Wold, W. Leontief and H. Theil. Their contributions to the discussion are reported on pp 1205-1232. The present publication is a reprint of Frisch 1964b IDa.

IDa:180, 1107, 1325

- 191 1965h Den sosialøkonomiske vitenskaps utvikling [The development of the science of economics], *Sosialøkonomen*, Vol 19 No 2, 56-61.
Lecture delivered at Universitetets gamle festsal 28 September 1962 at the unveiling of a portrait of Professor Ragnar Frisch (painted by the artist Agnes Hiorth). The portrait was a gift to the University of Oslo from Sosialøkonomisk Samfunn at Professor Frisch's 30th anniversary as Professor. The present publication is a reprint of Frisch 1962h IDa.
IDa:173
- 192 1965k Theory of production, Dordrecht-Holland, D. Reidel Publishing Company, 370 pp.
Translated by R. I. Christophersen. Reviewed in *Econometrica* by Boot 1967 IDa. The book comprises the content of both first volume (1962c IDb) and second volume (1953-11-20 IDc) of *Innledning til produksjonsteorien [Introduction to the theory of production]*. To catch a glimpse of the development of the theory during the "gestation period" from the late twenties through the thirties, see the annotations to 1931h IDd, 1937d IDe and 1941b IDf. A French translation: 1963c IDg.
IDa:1963 IDb:169, 889 IDc:588, 885 IDd:332, 869 IDe:353, 874 IDf:359, 875 IDg:175, 890
- 193 1966a General outlook on a method of advanced and democratic macroeconomic planning, in Bruno de Finetti (ed): *Mathematical Optimization in Economics*, Roma, III Ciclo, l'aquila, 29 Agosto - 7 Settembre 1965, Edizioni Cremonese, 223-264.
Issued in Italian translation as 1966c IDa (Intorno ad un metodo ...).
IDa:195, 1344
- 194 1966b A generalized form of the Refi interflow table, in Kowalik, T. (ed): *Problems of economic dynamics and planning. Essays in honour of Michal Kalecki*, Warszawa, PWN-Polish Scientific Publishers (Pergamon Press), 133-156.
- 195 1966c Intorno ad un metodo di pianificazione macroeconomica avanzata e democratica, *Rassegna Economica*, Vol 30, 5-42.
Translation of 1966a IDa (General outlook ...) by Antonio Maria Fusco.
IDa:193, 1342
- 196 1966e *Leggi tecniche ed economiche della produzione industriale*, Milan, Etas Kompass, 532 pp.
Translation of 1963c IDa by Luigi M. Bianchi. Introduction by Luigi Frey, xiii-xxxvi.
IDa:175, 890
- 197 1966f *Maxima and minima. Theory and economic applications*, Dordrecht-Holland, D. Reidel Publishing Company, 176 pp.
In collaboration with A. Nataf. Translated from 1960d IDa by Express Translation Service, London. Review in *Econometrica*: Allen 1968 IDb. Originally issued as Frisch 1953-10-15 IDc.
IDa:155, 1470 IDb:1967 IDc:584, 1418
- 198 1966g Optimal implementation, *Rivista Internazionale de Scienze Economiche e Commerciali*, 1966 No 1, ?
Originally published as a memorandum from the Graduate School of Public and International Affairs, University of Pittsburgh, Frisch 1964-03-29b IDa. A reprint was published as Frisch 1966h IDb.
IDa:796, 1332 IDb:199, 1346
- 199 1966h Optimal implementation, in Tullio Bagiotti (ed): *Essays in honour of Marco Fanno*, Padova, Cedam - Casa Editrice Dott. Antonio Milani, 270-286.
Reprint of Frisch 1966g IDa.
IDa:198, 1345
- 200 1966i Propagation problems and impulse problems in dynamic economics, in Gordon, R. A., and L. R. Klein (eds): *Readings in business cycles*, London, George Allen & Unwin Ltd., 155-185.
Reprint of Frisch 1933i IDa, see the annotations.

IDa:50, 968

- 201 1966j Rational price fixing in a socialistic society, *Economics of Planning*, Vol 6, 97-124.
A footnote 1 p 97: "This paper is based on an address given on 18 March 1966 in the Economic Institute of the Academy of Sciences of the Sovjet Union. The meeting was chaired by Professor D. A. Allachverdjan, Deputy Director of the Institute, and by Professor Hachaturov. A very active participant in the ensuing discussion was Professor Istislavsky. My thanks to Professor Allachverdjan are also due because of an elaborate personal memorandum which he wrote me in the fall of 1963 on the rules for price fixation in the Sovjet Union." The article was to be continued, but the continuation never appeared. A reprint (in Bjerkholt): Frisch 1995aå IDa.
IDa:306, 1380
- 202 1966k Øst og Vest - og avanserte planleggingsmetoder [East and West - and advanced planning methods], *Sosialøkonomen*, Vol 20 No 1, 3-10.
A slightly revised reproduction of the first part of a lecture given in Sosialøkonomisk Samfunn, Oslo, 1965. An excerpt of part two of the article (in which theoretical and mathematical discussions are omitted) is issued as Frisch 1995au IDa.
IDa:298, 1377
- 203 1966l Øst og vest - og avanserte planleggingsmetoder. Annen artikkel: Prisproblemet [East and west - and advanced planning methods. The second article: The price problem], *Sosialøkonomen*, Vol 20 No 3, 22-32.
The present article is a revised reproduction of the second part of a lecture given in Sosialøkonomisk Samfunn, Oslo, on October 5 1965. Frisch 1966k IDa is a revised reproduction of the first part of the same lecture. The present article deals with the fundamental question of how to find a system of prices which should be fixed officially through an optimal programming analysis and which should serve as an active vehicle for steering the economic activity in accordance with established preferences. An excerpt of the article (where theoretical and mathematical discussions are omitted) is issued as Frisch 1995au IDb.
IDa:202, 1348 IDb:298, 1377
- 204 1967a Investment starting vs. investment sinking, *Economics of Planning*, Vol 7, 219-231.
A paper prepared as background material for invited lectures to be given April 1968 in the Department of Economics and Jurisprudence of the Hungarian Academy of Sciences, Budapest.
- 205 1967b A multilateral trade clearing agency, *Economics of Planning*, Vol 7, 97-105.
A slightly revised version of 1963d IDa, 1963-02-03 IDb and 1964d IDc. See the annotation to 1963d. Reissued together with Alstadhe im 1967 IDd as reprint No 36 from DE-UO.
IDa:176, 1315 IDb:780, 1318 IDc:182, 1327 IDd:1962
- 206 1967c Möglichkeiten einer vorteilhaften Anwendung der matematischen Programmierungsmethode in der bundesstaatlichen Wirtschaftsplanung Jugoslawiens, in Mayrzedt, Hans und Heelmut Romé (eds): *Koexistenz zwischen Ost und West - Konflikt, Kooperation, Konvergenz*, Wien, Frankfurt, Zürich, Europa Verlag Wien, 157-164 and 311-312.
Notes to the article are presented on pp 311 and 312. Note 1 and 2 are by the editors, note 3, 4, 5 and 6 by the author. A number of references to writings by the author himself are given in note 6.
- 207 1967d The smoothing of an interpreference table, in Henn, Rudolf (ed): *Operations Research-Verfahren - Methods of operations research III*, Meisenheim, Verlag Anton Hain, 181-191.
A reprint (in Bjerkholt): Frisch 1995bh IDa.
IDa:313, 1504
- 208 1968b Monopol - Polypol - der Begriff der Kraft in der Wirtschaft, in Barnikel, Hans-Heinrich (ed): *Wettbewerb und Monopol*, Darmstadt, Wissenschaftliche Buchgesellschaft, 35-56.

- Reprint of Frisch 1965b IDa, see the annotations.
Ida:187, 923, 982
- 209 1969 *Et numerisk eksempel som viser hvorledes prinsipper fra "The Oslo Channel Model" kan brukes for å avgjøre valg mellom investeringsprosjekter [A numerical example which shows how principles from "The Oslo Channel Model" can be used to decide choices between investment projects]*, Oslo, Bergen, Tromsø, Universitetsforlaget, 72 pp.
Reprint of Frisch 1963-10-03 IDa.
Ida:782, 1320
- 210 1970a Econometrics in the midst of analytical and social turmoils, in Dalenius, T., G. Karlsson, and S. Malmquist (eds): *Scientists at work. Festschrift in honour of Herman Wold*, Stockholm, Almqvist & Wiksell, 249-259.
Also as reprint No 71 from DE-UO.
- 211 1970b Econometrics in the world of today, in Eltis, W. A., M. Fg. Scott, and J. N. Wolfe (eds): *Induction, growth and trade - Essays in honour of Sir Roy Harrod*, Oxford, Clarendon Press, 152-166.
Also as reprint No 73 from DE-UO.
- 212 1970c From utopian theory to practical applications: The case of econometrics, *Réimpression de Les Prix Nobel en 1969*, 213-243.
Ragnar Frisch's Nobel Prize Award lecture, June 17, 1970. The lecture and the biographical note 1970e IDa are issued together as reprint No 70 from DE-UO. The lecture is republished as Frisch 1976d IDb (in Long), 1981 IDc (in a special issue of *American Economic Review*) and 1995m IDd (in Bjerkholt).
Ida:214 IDb:237, 1117 IDc:243, 1119 IDd:261, 1124
- 213 1970d Partial time regressions as compared with individual trends, in Hooper, J. W. and Nerlove, M. (eds): *Selected readings in econometrics from Econometrica*, Cambridge Massachusetts and London, M. I. T. Press, 17-31.
With Frederick V. Waugh. A reprint of Frisch 1933f IDa.
Ida:48, 1023
- 214 1970e Ragnar Anton Kittil Frisch, *Réimpression de Les Prix Nobel en 1969*, 211-212.
Biographical note written for the Nobel Prize Award.
- 215 1971a *Co-operation between politicians and econometricians on the formalization of political preferences*, Esselte Tryck, Stockholm, The Federation of Swedish Industries, 66 pp.
Background paper for a seminar held by the Federation of Swedish Industries. See 1971f IDa, which seems to be a Norwegian translation of the present English original. Also as reprint No 90 from DE-UO.
Ida:220, 1357
- 216 1971b Communication and developing countries, *Socio-Economic Planning Sciences*, Vol 5, 341-345.
Presented at the World Conference on Social Communication for Development Organizations, March 15-20 1970 in Mexico City.
- 217 1971c Note generali sulla pianificazione, in Caffè, F. (ed): *Economisti moderni*, Bari, Casa editrice Gius. Laterza & Figh, 195-226.
The same as 1962e IDa.
Ida:170, 1307
- 218 1971d On a problem in pure economics, in Chipman, John S., Leonid Hurwicz, Marcel K. Richter and Hugo F. Sonnenschein (eds): *Preferences, utility, and demand - A Minnesota symposium*, New York, Chicago, San Francisco, Atlanta, Harcourt Brace Jovanovich, Inc., 386-423.
The article is translated by John S. Chipman from the original French issue Frisch 1926h IDa, see the annotations. Reprinted as Frisch 1995aj IDb (in Bjerkholt).
Ida:12, 811, 1008 IDb:287, 864, 1129

- 219 1971e Rundspørning om Fellesmarkedet [Poll about the Common Market], *Sosialøkonomen*, Vol 25 No 3, 47-49.
Sosialøkonomen arranged an inquiry among distinguished economists, 19 Norwegians (among them Ragnar Frisch) and two from abroad (Richard Stone and Jan Tinbergen), asking them to answer the following questions (translated): 1) Do you mean that joining the Common Market will have so great advantages or disadvantages for the Norwegian economy on the whole that such a judgement alone should be decisive for the question of whether to join or not? 2) If the answer is no, would you still estimate the economic consequences for some special occupational- or social groups and industries so strong that a stand might be reasonably justified on economic relations alone? If yes, which stand and which economic relations? Frisch answers "no" to both questions and gives his reasons for his stand.
- 220 1971f Samarbeid mellom politikere og økonometrikere om formuleringen av politiske preferanser [Cooperation between politicians and econometricians on the formulation of political preferences], *Sosialøkonomen*, Vol 25 No 6, 5-13.
 Lecture given in Sosialøkonomisk Samfunn, Oslo, March 1971. It seems to be a Norwegian translation of 1971a IDa. Also issued as reprint No 81 from DE-UO. Parts of the article (from pp 5-9) are reprinted (in *Troen på nøkken*) as Frisch 1995bf IDb.
IDa:215, 1355 IDb:311, 1382
- 221 1971h Økonomisk teori og økonomisk politikk [Economic theory and economic policy], in *Økonomi og politikk*, Oslo, H. Aschehoug & co. (W. Nygaard), 5-13.
 With Petter Jakob Bjerve. *Økonomi og politikk* is a selection of articles issued as Festschrift to Ole Myrvoll on his 60th anniversary May 18 1971. The Frisch-Bjerve article is from a conversation on the radio July 5 1970. Also as reprint No 78 from DE-UO.
- 222 1974a Az általános közgazdasági elmélet időszerű kérdésénekáttekintése. Az indexszámok problémája [Annual survey of general economic theory: The problem of index numbers], in Frisch, Ragnar: *Kvantitatív és dinamikus közgazdaságtan*, Budapest, Közgazdasági és Jogi Könyvkiadó, 137-180.
 Translation by Csath, Magdolna of Frisch 1936a IDa, see the annotations. See Frisch 1974f IDb.
IDa:63, 819 IDb:227
- 223 1974b Az egyensúly és az egyensúlytalanság fogalmáról [On the notion of equilibrium and disequilibrium], in Frisch, Ragnar: *Kvantitatív és dinamikus közgazdaságtan*, Budapest, Közgazdasági és Jogi Könyvkiadó, 181-188.
 Translation by Kupa, Ildikó of Frisch 1936d IDa, see the annotation. See Frisch 1974f IDb.
IDa:65, 971 IDb:227
- 224 1974c Az elméleti közgazdaságtan egyik problémájáról [Sur un problème d'économie pure], Frisch, Ragnar: *Kvantitatív és dinamikus közgazdaságtan*, Budapest, Közgazdasági és Jogi Könyvkiadó, 35-72.
 Translation by Szegedy, Miklós of Frisch 1926h IDa, see the annotations. See Frisch 1974f IDb.
IDa:12, 811, 1008 IDb:227
- 225 1974d Bevezetés az Oslo Chanell modellhez. A gazdasági előrejelzés és programozás típusai [Preface to the Oslo Channel Model. A survey of types of economic forecasting and programming], in Frisch, Ragnar: *Kvantitatív és dinamikus közgazdaságtan*, Budapest, Közgazdasági és Jogi Könyvkiadó, 297-334.
 Translation by Ámon, Zsolt of Frisch 1962ge IDa. The input output table appended in the original publication is omitted. See Frisch 1974f IDb.
IDa:172, 1309 IDb:227
- 226 1974e Egy többszektoros modell összes keresletrugalmassági és keresztrugalmassági együtthatóinak számítási módszere [A complete scheme for computing all direct and cross demand elasticities in a model with many sectors], in Frisch, Ragnar: *Kvantitatív és dinamikus közgazdaságtan*, Budapest, Közgazdasági

- és Jogi Könyvkiadó, 269-295.
Translation by Káposztás, Ferenc of Frisch 1959a IDa, see the annotations. See Frisch 1974f IDb.
Ida:147, 849, 921 IDb:227
- 227 1974f *Kvantitatív és dinamikus közgazdaságtan [Quantitative and dynamic economics]*, Budapest, Közgazdasági és Jogi Könyvkiadó, 382 pp.
A selection of essays by Ragnar Frisch, translated. Editors: László Fébó and Leif Johansen. The preface by Leif Johansen. An article by Leif Johansen (translated), originally published in English under the title "Ragnar Frisch's contributions to economics" (Johansen 1969 IDa), is also included.
Ida:1969
- 228 1974g A közgazdasági elmélet új irányzata. A közgazdaságtan mint tapasztalati tudomány [New orientation of economic theory. Economics as an experimental science], in Frisch, Ragnar: *Kvantitatív és dinamikus közgazdaságtan*, Budapest, Közgazdasági és Jogi Könyvkiadó, 73-84.
Translation by Kupa, Ildikó of Frisch 1932h IDa. Originally issued in Norwegian as Frisch 1932i IDb, see the annotations. See also Frisch 1974f IDc.
Ida:38 IDb:39 IDc:227
- 229 1974h Modellele alkalmazása racionális gazdaságpolitika kidolgozásához [L'emploi des modèles pour l'élaboration d'une politique économique rationnelle], in Frisch, Ragnar: *Kvantitatív és dinamikus közgazdaságtan*, Budapest, Közgazdasági és Jogi Könyvkiadó, 189-242.
Translation by Ágainé, Tüzes Klára of Frisch 1950c IDa, see the annotations. See Frisch 1974f IDb.
Ida:107, 1170 IDb:227
- 230 1974i Monopólium - polipólium - az erő fogalma a közgazdaságtanban [Monopole - polypole - la notion de force dans l'économie], in Frisch, Ragnar: *Kvantitatív és dinamikus közgazdaságtan*, Budapest, Közgazdasági és Jogi Könyvkiadó, 85-101.
Translation by Ágainé, Tüzes Klára of Frisch 1933d IDa, see the annotations. See Frisch 1974f IDb.
Ida:46, 897, 967 IDb:227
- 231 1974j A nemzeti elszámolási rendszertől a makroökonómiai döntési modellekig [From national accounts to macro-economic decision models], in Frisch, Ragnar: *Kvantitatív és dinamikus közgazdaságtan*, Budapest, Közgazdasági és Jogi Könyvkiadó, 243-267.
Translation by Kupa, Ildikó of Frisch 1955b IDa, see the annotations. See Frisch 1974f IDb.
Ida:130, 949, 1200 IDb:227
- 232 1974k Politikai preferenciák kialakítására irányuló együttműködés politikusok és ökonometrikusok között [Co-operation between politicians and econometricians on the formalization of political preferences], in Frisch, Ragnar: *Kvantitatív és dinamikus közgazdaságtan*, Budapest, Közgazdasági és Jogi Könyvkiadó, 335-382.
Translation by Ámon, Zsolt of Frisch 1971a IDa, see the annotations. See Frisch 1974f IDb.
Ida:215, 1355 IDb:227
- 233 1974l A terjedés és az impulzus kérdései a dinamikus közgazdaságtanban [Propagation problems and impulse problems in dynamic economics], in Frisch, Ragnar: *Kvantitatív és dinamikus közgazdaságtan*, Budapest, Közgazdasági és Jogi Könyvkiadó, 103-136.
Translation by Ágainé, Tüzes Klára of Frisch 1933g IDa, see the annotations. See Frisch 1974f IDb.
Ida:50, 968 IDb:227
- 234 1976a Co-operation between politicians and econometricians on the formalization of political preferences, in Long, Frank (ed): *Economic planning studies. A*

- collection of essays by Ragnar Frisch, International studies in economics and econometrics Vol 8, Dordrecht-Holland, Boston-U.S.A., D. Reidel Publishing Company, 41-86.*
A reprint of Frisch 1971a IDa, see the annotations.
IDA:215, 1355
- 235 1976b Economic planning and the growth problem in developing countries, in Long, Frank (ed): *Economic planning studies. A collection of essays by Ragnar Frisch, International studies in economics and econometrics Vol 8, Dordrecht-Holland, Boston-U.S.A., D. Reidel Publishing Company, 175-195.*
A reprint of Frisch 1961a IDa, see the annotations.
IDA:159, 1294
- 236 1976c *Economic planning studies. Selected and introduced by Frank Long. Preface by Jan Tinbergen, International studies in economics and econometrics, Vol 8, Dordrecht-Holland, Boston-USA, D. Reidel Publishing Company, 195 pp.*
- 237 1976d From utopian theory to practical applications: The case of econometrics, in Long, Frank (ed): *Economic planning studies. A collection of essays by Ragnar Frisch, International studies in economics and econometrics Vol 8, Dordrecht-Holland, Boston-U.S.A., D. Reidel Publishing Company, 1-39.*
A reprint of Frisch 1970c IDa (the Nobel Prize Award lecture), see the annotations for further references.
IDA:212, 1113
- 238 1976e An implementation system for optimal national economic planning without detailed quantity fixation from a central authority, in Long, Frank (ed): *Economic planning studied. A collection of essays by Ragnar Frisch, International studies in economics and econometrics Vol 8, Dordrecht-Holland, Boston-U.S.A., D. Reidel Publishing Company, 129-174.*
A reprint of Frisch 1963b IDa, see the annotations.
IDA:174, 1314
- 239 1976f Objektivitet i sosialøkonomien - den prinsipielle sondring mellom sak og vurdering [Objectivity in economics - the fundamental distiction between scientific statements and value judgements], in Slagstad, Rune (ed): *Positivism, dialektikk, materialisme. Den norske debatten om samfunnsvitenskapens teori*, Oslo, Universitetsforlaget, 108-111.
A reproduction of Frisch 1962c IDa, see the annotations.
IDA:169, 889
- 240 1976g Preface to the Oslo Channel Model - A survey of types of economic forecasting and programming, in Long, Frank (ed): *Economic planning studies. A collection of essays by Ragnar Frisch, International studies in economics and econometrics Vol 8, Dordrecht-Holland, Boston-U.S.A., D. Reidel Publishing Company, 87-127.*
A reprint of Frisch 1962g IDa, see the annotations for other references.
IDA:172, 1309
- 241 1977 Indeksproblemet [The index problem], in Gørtz, Erik and Drud Hansen, Jørgen (eds): *Indeks teori*, Odense, Odense Universitetsforlag, 21-36.
A reprint of section j of Excursus 18 (Frisch 1947q IDa).
IDA:385, 827
- 242 1978 *New methods of measuring marginal utility*, Philadelphia, Penn., Porcupine Press, 142 pp.
A facsimile edition of 1932h IDa.
IDA:37, 815, 1020
- 243 1981 From utopian theory to practical applications: The case of econometrics, *The American Economic Review*, Vol 71, 1-16.
A reprint of Frisch 1970c IDa, see the annotations for other references.
IDA:212, 1113
- 244 1984 Partial time regressions as compared with individual trends, in Houck, James

- P. and Abel, Martin E. (eds): *Waugh, Frederick V.: Selected writings on agricultural policy and economic analysis*, Minneapolis, University of Minnesota Press, 409-423.
 With Frederick V. Waugh. A reprint of Frisch 1933f IDa.
IDA:48, 1023
- 245 1990 The characteristic solutions of a mixed difference and differential equation occurring in economic dynamics, in Osiatynski, Jerzy (ed): *Collected works of Michal Calecki. Volume 1. Capitalism: Business cycles and full employment*, Oxford; New York; Toronto and Melbourne, Oxford University Press, Clarendon Press, 447-460.
 With Harald Holme. A reprint of Frisch 1935b IDa.
IDA:59, 1387
- 246 1992 Statics and dynamics in economic theory, *Structural Change and Economic Dynamics*, Vol 3, 391-401.
 An English translation by Peter Thomas of the sections 1-3 of Frisch 1929d IDa. A reprint in Frisch 1995bk IDb (in Bjerkholt). An introduction by Andvig 1992 IDc in the same journal issue, pp 385-389.
IDA:20, 957 IDb:316, 998 IDc:2040
- 247 1994a Editorial, in Poirier, Dale J. (ed): *The methodology of econometrics*, Aldershot, Edward Elgar Publishing Limited, 3-6.
 A reprint of Frisch 1933c IDa, the first editorial in *Econometrica*.
IDA:45, 1022
- 248 1994b More pitfalls in demand and supply curve analysis, in Darnell, Adrian C. (ed): *The history of econometrics - Volume II*, Aldershot England (Brookfield Vermont USA), Edward Elgar Publishing Limited (E. E. Publishing Company), 54-60.
 A reprint of Frisch 1934c IDa, see the annotations. See also the annotations to Frisch 1933g IDb.
IDA:55, 1025 IDb:49, 1024
- 249 1995a Annual survey of general economic theory: The problem of index numbers, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume I*, Aldershot UK, Brookfields US, Edward Elgar, 51-88.
 A reprint of Frisch 1936a IDa, see the annotations.
IDA:63, 819
- 250 1995b Autonomy of economic relations (1938). Statistical versus theoretical relations in economic macrodynamics, in Hendry, David F. and Morgan, Mary S. (eds): *The foundations of econometric analysis*, Cambridge England, New York, Melbourne, Cambridge University Press, 407-419.
 Printed issue of Frisch 1954-09-10 IDa, which was the second issue of Frisch's *League of Nations memorandum* 1938-07-17 IDb to the Business Cycle Conference at Cambridge, England, July 18th-20th, 1938. The memorandum was first published as part of a memo from DE-UO, 1948-11-06b IDc, with Prof. Tinbergen's reply. Also issued in print as Frisch 1995bo IDd (in Bjerkholt). See the annotations to 1938-07-17.
IDA:609, 1091 IDb:355, 1034 IDc:449, 1049 IDd:320, 1135
- 251 1995c Befolkningsoptimum [Optimum population], in Frisch, Ragnar: *Troen på nøkken*, Oslo, Det Blå Bibliotek, UF, 127-136.
 An excerpt from the treatise "Befolkningsoptimum", 1940a IDa. The excerpt is limited to some introductory passages (pp 157-170, with omissions) and some passages at the end of the treatise (pp 214-215). See the annotations to 1940a.
IDA:81
- 252 1995d The characteristic solutions of a mixed difference and differential equation occurring in economic dynamics, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume I*, Aldershot UK, Brookfield US, Edward Elgar, 439-453.
 With Harald Holme. A reprint of Frisch 1935b IDa.

- IDA:59, 1387*
- 253 1995e Circulation planning: Proposal for a national organization of a commodity and service exchange, in Bjerkholt, O. (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume I*, Aldershot UK, Brookfield US, Edward Elgar, 360-438.
A reprint of pp 258-336 of Frisch 1934a IDa. Thus the mathematical appendix, pp 422-435, is omitted.
IDA:54, 1136
- 254 1995f A complete scheme for computing all direct and cross demand elasticities in a model with many sectors, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume I*, Aldershot UK, Brookfield US, Edward Elgar, 95-114.
A reprint of Frisch 1959a IDa.
IDA:147, 849, 921
- 255 1995g Correlation and scatter in statistical variables, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume I*, Aldershot UK, Brookfield US, Edward Elgar, 117-183.
A reprint of Frisch 1929b IDa.
IDA:18, 1013
- 256 1995h The double-expenditure method, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume I*, Aldershot UK, Brookfield US, Edward Elgar, 89-90.
A reprint of Frisch 1938a IDa. See the annotations to 1936a IDb.
IDA:74, 824 IDb:63, 819
- 257 1995i The Dupuit taxation theorem, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*, Aldershot UK, Brookfield US, Edward Elgar, 347-352.
A reprint of Frisch 1939a IDa, see the annotations.
IDA:78, 898
- 258 1995j Dynamic utility, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*, Aldershot UK, Brookfield US, Edward Elgar, 471-477.
A reprint of Frisch 1964a IDa, see the annotation.
IDA:179, 851, 981
- 259 1995k Erkjennelsemåter og vurderinger [Cognitive inferences and value judgements], in Frisch, Ragnar: *Troen på nøkken*, Oslo, Det Blå Bibliotek, UF, 49-53.
A reprint of Frisch 1951a IDa.
IDA:113
- 260 1995l Forskertrang og pensumidioti [Desire to do research versus syllabus idiocy], in Frisch, Ragnar: *Troen på nøkken*, Oslo, Det Blå Bibliotek, 241-245.
A reprint of the article "Sosialøkonomisk forskning og studium" [Economic research and study of economics], Frisch 1950h IDa.
IDA:112
- 261 1995m From utopian theory to practical applications: The case of econometrics, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*, Aldershot UK, Brookfield US, Edward Elgar, 501-531.
A reprint of Frisch 1970c IDa, his Nobel Prize Award lecture, see the annotations for more references.
IDA:212, 1113
- 262 1995n Hva forordene forteller [What the prefaces tell], in Frisch, Ragnar: *Troen på nøkken*, Oslo, Det Blå Bibliotek, 264-267.
Extracts from the prefaces to *Innledning til produksjonsteorien, 9. utgave* [Introduction to the theory of production, ninth edition], Frisch 1962c IDa and *Notater til økonomisk teori*

- [Notes on economic theory. Fourth edition, first volume], Frisch 1947ag IDb.
IDa:169, 889 IDb:399
- 263 1995o An implementation system for optimal national economic planning without detailed quantity fixation from a central authority, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*, Aldershot UK, Brookfield US, Edward Elgar, 154-193.
A reprint of Frisch 1963b IDa, see the annotations.
IDa:174, 1314
- 264 1995p Innledning til produksjonsteorien [Introduction to the theory of production], in Frisch, Ragnar: *Troen på nøkken*, Oslo, Det Blå Bibliotek, UF, 97-108.
A reprint of pp 15-42 of Frisch 1962c IDa (*Innledning til ...*). A few passages are omitted.
IDa:169, 889
- 265 1995q The interrelation between capital production and consumer-taking, in Bjerkholt, O. (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume I*, Aldershot UK, Brookfield US, Edward Elgar, 302-310.
A reprint of Frisch 1931c IDa, see the annotations.
IDa:25, 959
- 266 1995r Linear expenditure functions. An expository article, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*, Aldershot UK, Brookfield US, Edward Elgar, 457-462.
A reprint of Frisch 1954a IDa.
IDa:125, 841
- 267 1995s Låneopptagelse og etterkommerne (1) [Raising loans and the descendants (1)], in Frisch, Ragnar: *Troen på nøkken*, Oslo, Det Blå Bibliotek, UF, 92-93.
A shortened reprint of Frisch's contribution to the Oslo newspaper *Aftenposten* 20 January 1936. Frisch claims that the editor had maintained the same erroneous stand as the editor of *Tidens Tegn* (see Frisch 1995ah IDa), and makes it clear in didactic terms how the matter should be understood.
IDa:285
- 268 1995t Låneopptagelse og etterkommerne (2) [Raising loans and the descendants (2)], in Frisch, Ragnar: *Troen på nøkken*, Oslo, Det Blå Bibliotek, UF, 93-94.
A reprint of a reply (with a reprimand) to Professor Keilhau on the same matter as discussed with the Oslo newspapers *Aftenposten* and *TidensTegn*, see i.e. Frisch 1995s IDa.
IDa:267
- 269 1995u Macroeconomics and linear programming, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*, Aldershot UK, Brookfield US, Edward Elgar, 235-264.
A reprint of Frisch 1956b IDa, see the annotations.
IDa:138, 1213, 1442
- 270 1995v The mathematical structure of a decision model: The Oslo Sub-Model, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Vol II*, Aldershot UK, Brookfield US, Edward Elgar, 9-34.
A reprint of Frisch 1955f IDa, see the annotations.
IDa:134, 1201
- 271 1995w A method of decomposing an empirical series into its cyclical and progressive components, in Bjerkholt, O. (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume I*, Aldershot UK, Brookfield US, Edward Elgar, 184-189.
A reprint of Frisch 1931f IDa, see the annotations.
IDa:28, 962
- 272 1995x Mixed linear and quadratic programming by the multiplex method, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected*

- essays of Ragnar Frisch. Volume II*, Aldershot UK, Brookfield US, Edward Elgar, 307-326.
A reprint of Frisch 1961g IDa, see the annotations. Also published as memo from DE-UO 1960-11-07 IDb.
IDA:162, 1477 IDb:751, 1476
- 273 1995y Monopoly - Polypoly - The concept of force in the economy, in Bjerkholt, O. (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume I*, Aldershot UK, Brookfield US, Edward Elgar, 346-359.
A reprint of Frisch 1951c IDa, see the annotations.
IDA:115, 917, 977
- 274 1995z More pitfalls in demand and supply curve analysis, in Hendry, David F. and Morgan, Mary S. (eds): *The foundations of econometric analysis*, Cambridge England, New York, Melbourne, Cambridge University Press, 263-265.
An extract from Frisch's reply to W. W. Leontief in the "pitfalls debate", Frisch 1934c IDa, see the annotations. Extracts from Leontief's first response to Frisch's criticism and from Leontief's "final word", Leontief 1934b IDb and 1934a IDc respectively, are also printed in Hendry and Morgan: Leontief 1995b IDd pp 259-263 and 1995a IDe pp 265-267.
IDA:55, 1025 IDb:1774 IDc:1773 IDd:2068 IDe:2067
- 275 1995æ The multiplex method for linear programming, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*, Aldershot UK, Brookfields US, Edward Elgar, 265-306.
A reprint of Frisch 1957b IDa, see the annotations.
IDA:142, 1450
- 276 1995ø Nasjonalregnskapet [The national accounts], in Frisch, Ragnar: *Troen på nøkken*, Oslo, Det Blå Bibliotek, UF, 169-174.
An extract of Frisch 1940b IDa. Except for some minor omissions the extract consists of pp 141-147 of 1940b.
IDA:82, 932
- 277 1995å Necessary and sufficient conditions regarding the form of an index number which shall meet certain of Fisher's tests, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume I*, Aldershot UK, Brookfield US, Edward Elgar, 41-50.
A reprint of Frisch 1930c IDa.
IDA:23, 812
- 278 1995aa New orientation of economic theory. Economics as an experimental science, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*, Aldershot UK, Brookfield US, Edward Elgar, 481-495.
A reprint of Frisch 1932i IDa. Originally Frisch's inaugural lecture in Norwegian, first published as 1932j IDb, see the annotations.
IDA:38 IDb:39
- 279 1995ab The nonplex method in its subconditional form. Main points of the theory, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*, Aldershot UK, Brookfield US, Edward Elgar, 327-344.
Assisted by Håvard Alstadheim. A reprint of Frisch 1963e IDa.
IDA:177, 1484
- 280 1995ac Numerical determination of a quadratic preference function for use in macroeconomic programming, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*, Aldershot UK, Brookfield US, Edward Elgar, 35-75.
A reprint of Frisch 1961i IDa, see the annotations for other references.
IDA:163, 1105, 1298
- 281 1995ad Om desisjonsmodeller [On decision models], in Frisch, Ragnar: *Troen på nøkken*, Oslo, Det Blå Bibliotek, UF, 54-60.

- An excerpt from 1958b IDa (Økonomikkens landevinninger ...). The excerpt is, except for a few short passages, identical with pp 277-285 of the article.
IDA:146
- 282 1995ae Om målsettingsformuleringen ved nasjonal planlegging [On the formulation of objectives in national planning], in Frisch, Ragnar: *Troen på nøkken*, Oslo, Det Blå Bibliotek, UF, 185-189.
 A reprint of 1957c IDa.
IDA:143, 1225
- 283 1995af Om å skrive eksamensoppgaver [On writing examination papers], in Frisch, Ragnar: *Troen på nøkken*, Oslo, Det Blå Bibliotek, 261-263.
 A reprint of Appendix 9 in *Notater til økonomisk teori. 4. utgave, annet hefte [Notes on economic theory. Fourth edition, second volume]*, Frisch 1947af IDa.
IDA:398
- 284 1995ag Om å skrive økonometrisk oppgave [On writing an econometric paper], in Frisch, Ragnar: *Troen på nøkken*, Oslo, Det Blå Bibliotek, UF, 252-260.
 A reprint of Appendix 10 in *Notater til økonomisk teori. 4. utgave, annet hefte [Notes on economic theory. Fourth edition, second volume]*, Frisch 1947af IDa.
IDA:398
- 285 1995ah Om å velte byrder på etterkommerne (1) [On shifting burdens on to the descendants (1)], in Frisch, Ragnar: *Troen på nøkken*, Oslo, Det Blå Bibliotek, UB, 91-91.
 A shortened reprint of a note in the Oslo newspaper *Tidens Tegn*, Frisch 1936-01-17 IDa, on a statement in the newspaper's editorial of the previous day claiming that raising a domestic state loan means shifting burdens on to the next generation. Frisch indicates through rhetorical questions that the editorial statement is an example of a rather common mistake. Frisch meant that as an economist and scientist he was in duty bound to swoop down on just that kind of misunderstandings, or - as he liked to phrase it - to fight down fictions. The editor gave a comment (as a tail to Frisch's note), and Frisch a rejoinder 1995ai IDb.
IDA:1620 IDb:286
- 286 1995ai Om å velte byrder på etterkommerne (2) [On shifting burdens on to the descendants (2)], in Frisch, Ragnar: *Troen på nøkken*, Oslo, Det Blå Bibliotek, UB, 92-92.
 A shortened reprint of Frisch's rejoinder in *Tidens Tegn*, Frisch 1936-01-20 IDa, to the editor's comment on his note 1995ah IDb, see the annotations.
IDA:1621 IDb:285
- 287 1995aj On a problem in pure economics, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch - Volume I*, Aldershot UK, Brookfield US, Edward Elgar, 3-40.
 A reprint of Frisch 1971d IDa (in Chipman et al), which is an English translation by John S. Chipman from the original French issue Frisch 1926h IDb, see the annotations.
IDA:218, 852, 1115 IDb:12, 811, 1008
- 288 1995ak On the need for forecasting a multilateral balance of payments, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*, Aldershot UK, Brookfield US, Edward Elgar, 353-369.
 A reprint of Frisch 1947ai IDa, see the annotations.
IDA:96, 1139
- 289 1995al On the notion of equilibrium and disequilibrium, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume I*, Aldershot UK, Brookfield US, Edward Elgar, 454-459.
 A reprint of Frisch 1936d IDa. See the annotations to 1929d IDb (Statikk og dynamikk ...).
IDA:65, 971 IDb:20, 957
- 290 1995am On welfare theory and Pareto regions, in Bjerkholt, Olav (ed): *Foundations of*

- modern econometrics. The selected essays of Ragnar Frisch. Volume II*, Aldershot UK, Brookfield US, Edward Elgar, 403-456.
A reprint of Frisch 1959c IDa, see the annotations.
IDA:149, 922
- 291 1995an Den optimale arbeidsinnsats [The optimum employment], in Frisch, Ragnar: *Troen på nøkken*, Oslo, Det Blå Bibliotek, UF, 137-147.
An extract from 1948a IDa. The extract comprises pp 63-75 and 79-80, except for minor omissions. See the annotations to 1948a for further references.
IDA:99
- 292 1995ao Oskar Jæger, in Frisch, Ragnar: *Troen på nøkken*, Oslo, Det Blå Bibliotek, UF, 246-251.
A reprint of Frisch 1960e IDa.
IDA:156
- 293 1995ap Parametric solution and programming of the Hicksian model, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*, Aldershot UK, Brookfield US, Edward Elgar, 116-153.
Assisted by Ashok K. Parikh. A reprint of Frisch 1964f IDa, see the annotations.
IDA:184, 1487
- 294 1995aq Partial time regressions as compared with individual trends, in Bjerkholt, O. (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume I*, Aldershot UK, Brookfield US, Edward Elgar, 241-255.
With Frederick V. Waugh. A reprint of Frisch 1933e IDa. See the annotation.
IDA:48, 1023
- 295 1995ar Pitfalls in the statistical construction of demand and supply curves, in Bjerkholt, O. (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume I*, Aldershot UK, Brookfield US, Edward Elgar, 208-240.
A reprint of Frisch 1933f IDa, see the annotations. The title of the article is (most likely unintentionally) omitted in the reprint.
IDA:49, 1024
- 296 1995as Preface to the Oslo Channel Model - A survey of types of economic forecasting and programming, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*, Aldershot UK, Brookfield US, Edward Elgar, 76-115.
A reprint from Frisch 1976g IDa (Long). The original printed issue is Frisch 1962g IDb, see the annotations for other references.
IDA:240, 1367 IDb:172, 1309
- 297 1995at The principle of substitution. An example of its application in the chocolate industry, in Bjerkholt, O. (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume I*, Aldershot UK, Brookfield US, Edward Elgar, 256-271.
A reprint of 1935g IDa, see the annotation.
IDA:62, 873
- 298 1995au Prisproblemet [The price problem], in Frisch, Ragnar: *Troen på nøkken*, Oslo, Det Blå Bibliotek, UF, 190-199.
An excerpt of 1966l IDa. Theoretical and mathematical discussions are omitted.
IDA:203, 1349
- 299 1995av The problem of multicompensatory trade. Outline of a system of multicompensatory trade, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*, Aldershot UK, Brookfield US, Edward Elgar, 370-376.
A reprint of Frisch 1948c IDa, see the annotations.
IDA:101, 1143
- 300 1995aw Prolegomena to a pressure-analysis of economic phenomena (1949), in

- Hendry, David F. and Morgan, Mary S. (eds): *The foundations of econometric analysis*, Cambridge England, New York, Melbourne, Cambridge University Press, 355-358.
An excerpt from Frisch 1949b IDa.
IDa:104, 975
- 301 1995ax Prolegomena to a pressure-analysis of economic phenomena, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*, Aldershot UK, Brookfield US, Edward Elgar, 377-402.
A reprint of Frisch 1949b IDa, see the annotations.
IDa:104, 975
- 302 1995ay Propagation problems and impulse problems in dynamic economics (1933), in Hendry, David F. and Morgan, Mary S. (eds): *The foundations of econometric analysis*, Cambridge England, New York, Melbourne, Cambridge University Press, 333-346.
Extracts from Frisch 1933i IDa (the Cassel Festschrift article), see the annotations.
IDa:50, 968
- 303 1995az Propagation problems and impulse problems in dynamic economics, in Bjerkholt, O. (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume I*, Aldershot UK, Brookfield US, Edward Elgar, 311-345.
A reprint of Frisch 1933g IDa, see the annotations.
IDa:50, 968
- 304 1995aæ Propagation problems and impulse problems in dynamic economics, in Kydland, Finn E. (ed): *Business Cycle Theory*, Aldershot, UK - Brookfield, US, Edward Elgar Publ. Ltd - Edward Elgar Publ. Co., 3-37.
A reprint of Frisch 1933i IDa, see the annotations.
IDa:50, 968
- 305 1995aø Rasjonell økonomisk politikk [Rational economic policy], in Frisch, Ragnar: *Troen på nøkken*, Oslo, Det Blå Bibliotek, UF, 175-184.
A reprint of 1951e IDa.
IDa:116, 1176
- 306 1995aå Rational price fixing in a socialistic society, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*, Aldershot UK, Brookfield US, Edward Elgar, 194-221.
A reprint of 1966j IDa, see the annotations.
IDa:201, 1347
- 307 1995ba A reconsideration of Domar's theory of economic growth, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*, Aldershot UK, Brookfield US, Edward Elgar, 463-470.
A reprint of Frisch 1961i IDa.
IDa:166
- 308 1995bb Repercussion studies at Oslo, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*, Aldershot UK, Brookfield US, Edward Elgar, 3-8.
A reprint of Frisch 1948d IDa, see the annotations. Also issued as memo from DE-UO: 1949-04-20 IDb.
IDa:102, 1044 IDb:469, 1056, 1154
- 309 1995bc The responsibility of the econometrician, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*, Aldershot UK, Brookfield US, Edward Elgar, 496-499.
A reprint of Frisch 1946j IDa, his first editorial in *Econometrica* after the second world war, see the annotations.
IDa:91, 1038
- 310 1995be Rytmer og impulser i dynamisk økonomikk [Rhythms and impulses in

- dynamic economics], in Frisch, Ragnar: *Troen på nøkken*, Oslo, Det Blå Bibliotek, UF, 155-166.
An extract from the treatise "Propagation problems ..." 1933i IDa, see the annotations.
The extract, translated into Norwegian by Jens Chr. Andvig, is a considerably shortened version of the original treatise. A number of passages with substantial use of mathematics, diagrams etc are omitted, and so are all mathematically more demanding discussions.
IDA:50, 968
- 311 1995bf Samarbeid mellom politikere og økonometrikere om formuleringen av politiske preferanser [Cooperation between politicians and econometricians on the formulation of political preferences], in Frisch, Ragnar: *Troen på nøkken*, Oslo, Det Blå Bibliotek, UF, 200-207.
The present contribution is an excerpt from pp 5-9 of Frisch 1971f IDa, see the annotations.
IDA:220, 1357
- 312 1995bg Skillet mellom sak og vurdering [The distinction between scientific statements and value judgement], in Frisch, Ragnar: *Troen på nøkken*, Oslo, Det Blå Bibliotek, UF, 44-48.
A slightly shortened reprint of Frisch 1936f IDa, added a few introductory remarks.
IDA:67
- 313 1995bh The smoothing of an interpreference table, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*, Aldershot UK, Brookfield US, Edward Elgar, 222-232.
A reprint of Frisch 1967d IDa.
IDA:207, 1496
- 314 1995bi Sosialøkonomiske problemer ved kostholdet [Economic problems about nutrition], in Frisch, Ragnar: *Troen på nøkken*, Oslo, Det Blå Bibliotek, UF, 109-124
An investigation on nutrition problems of society was carried through as part of the project *Økonomisk strukturoversikt for Norge [Economic structural survey of Norway]* - see Frisch 1936e IDa. The investigation was planned by Ragnar Frisch and carried out by Knut Getz Wold, see Wold 1941 IDb (*Kosthold og levestandard ...*). Frisch wrote the preface and the introduction chapter, see 1941a IDc. The present article is a reprint of pp 1-19 of the introduction chapter, with some minor omissions.
IDA:66, 1137 IDb:1809 IDc:84
- 315 1995bj Statens plikt til sirkulasjonsregulering [The Government's obligation to circulation regulation], in Frisch, Ragnar: *Troen på nøkken*, Oslo, Det Blå Bibliotek, UF, 63-88.
Printed issue of 1951-01-11 IDa; a number of paragraphs of minor importance are omitted; see the annotations.
IDA:527, 1178
- 316 1995bk Statics and dynamics in economic theory, in Bjerkholt, O. (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume I*, Aldershot UK, Brookfield US, Edward Elgar, 291-301.
A reprint of Frisch 1992 IDa, which was an English translation by Peter Thomas of sections 1-3 from the original Norwegian article Frisch 1929d IDb (see the annotations).
IDA:246, 987 IDb:20, 957
- 317 1995bl Statikk og dynamikk [Statics and dynamics], in Frisch, Ragnar: *Troen på nøkken*, Oslo, Det Blå Bibliotek, UF, 151-154.
An extract from pp 312-323 and 326-327 of the treatise 1929d IDa, see the annotations.
IDA:20, 957
- 318 1995bm Statistical confluence analysis by means of complete regression systems (1934), in Hendry, David F. and Morgan, Mary S. (eds): *The foundations of econometric analysis*, Cambridge England, New York, Melbourne, Cambridge University Press, 271-273.
An extract from Frisch 1934f IDa (Publication No 5 from DE-UO) pp 5-8 (only the introduction).

IDa:58, 1026

- 319 1995bn Statistical correlation and the theory of cluster types, in Bjerkholt, O. (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume I*, Aldershot UK, Brookfield US, Edward Elgar, 190-207.
With Bruce D. Mudgett. A reprint of Frisch 1931h IDa.
IDa:29, 1017
- 320 1995bo Statistical versus theoretical relations in economic macrodynamics, in Bjerkholt, O. (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume I*, Aldershot UK, Brookfield US, Edward Elgar, 272-287.
A reprint of Frisch 1954-09-10 IDa, which was the second issue of Frisch's autonomy memorandum 1938-07-17 IDb, see the annotations to both.
IDa:609, 1091 IDb:355, 1034
- 321 1995bp Troen på nøkken [The belief in the river sprite], in Frisch, Ragnar: *Troen på nøkken*, Oslo, Det Blå Bibliotek, UB, 89-91.
A reprint of an article in the newspaper *Aftenposten* (Oslo), Frisch 1933-03-08 IDa.
IDa:1617
- 322 1995bq *Troen på nøkken. Utvalg og innledning ved Jens Chr. Andvig, Olav Bjerkholt og Tore Thonstad [The belief in the river sprite. Selection and introduction by Jens Chr. Andvig, Olav Bjerkholt and Tore Thonstad]*, Oslo, Det Blå Bibliotek, UF, 267 pp.
Selected and slightly shortened articles by Ragnar Frisch. See Andvig et al 1995a IDa (Forord og Innledning... [Preface and Introduction...]). See especially the annotations.
Review of the book: Norman 1996 IDb (in *Sosialøkonomen*).
IDa:2056, 2160 IDb:2084, 2171
- 323 1995br *Økonomikken som eksperimentalvitenskap [Economics as an experimental science]*, in Frisch, Ragnar: *Troen på nøkken*, Oslo, Det Blå Bibliotek, UF, 33-43.
A slightly shortened reprint of Frisch 1932j IDa (the inaugural lecture); see the annotations.
IDa:39
- 324 1995bs Økonomisk forskning og undervisning i Norge [Economic research and education in Norway] in Frisch, Ragnar: *Troen på nøkken*, Oslo, Det Blå Bibliotek, UF, 231-240.
A reprint of Frisch 1945c IDa.
IDa:90

II.2

MEMORANDA AND OTHER UNPUBLISHED SCIENTIFIC WORKS ON ECONOMICS, MATHEMATICS AND STATISTICS

- 325 1926i Under hvilke betingelser gjelder den setning, at når alle produksjonsfaktorer får en godtgjørelse efter sin grenseproduktivitet, så vil den samlede godtgjørelse svare til den samlede produktverdi? [Under which conditions is the theorem valid, that when every production factor gets a remuneration in accordance with its marginal product, then the total remuneration will correspond to the total product value?], Oslo, DE-UO, 38 pp.
Frisch's trial lecture, prescribed topic, delivered October 7 1926. Not printed. A handwritten manuscript is available at DE-UO in folder labelled "Prøveforelesning over oppgitt emne (7.10.1926) Produksjonsteori". The defence was held on October 13 1926. See Frisch 1926g IDa.
IDA:11, 1007
- 326 1927a *The analysis of statistical time series*, New York, mimeo, 121 pp.
The first of three papers in English reporting results of Frisch's research on time-series methods. Circulated privately by the help of W. C. Mitchell, see Morgan 1990a IDa p 84. The other two papers are 1928 IDb and 1931e IDc.
IDA:2034 IDb:16, 956, 1011 IDc:28, 962
- 327 1927e *Tekniske og økonomiske produktivitetslover [Technical and economic productivity laws]*, Notes of Dr. Ragnar Frisch's lectures in the autumn term 1926, Oslo, memo DE-UO, 26 pp.
The lectures were given in the autumn term of 1926. Stenciled and issued with Dr. Frisch's permission by the Committee of the Students of Economics (Sosialøkonomiske Studerendes Utvalg). See the annotations to 1937d IDa.
IDA:353, 874
- 328 1930a *A dynamic approach to economic theory*, New Haven, mimeographed notes of lectures at Yale University, 246 pp.
A note on the front page: "The present summary is supposed to contain all the main points discussed in the lectures. Professor Frisch does not want to have this considered as a finished statement of his view. The summary may be subject to change and revision." The memo consists of three parts: I. General considerations on statics and dynamics. II. Dynamic formulation of some parts of economic theory. III. Statistical verification of the laws of dynamic economic theory. See Frisch 1929d IDa with annotations. A few copies of the present memo are available at UB Oslo (DE-UO); not for lending.
IDA:20, 957
- 329 1930b *Marginal and limitational productivity*, New Haven, mimeographed notes of lectures at Yale University, 104 pp.
A few copies are available at UB Oslo (DE-UO); not for lending.
- 330 1930d *Referat av Dr. Frisch's forelesninger over teoretisk økonomikk høstsemesteret 1928 og vårsemesteret og høstsemesteret 1929 [Notes of Dr. Frisch's lectures on theoretical economics during the autumn term 1928 and the spring and autumn terms 1929]*, Oslo, mimeo DE-UO, 82 pp.
- 331 1931f *The optimum regression*, Minneapolis, mimeo University of Minnesota, 11 pp.
Frisch presents and discusses a principle for selecting (as the "best") one particular of the n elementary regressions between n statistical variables, the regressions being determined by minimizing the sum-squares in each of the n directions. The principle is "an immediate outgrowth of the theory of linear regressions" developed in Frisch 1929a IDa. See the annotations to Frisch 1948d IDb for more references.

IDA:17, 1012 IDb:102, 1044

- 332 1931h *Tekniske og økonomiske produktivitetslover - Omarbeidede og forkortede referater utarbeidet på grunnlag av professor R. Frisch's forelesninger og notater [Technical and economic productivity laws - Revised and shortened accounts worked out from Professor R. Frisch's lectures and notes]*, Oslo, mimeo DE-UO, 76 pp.
Accounts by Unni Munkebye and Peter B. Helgeby. Frisch (in the preface of 1941b IDa): "Only the most elementary could be included, and neither had I opportunity to go carefully through the issue" (translated). The dating is uncertain; however, statements in the preface to 1941b indicate that the present issue should be dated 1931.
IDA:359, 875
- 333 1932-12-12 *Statens plikt til cirkulasjonsregulering [The Government's obligation to circulation regulation]*, Oslo, mimeo DE-UO, 6 pp.
A statement in paranthesis on the fron cover: "Nedtegnet i hast 10. - 12. desember 1932" [Put down in haste 10 - 12 December 1932]. The memo was labelled "not for publication". It was distributed confidentially to a small number of distinguished politicians and bank people responsible for managing the Norwegian financial system. Frisch initiated a meeting with the same people, at which he strongly advocated the political steps launched in the paper. His efforts were, however, vain. The paper was later distributed ordinarily as a memo from DE-UO, Frisch 1951-01-11 IDa (see the annotations) and published in print (slightly shortened) as Frisch 1995bj IDb. See also Andvig 1986 IDc pp 343 and further.
IDA:527, 1178 IDb:315, 1383 IDc:2013
- 334 1933h *Polypolteori [Polypoly theory]*, mimeo DE-UO, ssss-trykk, 88 pp.
Notes of Frisch's lectures during the autumn term of 1932 and the spring term of 1933.
- 335 1933-12-04 *Finansielle foranstaltninger mot depresjonen [Financial measures against the depression]*, Typewritten memorandum on the occasion of *Conference on 1933-12-04 between the President of the Lagting Johan Nygaardsvold, Member of the Storting Magnus Nilssen and Professor Ragnar Frisch*, Oslo, Typewritten memorandum DE-UO, 35 pp.
Johan Nygaardsvold and Magnus Nilssen were both prominent members of the Labour Party. After the conference, on the same day, Frisch draws up the present memorandum in which he presents in writing what he had advocated at the conference. A copy of the (typewritten) memorandum is available at DE-UO in a folder labelled 'Finansielle foranstaltninger mot depresjonen'. Not for lending. Three main tasks are specified: 1. Securing the bank- and credit system (key words: State guarantee for bank deposits; establishing a new agency, 'Sambandsbanken', for coordinating tasks; how the mass of deposits can be created or annihilated; value secured deposits and loans). 2. Surmount hindrances to the financial circulation (key word: a National Exchange Service, ref. to Frisch 1933-12-14 IDa). 3. Surmount sabotage from the passive capital (key word: a tax on liquid capital that is kept idle). An additional point: Establishing an agency to represent the economic interests of the society. Ref. to Frisch 1933l IDb and 1934a IDc; also Munthe 1995 IDd.
IDA:336 IDb:53 IDc:54, 1136 IDd:2071
- 336 1933-12-14 *Norges Omsetningsverk, [A National Exchange Service for Norway]*, Attachment to *P.M. on the occasion of the conference of 1933-12-04 between President of the Lagting Johan Nygaardsvold, Member of the Storting Magnus Nilssen and Professor Ragnar Frisch*, Oslo, Typewritten memorandum DE-UO, 27 pp.
A copy of the memorandum is available at DE-UO (in a folder labelled 'Finansielle Foranstaltninger ...'), not for lending.
- 337 1934b *Makrodynamikk [Macro-dynamics]*, Oslo, ssss-trykk, mimeo DE-UO, 111 pp.
Lectures given 1933 II and 1934 I. Refer to Frisch 1928 IDa, 1931e IDb and 1950-01-24 IDc.
IDA:16, 956, 1011 IDb:28, 962 IDc:494, 1058
- 338 1934g *Teknikk ved beregning av produktmomenter og korrelasjonskoeffisienter [Technique in calculating moments and correlation coefficients]*, Oslo,

- DE-UO, Memorandum No 1, 12 pp.
With Kåre Norderud.
- 339 1934h *Den tekniske organisasjon av New York Stock Exchange [The technical organisation of New York Stock Exchange]*, Notes of Professor Frisch's lectures 17 September and 5 November 1934, Oslo, mimeo DE-UO, 15 pp.
- 340 1934-01-01 *Forslag til et kapitel om finans-, bank- og kreditvesenet, å innta i Arbeiderpartiets kriseplan [Proposal of a chapter on the finance-, bank- and credit system, to be included in the Labour Party's crisis plan]*, Oslo, Typewritten memorandum DE-UO, 16 pp.
With Ole Colbjørnsen. The contribution is a revised version of Frisch 1933-12-04 IDa. It became incorporated in the Labour Party's crisis plan 1934 after a further adaptation, see det Norske Arbeiderparti 1934 IDb. and the annotations to *Dagbladet* 1934-03-03 IDc. A copy of the memorandum is available at DE-UO (in a folder labelled 'Finansielle Foranstaltninger ...'), not for lending.
Ida:335 IDb:1772 IDc:1777
- 341 1934-03-20 *Til Stortinget [To the Storting]*, Oslo, DE-UO.
The present letter to the Storting (which includes a letter from Professor J. M. Keynes to Frisch) is a reaction against the Monetary Committee's judgement of the Labour Party's crisis plan 1934 (St. med. nr. 19, 1934, bil. 1)). See the annotations to *Arbeiderbladet* 1934-03-20 IDa and 1934-03-22 IDb. See also the reply to the present letter from the chairman of the Monetary Committee, Gunnar Jahn 1934-03-21 IDc. A copy of the present letter is available at DE-UO in a file labelled 'Finansielle Foranstaltninger ...', not for lending.
Ida:1778 IDb:1780 IDc:1779
- 342 1934-05-05 *Utkast til særvotum fra Arbeiderpartiets medlemmer av Stortingets Finanskomite [Draft of diverging vote from the Labour Party members of the Finance Committee of the Storting]*, regarding *St. prp. nr. 46/1934 "Om bemyndigelse til utferdigelse av statsveksler [On authorization to issue treasury bills]*, Oslo, Typewritten memorandum from DE-UO, 8 pp.
The draft was worked out on Mai 5 1934 by request of the President of the Norwegian Storting Johan Nygaardsvold. A copy of the draft is available at DE-UO, not for lending.
- 343 1935a *Byttemarkeds og valghandlings teori - Hefte I - Referat av professor Ragnar Frisch's forelesninger høstsem. 1931 og vårsem. 1932 - Annen utgave [Barter market and choice theory - Volume I - Notes of Professor Ragnar Frisch's lectures in the autumn term 1931 and the spring term 1932 - Second edition]*, Oslo, mimeo DE-UO, III+103 pp.
Second issue (1935) in which some corrections and additions are carried out.
- 344 1935c *Elementer av determinantberegningen [Elements of evaluating determinants]*, Oslo, mimeo DE-UO, 14 pp.
Part of Professor Frisch's lectures on probability distributions and regression theory during the spring term of 1933.
- 345 1935d *Et generelt monetært begreps- og symbolsystem [A general monetary concept- and symbol system]*, Oslo, mimeo DE-UO, 38 pp.
A part of Professor Frisch's lectures on monetary theories, spring term and autumn term 1935. Frisch presents a system of definition relations representing a new step in the development of the ecocirc system, refer to Bjerve 1986 IDa, section 4, "1935-systemet [The 1935 system]", and to Frisch 1948-12-22 IDb. See also Frisch 1943c IDc.
Ida:2014 IDb:457, 937 IDc:88, 934
- 346 1935e *Grenseproduktivitetsdata fra Freia Chokolade Fabrik [Marginal product data from Freia Chokolade Fabrik]*, Oslo, mimeo DE-UO, 10 pp.
From the introductory remarks (translated): "The following is an example of using actual data from a part of a production process at Freia Chokolade Fabrik." Refer to Frisch 1935h IDa. The present lecture note appeared as excursus 1 in *Notater til grunnkursus i økonomisk teori [Notes to basic course in economic theory]*, Frisch 1939c IDb.
Ida:62, 873 IDb:356

- 347 1935i *Ricardos teori om arbeidslønn, kapitalprofitt og grunnrente [Ricardo's theory on wage, capital profit and rent]*, Part of Frisch's spring term lectures 1934, Oslo, mimeo DE-UO, 9 pp.
- 348 1935-01-26 *Memorandum on the organising of a commodity and service exchange*, mimeo DE-UO, 11 pp.
Frisch discusses how to organize a direct commodity and service exchange aiming at combating a deep economic depression. Particularly he discusses a plan proposed by a Dr. Schönstein for Switzerland. He also refers to his own paper "Circulation planning: ...", Frisch 1934a IDa. The present mimeo was never circulated. A copy is available at DE-UO, not for lending.
Ida:54, 1136
- 349 1935-03-15 *Ekskurs om den progressive beskatning [Excursus on progressive taxation]*, Oslo, memo DE-UO, 11 pp.
Note of Professor Frisch's lecture 15 March 1935.
- 350 1936b Beretning om de arbeider som er utført under professor Ragnar Frisch's ledelse fra januar 1932 til juni 1936 [Report of work done under the direction of Professor Ragnar Frisch January 1932 - June 1936], in a joint report to A/S Norsk Varekrigsforsikrings Fond from the Professors I. Wedervang and Ragnar Frisch, *A/S Norsk Varekrigsforsikrings Fonds beretning for 1935-36*, Oslo, 4-9.
- 351 1936-06-27 *Betenkning angående efterspørselen etter øl i Norge og angående de virkninger som kan påregnes ved en nedsettelse av ølavgiften og av den pris bryggeriene får [An opinion on the demand for beer in Norway and on the effects that are to be expected from a reduction of the excise duty on beer and of the price the breweries can take]*, Oslo, mimeo DE-UO, 29 pp.
An econometric analysis carried out for Den Norske Bryggeriforening [The Union of Breweries in Norway]. A few copies are available at DE-UO. Not for lending.
- 352 1936-10-08 Memorandum on Mr. Mendershausen's argument in regard to the skewness of the regression line in seasonals in the building industry, Oslo, mimeo DE-UO, 4 pp.
Discussed September 29 1936 at the Econometric Society Meeting at Oxford. The memorandum was never distributed. A few copies are available at DE-UO.
- 353 1937d *Innledning til produksjonsteorien [Introduction to the theory of production]*, Oslo, mimeo DE-UO, Incomplete.
It is apparent from the later edition numbers that the present edition is *post-dated* the fifth one. From the historical sketch given by Frisch in the preface to the first volume of the sixth edition, 1941b IDa, the issues prior to the present one should be dated: 1927, 1929, 1931 and 1931-33. For 1927e IDb, 1931h IDc and 1937d (the present issue) a few copies are available at DE-UO (not for lending); for 1931h no date is given, and for 1937c a last part has been removed. For the issues 1929 and 1931-33 all copies seem for the time being to be lost.
Ida:359, 875 IDb:327, 866 IDc:332, 869
- 354 1937e *Methods of measuring the relative cost of living*, Washington D. C., mimeographed report, 21 pp.
A note on the front page: "Professor Frisch ... met with statisticians and economists representing a number of Government agencies in Washington D. C. on July 26 and 27 1937 to discuss methods of measuring costs of living. This report is a summary dictated by Professor Frisch. A few copies of the report are available at DE-UO. Not for lending.
- 355 1938-07-17 Statistical versus theoretical relations in economic macrodynamics, Oslo, mimeo DE-UO, 16 pp.
A memorandum prepared for the Business Cycle Conference at Cambridge, England, 18-20 July 1938, to discuss Tinbergen's work for the League of Nations (two volumes published in 1939). Although Frisch praises Tinbergen for having presented a work "of paramount importance", a main point of his memorandum is a severe and cogent criticism of Tinbergen's conclusions. "'coflux' relations may have provided observations which do not reveal the structure relations one is actually trying to estimate." He introduces the

autonomy concept and discusses passive curve-fitting versus numerical determination of theoretical relations. The first issue: 1948-11-06b IDa, the second: 1954-09-10 IDb. In print: 1995bo IDc (in Bjerkholt) and 1995b IDd (in Hendry and Morgan). For assessments, see Arrow 1960b IDE and Qin 1989 IDf. Frisch resumed the discussion of the identification problem in 1948d IDg, see the annotations for more references. Refer also to Aldrich 1989 IDh (on the autonomy concept). Parts of the autonomy memorandum was analyzed and discussed in depth (with parts of Frisch 1933i IDi) in Boumans 1995 IDj.

IDa:449, 1049 IDb:609, 1091 IDc:320, 1135 IDd:250, 1122 IDE:1923 IDf:2031
IDg:102, 1044 IDh:2023 IDi:50, 968 IDj:2061

- 356 1939c *Notater til grunnkursus i økonomisk teori [Notes to basic course in economic theory]*, Etter forelesninger av professor Ragnar Frisch [From lectures by Professor Ragnar Frisch], Oslo, mimeo DE-UO, s.s.s.s.-trykk, 187 pp.
In the preface of the third edition, first volume (1946i IDa) the publication 1941c IDb, *Notater til økonomisk teori [Notes on economic theory]*, is named the second edition. And in the preface of that edition the present publication is named (translated) the first edition of "the Notes". Some passages from the preface of the present edition (translated): "For some years I have gone through basic course in economics for the students Alfred Marshall's *Principles of economics* is the main textbook although it has been complemented a good deal with newer texts and a little on the theory of value and distribution from the classics. Moreover, I have tried to make the presentation of the main features of Book V in Marshall a little more systematic."
IDa:367 IDb:360
- 357 1939-10-22 *Beretning om undersøkelse av elektro-etterspørselen [Report of an exploration of the electricity demand]*, Oslo, mimeo DE-UO, 9 pp.
Work done until October 1939 by the Co-ordination Department under the Plan for an Economic Structural Survey of Norway, see Frisch 1936e IDa. A copy of the present report is available at DE-UO for copying.
IDa:66, 1137
- 358 1940-02-04 *Responsum ang. den sannsynlige virkning på smør og margarinomsetningen av visse reguleringsforanstaltninger [Response regarding the probable effect on the sales of butter and margarine from certain trade restrictions]*, Oslo, mimeo DE-UO, 5 pp.
A small econometric analysis carried out for Margarinfabrikkenes Landsforening [The Union of Margarine Producers in Norway]. A few copies are available at DE-UO. Not for lending.
- 359 1941b *Innledning til produksjonsteorien, første hefte, [Introduction to the theory of production, first volume]*, Oslo, mimeo DE-UO, ssss-trykk, 129 pp.
From several circumstances the second volume was not issued until 1953, see Frisch 1953-11-20 IDa. In the preface of the present volume Frisch gives a historical sketch of his work on the development of the theory of production. There he says *inter alia* (translated): "At the implementation of the new examination rules there was a need for a new and more coordinated presentation. I wrote this myself. It was issued in stenciled form in 1937 under the title *Innledning til produksjonsteorien [Introduction to the theory of production]*. I did not want to have it printed as I had not yet managed to make the presentation as smooth as I would prefer. The subject matter of these earlier issues has been used also in the neighbouring countries. Thus Professor F. Zeuthen effected in 1931 a stenciled resumé of the 1927 issue (added some exercise questions etc) for use at the University of Copenhagen. My way of presentation has also been used in some other contributions." See also 1937d IDb with annotations. As to later issues, see the annotations to 1946c IDc.
IDa:588, 885 IDb:353, 874 IDc:364, 876
- 360 1941c *Notater til økonomisk teori [Notes on economic theory]*, Oslo, mimeo DE-UO, ssss-trykk, 277 pp.
In the preface of the third edition, first volume (1946i IDa), the present publication is named the second edition. And in the preface of the present edition the publication 1939c IDb, *Notater til grunnkursus i økonomisk teori...*, is named "første utgave av "Notatene" [the first edition of "the Notes"]". The main book is still Marshall's *Principles*, with particular importance attached to Book V. Supplementary reading has been deemed

necessary and is given in the form of excursuses, marginal notes (both as in 1939c) and appendices. The last paragraph of the preface of the present edition reads (translated): "The first edition was called "Notes". Although the material is considerably more elaborated I have retained the term, mainly because it is used by the students and appears in the reading list. On the other hand I have removed "Grunnkursus [Basic course]" from the title since the material now comes partly under basic course and partly under higher courses."

IDA:367 IDb:356

- 361 1941-03 *Polypolteori. Forelesninger av professor Ragnar Frisch [Polypoly theory. Lectures by Professor Ragnar Frisch]*, Oslo, mimeo DE-UO, S.S.S.S-trykk, 52 pp.
Notes of Professor Frisch's lectures during the spring term of 1940.
- 362 1942 *Noen innføringsmerknader om økosirk-systemet - Det økonomiske sirkulasjonssystem [Some introductory remarks on the ecocirc system - The economic circulation system]*, Oslo, mimeo DE-UO, 37 pp.
The paper gives a condensed presentation of the ecocirc system as then adopted, together with a specific form of graphical representation (the ecocirc graph). The paper was circulated locally in mimeographed form. A few copies are available at UB Oslo, DE-UO, not for lending. See Frisch 1943c IDa with annotations.
IDA:88, 934
- 363 1942-06-10 *P.M. til Oslo Folkeregister og Statistiske kontor ang. brenselstillingen i Oslo mai 1942 [Memorandum to Oslo's Registration and Statistical Office regarding the fuel counting in Oslo Mai 1942]*, Oslo, mimeo DE-UO, 11 pp.
With Sven Vigger.
- 364 1946c *Innledning til produksjonsteorien, 7. utgave, første hefte [Introduction to the theory of production, seventh edition, first volume]*, Oslo, mimeo DE-UO, ssss-trykk, 132 pp.
A slightly revised edition of 1941b IDa. A more thoroughly revised edition appeared in 1956, 1956-09-28 IDb, and the ninth edition, the first printed one, in 1962, 1962c IDc. All these editions are of the first volume, though for the 1962c edition this is stated only in the preface. As to the content, the 1962c edition and the edition of 1956-09-28 are practically identical. A French and an English edition of both volumes put together appeared in 1963, 1963c IDd, and in 1965, 1965k IDe, respectively.
IDA:359, 875 IDb:646, 886 IDc:169, 889 IDd:175, 890 IDe:192, 891
- 365 1946d *LO's husholdningsregnskaps-undersøkelse for november 1945 - Hefte 1: Prinsipiell utredning og materialet for Oslo, Aker og Bergen [LO's survey of household accounts for November 1945 - Volume 1: Basic report and data for Oslo, Aker, and Bergen]*, Oslo, mimeo DE-UO, 49 pp.
From p 34 of the introductory chapter (translated): "The collected data that form the basis for these results are the most comprehensive ones which have ever been processed in this country. ..." Frisch presents himself (p 25) as responsible for the general leadership of the investigation and for the formulation of the verbal sections. Computation leader Sven Vigger and Dr. Hans Paul Schwartz have been accountable for the general technical organisation.
- 366 1946h *Notater til økonomisk teori. 3. utgave, annet hefte [Notes on economic theory. Third edition, second volume]*, Oslo, mimeo DE-UO, ssss-trykk, 213 pp.
See the annotations to 1946i IDa.
IDA:367
- 367 1946i *Notater til økonomisk teori. 3. utgave, første hefte [Notes on economic theory. Third edition, first volume]*, Oslo, mimeo DE-UO, ssss-trykk, 235 pp.
Compared with the second edition a considerable revision has taken place. The material is substantially extended, thus it has been necessary to divide it in two volumes. Two excursuses are rewritten, six new excursuses (three in the first and three in the second volume) and four new appendices (all in the second volume) are added. One new excursus, No 18, Generell etterspørselsteori [General theory of demand], gives a broad presentation of demand-related material, *inter alia* interlocal axioms of choice (first introduced in Frisch 1926h IDa (Sur un problème ...)). One of the new appendices, No 8,

Litt konfluens analyse [Some confluence analysis], gives a treatment of material originally published by Frisch in 1934f IDb, however, here presented in a form suitable for students.
IDA:12, 811, 1008 IDb:58, 1026

- 368 1946-05-05 *Levekostnadsundersøkelsen, materialet for november 1945. Rapport nr. 2 [The cost-of-living investigation, the material for November 1945. Report no. 2]*, DE-UO, mimeo, 16 pp.
 Report from the Department of Economics, the University of Oslo, to the Norwegian Federation of Trade Unions (LO). Signed by Ragnar Frisch and Sven Vigger.
- 369 1947a Appendiks 1. Litt differentialregning [Appendix 1. A note on differential calculus] in Frisch, Ragnar: *Notater til økonomisk teori. 4 utgave, annet hefte [Notes on economic theory. Fourth edition, second volume]*, Oslo, mimeo DE-UO, 366-381.
- 370 1947b Appendiks 12. Litt om inversjon av likningssystemer [Appendix 12. A note on inversion of equation systems], in Frisch, Ragnar: *Notater til økonomisk teori. 4. utgave, annet hefte [Notes on economic theory. Fourth edition, second volume]*, Oslo, mimeo DE-UO, 511-527.
- 371 1947c Appendiks 2. Regneregler for relative tilvekstgrader (elastisiteter). Definisjon av elastisiteten [Appendix 2. Calculation rules for relative degrees of growth (elasticities). Definition of the elasticity], in Frisch, Ragnar: *Notater til økonomisk teori. 4. utgave, annet hefte [Notes on economic theory. Fourth edition, second volume]*, Oslo, mimeo DE-UO, 382-392.
- 372 1947d Appendiks 4. Elementær metode til løsning av lineære likninger [An elementary method for solving linear equations], in Frisch, Ragnar: *Notater til økonomisk teori. 4. utgave, annet hefte [Notes on economic theory. Fourth edition, second volume]*, Oslo, mimeo DE-UO, 393-402.
- 373 1947e Appendiks 5. Harving og knippekart-tegning [Appendix 5. Harrowing and bunch-map drawing], in Frisch, Ragnar: *Notater til økonomisk teori. 4. utgave, annet hefte [Notes on economic theory. Fourth edition, second volume]*, Oslo, mimeo DE-UO, 403-414.
- 374 1947f Appendiks 6. Løsning av ikke-lineære likninger [Appendix 6. Solving non-linear equations], in Frisch, Ragnar: *Notater til økonomisk teori. 4. utgave, annet hefte [Notes on economic theory. Fourth edition, second volume]*, Oslo, mimeo DE-UO, 415-422.
- 375 1947g Appendiks 7. Litt om lineæroperasjoner [A note on linear operations], in Frisch, Ragnar: *Notater til økonomisk teori. 4. utgave, annet hefte [Notes on economic theory. Fourth edition, second volume]*, Oslo, mimeo DE-UO, 423-472.
- 376 1947h Appendiks 8. Litt konfluensanalyse [Appendix 8. A note on confluence analysis], in Frisch, Ragnar: *Notater til økonomisk teori, 4. utgave, annet hefte [Notes on economic theory, fourth edition, second volume]*, Oslo, mimeo DE-UO, 473-495.
 Made for teaching purpose. For complete presentations, see Frisch 1934f IDa and Reiersøl's doctoral thesis, Reiersøl 1945a IDb.
IDA:58, 1026 IDb:1814
- 377 1947i Ekskurs 10. Litt om prisdannelsen for sammenhengende goder [Excursus 10. A short note on the price formation for connected goods], in Frisch, Ragnar: *Notater til økonomisk teori, 4. utgave, første hefte [Notes on economic theory, fourth edition, first volume]*, Oslo, mimeo DE-UO, 103-132.
- 378 1947j Ekskurs 11. Litt skatteoverveltningsteori [Excursus 11. A short note on tax shifting theory], in Frisch, Ragnar: *Notater til økonomisk teori. 4. utgave, første hefte [Notes on economic theory. Fourth edition, first volume]*, Oslo, mimeo DE-UO, 133-150.
 The simplest cases are treated: the pure free competition market - i.e. when a supply curve faces a demand curve - and the pure monopoly market - i.e. when a monopolist faces a

- demand curve.
- 379 1947k Ekskurs 12. Litt om fordelingslærens alminnelige del. (Det generelle fordelingsproblem) [Excursus 12. A short note on the general part of the theory of distribution. (The general distribution problem)], in Frisch, Ragnar: *Notater til økonomisk teori. 4. utgave, første hefte [Notes on economic theory. Fourth edition, first volume]*, Oslo, mimeo DE-UO, 151-166.
A note on the distribution of the national income.
- 380 1947l Ekskurs 13. Litt om kapitalbegrepet [Excursus 13. A short note on the concept of capital], in Frisch, Ragnar: *Notater til økonomisk teori. 4. utgave, første hefte [Notes on economic theory. Fourth edition, first volume]*, Oslo, mimeo DE-UO, 167-175.
- 381 1947m Ekskurs 14. En oversikt over Marshalls verdilære [Excursus 14. A general view of Marshall's theory of value], in Frisch, Ragnar: *Notater til økonomisk teori. 4. utgave, første hefte [Notes on economic theory. Fourth edition, first volume]*, Oslo, mimeo DE-UO, 177-203.
An English translation published as Frisch 1950a IDa. Also as reprint No 114 from DE-UO.
IDa:106, 882, 916
- 382 1947n Ekskurs 15. Oppdelingen av de faste omkostninger [Excursus 15. The division of the fixed costs], in Frisch, Ragnar: *Notater til økonomisk teori. 4. utgave, første hefte [Notes on economic theory. Fourth edition, first volume]*, Oslo, memo DE-UO, 204-208.
It is referred to Marshall's theory of value.
- 383 1947o Ekskurs 16. Markedsmekanismen under rasjonering [Excursus 16. The market mechanism under rationing], in Frisch, Ragnar: *Notater til økonomisk teori. 4. utgave, første hefte [Notes on economic theory, fourth edition, first volume]*, Oslo, mimeo DE-UO, 209-215.
- 384 1947p Ekskurs 17. Økosirkssystemet [Excursus 17. The ecocirc system], in Frisch, Ragnar: *Notater til økonomisk teori. 4. utgave, første hefte [Notes on economic theory. fourth edition, first volume]*, Oslo, mimeo DE-UO, 216-243.
In all essentials concurrent with Frisch's article in *Economisk Tidsskrift*, 1943c IDa. See the annotations to 1943c for more references.
IDa:88, 934
- 385 1947q Ekskurs 18. Generell etterspørselsteori [Excursus 18. General demand theory], in Frisch, Ragnar: *Notater til økonomisk teori. 4. utgave, annet hefte [Notes on economic theory. Fourth edition, second volume]*, Oslo, mimeo DE-UO, 263-349,
- 386 1947r Ekskurs 19. Opplegg til en generell teori om fordelingslimitenter [Excursus 19. A plan for a general theory on distribution limitations], in Frisch, Ragnar: *Notater til økonomisk teori. 4. utgave, annet hefte [Notes on economic theory. Fourth edition, second volume]*, Oslo, mimeo DE-UO, 350-355.
- 387 1947s Ekskurs 2. Den intensive og den ekstensive dyrkingsgrense. Grunnrentens definisjon [Excursus 2. The intensive and the extensive cultivation limit. Definition of the rent], in Frisch, Ragnar: *Notater til økonomisk teori, 4. utgave, første hefte [Notes on economic theory, fourth edition, first volume]*, Oslo, mimeo DE-UO, 1-9.
- 388 1947t Ekskurs 20. Litt om inntektsbegrepet [Excursus 20. A note on the concept of income], in Frisch, Ragnar: *Notater til økonomisk teori. 4. utgave, annet hefte [Notes on economic theory. Fourth edition, second volume]*, Oslo, mimeo DE-UO, 356-365.
- 389 1947u Ekskurs 4. Etterspørsel og etterspørselskurver [Excursus 4. Demand and demand curves], in Frisch, Ragnar: *Notater til økonomisk teori, 4. utgave, første hefte [Notes on economic theory, fourth edition, first volume]*, Oslo, mimeo DE-UO, 10-41.

- 390 1947v Ekskurs 5. Tilbud og tilbudskurver [Excursus 5. Supply and supply curves], in Frisch, Ragnar: *Notater til økonomisk teori. 4. utgave, første hefte [Notes on economic theory, fourth edition, first volume]*, Oslo, mimeo DE-UO, 42-62.
- 391 1947w Ekskurs 6. Statikk og dynamikk i økonomikken [Excursus 6. Statics and dynamics in economics], in Frisch, Ragnar: *Notater til økonomisk teori, 4. utgave, første hefte [Notes on economic theory, fourth edition, first volume]*, Oslo, mimeo DE-UO, 63-76.
This is a simpler version of the treatise 1929d IDa (Statikk og dynamikk...) made for teaching purpose, see the annotations. A footnote on p 63 in the excursus reads (translated): "The main view for the distinction between statics and dynamics held in this excursus was formulated in an article "Statikk og dynamikk i den økonomiske teori [Statics and dynamics in economic theory]", *Nationaløkonomisk Tidsskrift*, Copenhagen 1929, and in some earlier lectures at Oslo. Some details of the terminology were slightly changed later. In newer literature, esp. within econometrics and trade cycle theory, a conceptual system and terminology is used which in all essentials accords with what is developed here (see e.g. the book by Haberler on trade cycle theory, and the one by Zeuthen: "Økonomisk Teori og Metode [Economic theory and method]").
IDA:20, 957
- 392 1947x Ekskurs 7. Elastisitetpåvirket tilpassing. Litt monopolpristeori [Excursus 7. Elasticity-influenced adjustment. A short note on monopoly price theory], in Frisch, Ragnar: *Notater til økonomisk teori, 4. utgave, første hefte [Notes on economic theory, fourth edition, first volume]*, Oslo, mimeo DE-UO, 77-91.
- 393 1947y Ekskurs 8. Forskjellen mellom prisbestemmende og prisbestemte omkostninger [Excursus 8. The difference between price determinative and price determined costs], in Frisch, Ragnar: *Notater til økonomisk teori, 4. utgave, første hefte [Notes on economic theory, fourth edition, first volume]*, Oslo, mimeo DE-UO, 92-95.
- 394 1947z Ekskurs 9. Et par eksempler fra lokaliseringsteorien [Excursus 9. Some examples from the theory of localization], in Frisch, Ragnar: *Notater til økonomisk teori. 4. utgave, første hefte [Notes on economic theory. Fourth edition, first volume]*, Oslo, mimeo DE-UO, 96-102.
- 395 1947aa *LO's husholdningsregnskaps-undersøkelse for november 1945 - Hefte 2: Materialet for byer og bygder i Indre Østland, [LO's survey of household accounts for November 1945 - Volume 2: Data for towns and countries in Indre Østland]*, Oslo, mimeo DE-UO, 76 pp.
Presented by Sven Vigger (by authority). See the annotations to Frisch 1946d IDa.
IDA:365
- 396 1947ab *LO's husholdningsregnskaps-undersøkelse for november 1945 - Hefte 3: Materialet for Viken, Sør-Norge og Vest-Norge [LO's survey of household accounts for November 1945 - Volume 3: Data for Viken, Sør-Norge, and Vest-Norge]*, mimeo DE-UO, 107 pp.
Presented by Sven Vigger (by authority). See the annotations to Frisch 1946d IDa.
IDA:365
- 397 1947ac *LO's husholdningsregnskaps-undersøkelse for november 1945 - Hefte 4: Materialet for Trøndelag og Nord-Norge [LO's survey of household accounts for November 1945 - Volume 4: Data for Trøndelag and Nord-Norge]*, mimeo DE-UO, 75 pp.
Presented by Sven Vigger (by authority). See the annotations to Frisch 1946d IDa.
IDA:365
- 398 1947af *Notater til økonomisk teori. 4. utgave, annet hefte [Notes on economic theory. Fourth edition, second volume]*, Oslo, mimeo DE-UO, 267 pp.
- 399 1947ag *Notater til økonomisk teori. 4. utgave, første hefte [Notes on economic theory. Fourth edition, first volume]*, Oslo, mimeo DE-UO, 272 pp.
- 400 1947ah On the need for an inter-economic budget (a multilateral balance sheet), with

- particular reference to its use as a tool of analysis in the work of the International Trade Organization (the ITO), Memorandum prepared as annexure to *The report of the Norwegian Delegation to the ITO Conference in Geneva, April-Mai 1947*, Oslo, 159-177.
Mimeographed. Not distributed as an ordinary memo from DE-UO. Refer to Frisch 1947-01-21 IDa, 1947-01-23 IDb, 1947-01-27 IDc and 1947-03-22 IDd. A copy of 1947ah is available at UB Oslo (DE-UO); not for lending.
IDa:402, 1140 IDb:403, 1141 IDc:404, 1142 IDd:406
- 401 1947aj Randmerknader til Marshalls Book V and Book VI [Marginalia to Marshall's Book V and Book VI], in Frisch, Ragnar: *Notater til økonomisk teori. 4. utgave, første hefte [Notes on economic theory. Fourth edition, first volume]*, Oslo, mimeo DE-UO, 244-262.
- 402 1947-01-21 *Proposal for an inter-economic budget analysis as part of the employment study of the Economic and Employment Commission, United Nations, Economic and Employment Commission, UN Document E/CN.1/18, 2 pp.*
An introductory note: "Submitted by the member from Norway as an additional Item for the Agenda of the First Session of the Economic and Employment Commission, Document E/CN.1/1". See Frisch 1947-01-23 IDa, 1947-01-27 IDb, 1947ah IDc and 1947-03-22 IDd. A copy of the document is available at UB Oslo (DE-UO); not for lending.
IDa:403, 1141 IDb:404, 1142 IDc:400, 1138 IDd:406
- 403 1947-01-23 *Proposal for an inter-economic budget analysis as part of the employment study of the Economic and Employment Commission, United Nations, Economic and Employment Commission, UN Document E/CN.1/18/Add.1, 14 pp.*
Submitted by the member from Norway in connection with proposal, Document E/CN.1/18, see Frisch 1947-01-21 IDa. See also Frisch 1947ah IDb, 1947-01-27 IDc and 1947-03-22 IDd. A copy of the present document is available at UB Oslo (DE UO); not for lending.
IDa:402, 1140 IDb:400, 1138 IDc:404, 1142 IDd:406
- 404 1947-01-27 *Proposal for an intereconomic budget analysis as part of the employment study of the Economic and Employment Commission, United Nations, Economic and Employment Commission, UN Document E/CN.1/18/Add.2, 5 pp.*
Submitted by the member from Norway in connection with proposal, Document E/CN.1/18. See Frisch 1947-01-23 IDa, 1947-01-21 IDb, 1947ah IDc and 1947-03-22 IDd. A copy of the present document is available at UB Oslo (DE-UO); not for lending.
IDa:403, 1141 IDb:402, 1140 IDc:400, 1138 IDd:406
- 405 1947-02-03 *The economist and the world problem of the day*, Oslo, mimeo DE-UO, 9 pp.
Address to the International Economic Club Lake Success, 3 February 1947.
- 406 1947-03-22 *The multilateral balance-sheet*, Oslo, 3 pp.
There is referred to the UN documents Frisch 1947-01-23 IDa, 1947-01-27 IDb and a paper E/PC/T/C, 6/90 1947-02-18, which is not recorded in this bibliography. See also Frisch 1947ah IDc and 1947-01-21 IDd. A copy of the present note is available at UB Oslo (DE-UO), not for lending. See Frisch 1947ah IDc.
IDa:403, 1141 IDb:404, 1142 IDc:400, 1138 IDd:402, 1140
- 407 1947-05-22 *Logpart-funksjonen [The logpart function]*, Oslo, memo DE-UO, 6 pp.
- 408 1947-05-28 *Seleksjonens grunnformel [The basic formula of selection]*, Oslo, memo DE-UO, 1 p.
- 409 1947-08-15 *Den samfunnsmessig optimale arbeidsinnsats [The socially optimum employment]*, Oslo, memo DE-UO, 11 pp.
This is the original version. later published (in *Stimulator*) as Frisch 1947am IDa. The memo was translated into English and submitted by the member from Norway (Ragnar Frisch) of the Economic and Employment Commission, UN, as Document E/CN.1/SUB.2/6, see Frisch 1947-12-04 IDb. A popularized version of the present

original work was issued as Frisch 1948-01-02 IDc and later published as an article in *Økonomisk Tidsskrift*, Frisch 1948a IDd.
 IDa:97 IDb:420 IDc:422 IDd:99

- 410 1947-08-20 *Om den statistiske bestemmelse av krysssetterspørslene i en gruppe av behovssammenhengende goder [On the statistical determination of the cross-demands in a group of want-connected goods]*, Oslo, memo DE-UO, 3 pp.
- 411 1947-10-03 *Prinsipiell definisjon av begrepet kjøpepress [Definition of the concept buying pressure]*, Oslo, memo DE-UO, 2 pp.
 Refer to Frisch 1949-03-07 IDa.
 IDa:463
- 412 1947-10-05 *Ad produksjonsteorien. Bedriftens reaksjon overfor endringer i produktpris og faktorpriser [Re the theory of production. The firm's reaction to changes in product-price and factor-prices]* Oslo, memo DE-UO, 12 pp.
- 413 1947-10-10 *Grunnprinsippene for Bush-Caldwell integratoren [The basic principles of the Bush-Caldwell integrator]*, Oslo, memo DE-UO, 9 pp.
- 414 1947-11-18 *Memorandum on the work of the Sub-Commission on Employment and Economic Stability*, UN, Sub-Commission on Employment and Economic Stability, UN Document E/CN.1/Sub.2/3, 7 pp.
 The very first sentence reads: "The following remarks are presented in the hope that they may be of some modest help in mapping out the work of the Sub-Commission on Employment and Economic Stability". A copy of the document and a French translation are available at UB Oslo (DE-UO); not for lending. Professor Ragnar Frisch was appointed a member of the Sub-Commission on Employment and Economic Stability in a Cabinet meeting on January 10 1947.
- 415 1947-11-24 *The Neyman-Pearson theory of testing hypothesis*, Oslo, memo DE-UO, 3 pp.
- 416 1947-11-30 *Uttalelse om dr. philos. Trygve Haavelmos vitenskapelige kvalifikasjoner og hans kompetanse for det ledige professorat i statsøkonomi og statistikk med særlig plikt til å lese over økonometriske emner [A statement on D. Phil. Trygve Haavelmo's scientific qualifications and his level of competence for the vacant professorship in economics and statistics with specific obligation to lecture on econometric subjects]*, Oslo, A letter to Det Juridiske Fakultet, Universitetet i Oslo, 12 pp.
 A letter to the Faculty of Law at the University of Oslo, dated "p.t. New York City, 30 November 1947". Manuscript for Frisch 1955h IDa. Copy available at DE-UO, for reading and copying.
 IDa:136
- 417 1947-12-03a Summary record of the fourth meeting, Held at Lake Success on Monday 24 November 1947, Sub-Commission on Employment and Economic Stability, UN Document E/CN.1/Sub.2/SR.4, 8 pp.
 Frisch's contribution to the debate.
- 418 1947-12-03b Summary record of the second meeting, Held at Lake Success on Thursday 20 November 1947, Sub-Commission on Employment and Economic Stability, UN Document E/CN.1/Sub.2/SR.2/Add.1, 3 pp.
 Frisch's contribution to the debate. The recorded document is a continuation of a document E/CN.1/Sub.2/SR.2, which unfortunately is missing.
- 419 1947-12-03c Summary record of the third meeting, Held at Lake Success on Thursday 20 November 1947, Sub-Commission on Employment and Economic Stability, UN Document E/CN.1/Sub.2/SR.3, 7 pp.
 Frisch, s contribution to the debate.
- 420 1947-12-04 *The optimal labour input*, UN Document E/CN.1/Sub.2/6, 13 pp.
 Originally issued in Norwegian as memo from DE-UO, Frisch 1947-08-15 IDa. The Norwegian version was reproduced in print as Frisch 1947am IDb. (The present paper is

the original *English* version.) From the introductory paragraph of the present mimeographed paper: "This paper is presented in compliance with the request of the Sub-Commission in its meeting on 28 November 1947. The form of the ... argument is abstract, but ... concerns a very practical issue. The nature of the abstractions ... is believed ... to indicate the strategic point where the difficulty lies and from where the search for a practical solution must start." A copy of the present memo is available at DE-UO; not for lending. A popularized version was first issued as memo from DE-UO, Frisch 1948-01-02 IDc, and later published as article in *Økonomisk Tidsskrift* Frisch 1948a IDd with annotations.

IDa:409 IDb:97 IDc:422 IDd:99

- 421 1947-12-08 Suggestion of the topics to be considered by the Sub-Commission on Employment and Economic Stability, Oslo, 2 pp.
A detailed agenda for the work in the Sub-Commission on Employment and Economic Stability.
- 422 1948-01-02 *Den optimale arbeidsinnsats [The optimum employment]*, Oslo, memo DE-UO, 18 pp.
A popularized presentation of a work presented in a memorandum to the United Nations' Subcommittee for Employment and Economic Stability (Document E/CN.1/Sub.2/6). A reprint is published as Frisch 1948a IDa, see the annotations for further references.
IDa:99
- 423 1948-01-12 *Preliminary draft of parts of contents of the report of the Sub-Commission on Employment and Economic Stability*, Blueprint of preliminary draft, 6 pp.
Introductory note: "The report ought to start in with a relatively brief formulation of the general philosophy on which its work is based." Then follows: 1) a six points list of topics, 2) five subdivision headings and 3) a ten points list specifying "the analytical system on which the Sub-Commission wants to base its reasoning".
- 424 1948-01-18 *Hvorledes en øking i tilgangen av et knapphetsgode (f.eks. en rasjonert vare) virker på likevektsstørrelsene i byttemarkedet [How an increased influx of a good in short supply (i.e. a rationed good) acts on the equilibrium values in the barter market]*, Oslo, memo DE-UO, 4 pp.
- 425 1948-01-20 *Om den tendens henimot underoptimal arbeidsinnsats som blir skapt av den externe grenseproduktivitet [On the tendency towards a sub-optimal employment caused by the external marginal product]*, Oslo, memo DE-UO, 6 pp.
- 426 1948-01-22 *Det samfunnsøkonomiske optimumsproblem må formuleres som et problem om å maksimere et nytteoverskudd [The economic optimization problem of the society should be formulated as a problem of maximizing a utility surplus]*, Oslo, memo DE-UO, 5 pp.
- 427 1948-01-25 *Skisse til et system for multikompensasjonshandel [An outline of a system for multicompensatory trade]*, Oslo, memo DE-UO, 8 pp.
Refer to Frisch 1963d IDa with annotations.
IDa:176, 1315
- 428 1948-01-26 *Et fundamentpunkt i den statiske lære om markedsmekanismen: Overbestemthet når produksjonssiden og konsumsjonssiden ses i sammenheng [A fundamental point in the static theory of the market mechanism: An overdeterminedness when the producer side and the consumer side are seen together]*, Oslo, memo DE-UO, 10 pp.
- 429 1948-01-28 *Noen merknader om iterert multiplikatoreffekt [Some remarks on an iterated multiplier effect]*, Oslo, memo DE-UO, 5 pp.
With Poul Nørregaard Rasmussen.
- 430 1948-02-08 *Videre merknader om optimumsegenskaper og overbestemthet ved visse typer av økonomiske likevektssystemer [Further remarks on optimum properties and overdeterminedness of certain kinds of economic equilibrium systems]*, Oslo, memo DE-UO, 15 pp.

- 431 1948-02-24 *Konjunkturbølgens utsagnskraft når materialet er hentet fra forskjellige distrikter, og distriktenes representasjon i materialet skifter tilfeldig [The significance of the business cycles when the data are taken from different districts and the representation of the districts shifts randomly]*, Oslo, memo DE-UO, 5 pp.
It is referred to a discussion with Professor Eli Heckscher.
- 432 1948-03-04 *Outline of a system of multicompensatory trade*, Oslo, memo DE-UO, 9 pp.
Frisch has dealt with this subject in a number of notes and articles, first in Frisch 1947ai IDa, see Frisch 1963d IDb with annotations.
Ida:96, 1139 IDb:176, 1315
- 433 1948-03-07 *Draft of parts of introductory remarks in the report of The Sub-Commission on Employment and Economic Stability*, Oslo, memo DE-UO, 4 pp.
- 434 1948-03-08 *A system of concepts describing the economic circulation and production process*, Oslo, memo DE-UO, 56 pp.
With Odd Aukrust and Petter Jakob Bjerve. A careful presentation of the ready-developed ecocirc system. A somewhat brief presentation is given in Frisch 1943c IDa (Ekonomisk Tidskrift). For other references, see the annotations to 1943c. For a thorough exposition of Frisch's effort in the development of the ecocirc system and the related work on national accounting, see Bjerve 1986 IDb.
Ida:88, 934 IDb:2014
- 435 1948-03-09 *Employment and economic stability in the post war world*, Oslo, memo DE-UO, 14 pp.
With Gunnar Bøe and Trygve Haavelmo. Draft material for the Sub-Commission on Employment and Economic Stability.
- 436 1948-03-18a *Aperçu d'un système d'échanges commerciaux à compensations multilatérales*, UN Document E/CN:!/Sub.2/8, 18 pp.
A memorandum submitted to the United Nations Sub-Commission on Employment and Economic Stability.
- 437 1948-03-18b *Draft of parts of introductory remarks in the report of the Sub-Commission on Employment and Economic Stability*, UN Document E/CN.1/Sub.2/W.4, 4 pp.
From the introduction: "The name of this Sub-commission and its terms of reference center around "employment and economic stability". These words ... designate in a general way a type of problem that has ... dominated the economic situation since World War I. But they do not give an adequate description of the problem ... from the viewpoint of *causes*, and still less ... from the viewpoint of *remedies*. To go to the root ... it is necessary to set the problem in relation to the general question of ... what is the "best" or "optimum" situation in the economic system. ..."
- 438 1948-04-27 *Influencing balances of payments through changes in prices and exchange-rates and through quantitative import restrictions*, Oslo, memo DE-UO, 41 pp.
A preliminary working paper. From the introductory paragraph: "The purpose of the present memorandum is simply to relate some important aspects of the balance of payments problem to certain national economic factors whose significance from the national viewpoint is taken for granted." A part of the present work is included in Frisch et al 1948-10-21 IDa, see the annotations.
Ida:446
- 439 1948-05-04 *P.M. om kalkulatoranlegg: Produktsummering ved hullkort [Promemoria on calculator installation: Adding products by means of punch cards]*, Oslo, memo DE-UO, 2 pp.
- 440 1948-05-05 *En statistisk analyse av bakeprøver [A statistical analysis of bakery samples]*, Oslo, memo DE-UO, 9 pp.
Originally published as Frisch 1945b IDa. Also as Publikasjon nr 19 from DE-UO, 1954c IDb. A note on the front page of the present memo (translated here): "The present article is reproduced from the jubilee publication "Kristiania Brødfabrik A/S og A/S

- Rosenborgkomplekset gjennom 25 år", Oslo 1945. Since the original article is available only in the jubilee publication, which was printed in a limited number of copies, one has found it convenient to reproduce it in the series of memos from DE-UO."
IDA:89, 1037 IDb:127, 1089
- 441 1948-05-10 *Kjøpepresset og etterspørgernes tilpassing når det finnes kvantumsbegrensete goder [The buying pressure and the adaptation of the demanders when there are goods in short supply]*, Oslo, memo DE-UO, 6 pp.
 Refer to Frisch 1949-03-07 IDa.
IDA:463
- 442 1948-05-23 *The cleavings of a univariate measurement into two factors*, Oslo, memo DE-UO, 7 pp.
 With Erling Sverdrup.
- 443 1948-08-27 *Finanskomiteen i De forente staters senat. Høringen av Dr. Charles F. Roos i forbindelse med vedtaket om skattereduksjonen våren 1948 [The Finance Committee of the United States' Senate. The hearing of Dr. Charles F. Roos in connection with the resolution of tax reductions in the spring of 1948]*, Oslo, memo DE-UO, 14 pp.
 A short foreword by Ragnar Frisch in which he writes among others (translated): The economic states of affaires prevailing in the United States are so different from those prevailing in Norway that one can hardly transfer to our country the judgements and conclusions of the hearing. However, we have much to learn concerning *the professional standard* of the discussions.
- 444 1948-10-02 *Converging dyadic approximations by means of partially unknown elements*, Oslo, memo DE-UO, 13 pp.
- 445 1948-10-08 *Optimum institutions*, Oslo, memo DE-UO, 3 pp.
 Summary of a discussion between Trygve Haavelmo, Lawrence R. Klein and Ragnar Frisch on October 4, 1948.
- 446 1948-10-21 *Measuring national advantages and disadvantages caused by changes in the international price structure*, Oslo, memo DE-UO, 34 pp.
 Assisted by Just Faaland and Per Sivle Tveite. The first part of this paper, expounding the principles and developing the formulae, is, with minor changes, taken from Frisch 1948-04-27 IDa. The study aroused a substantial interest in the Norwegian press. A number of newspapers gave a short report of the analysis, see among others *Aftenposten* Editor 1948-12-13 IDb. Later an intensive newspaper debate evolved, see the numerous newspaper contributions on the case during January and February 1949. By and large the analysis was received positively by Labour Party newspapers and strongly negatively - even in part maliciously - by non-socialist papers. The former were comforted by learning that much of the troubles experienced by the Labour Government after the war had been caused by forces outside the Government's control. The latter, however, found this conclusion totally unacceptable, judging the troubles in question to be caused by more or less incompetent planners in the socialist Government.
IDA:438 IDb:1851
- 447 1948-11-04 *Hva er en økonomisk modell? [What is an economic model?]*, Oslo, memo DE-UO, 3 pp.
 Report of a conversation with Preben Munthe on what kind of relations has to be added to the ecocirc system to make it an economic model.
- 448 1948-11-06a *Autonomy of economic relations*, Oslo, memo DE-UO, 60 pp.
 With T. Haavelmo, T. C. Koopmans and J. Tinbergen. An introductory remark: "For any economic relations introduced into our analysis we may ask: How *autonomous* is it? This question is extremely important. In one sense it is the most basic question one may raise in all sorts of econometric work. The institute has found it expedient to reproduce in the form of a stencil-memo some contributions that have been made towards a discussion of this question, ..." The reproduced works are: Frisch 1948-11-06b IDa, Tinbergen 1948-11-06 IDb, Haavelmo 1948-11-06 IDc, Frisch 1948-11-06c IDd and Koopmans 1948-11-06 IDE. A thorough discussion of the autonomy concept and the network of concepts surrounding it is given in Aldrich 1989 IDf.

IDA:449, 1049 IDb:1849 IDc:1847 IDd:450, 1050 IDE:1848 IDf:2023

- 449 1948-11-06b League of Nations. Statistical versus theoretical relations in economic macrodynamics, in Ragnar Frisch et al: *Autonomy of economic relations*, Oslo, memo DE-UO, 2-19.
This is the first publication of Frisch's memorandum for the Business Cycle Conference at Cambridge, England, 18-20 July 1938, to discuss J. Tinbergen's works of 1938, see Frisch 1938-07-17 IDa. More references in the annotations to 1938-07-17 IDa. See also 1948d IDb.
IDA:355, 1034 IDb:102, 1044
- 450 1948-11-06c Parts of Professor Frisch's article "Repercussion studies at Oslo", in Ragnar Frisch et al: *Autonomy of economic relations*, Oslo, memo DE-UO, 38-42.
Parts of Frisch 1948d IDa. One of the main contributions to the autonomy debate, see Frisch 1948-11-06b IDb.
IDA:102, 1044 IDb:449, 1049
- 451 1948-11-20 *Den multinomiale fordelingslov [The multinomial law of distribution]*, Oslo, memo DE-UO, 15 pp.
- 452 1948-11-21 *Noen prinsipielle og terminologiske merknader til den matematiske statistikk [Some fundamental and terminological remarks about mathematical statistics]*, Oslo, memo DE-UO, 3 pp.
Response to Frisch's remarks: Per Ottestad, 1948-12-11 IDa.
IDA:1850
- 453 1948-11-22 *On the distribution of a sum of squares over a linear subspace*, Oslo, memo DE-UO, 7 pp.
- 454 1948-11-23 *Statistiske fordelingslover for en variabel [Statistical single-variable laws of distribution]*, Oslo, memo DE-UO, 62 pp.
- 455 1948-12-09 *Subsidielikningssystemet [The subsidy equation system]*, Oslo, memo DE-UO, 16 pp.
An equation system with a specific view to discussing possible variable constellations with subsidization in focus. The system consists of 13 book-keeping equations in 20 variables.
- 456 1948-12-13 *En standard-disposisjon for den økonometriske oppgave [A standard outline for the econometric paper]*, Oslo, memo DE-UO, 7 pp.
- 457 1948-12-22 *Work on national accounting done at the University Institute of Economics, Oslo*, Oslo, memo DE-UO, 4 pp.
The memo presents a survey of the development of the ecocirc system from the very beginning in 1932 to the final presentation in Frisch et al 1948-03-08 IDa, also giving full due to the associates who had co-operated in some way or another in the development. Towards the end of the survey he wrote: The Institute work on the accounting system and the system of concepts has all the time been inspired by the idea that this was only a stepping stone to a study of the *structural* relations (production relations, consumption relations etc) of the economy. He announced that from then on the work would be turned more specifically in that direction, giving particular attention to the repercussion aspect.
IDA:434, 936
- 458 1949-01-11 *Kondensert liste over variable i modellen: "Optimalskattsystemet" [A condensed list of variables in the model: "The optimum tax system"]*, Oslo, memo DE-UO, 2 pp.
Refer to 1949-02-14 IDa.
IDA:461, 1150
- 459 1949-02-07 *Det asymptotiske behov for arbeidskraft [The asymptotical need for labour]*, Oslo, memo DE-UO, 3 pp.
- 460 1949-02-08 *Gjenpart av del av utredning av 1948-12-22 (p.4) fra Næringsøkonomisk Forskningsinstitutt ang. Universitetets Sosialøkonomiske Institutt's memorandum av 1948-10-21; og Gjenpart av professor Frisch' svarbrev av*

1949-01-07 [Copy of part of an exposition of 1948-12-22 (p.4) from *Næringsøkonomisk Forskningsinstitutt concerning the DE-UO memo of 1948-10-21; and Copy of Professor Frisch's letter of reply of 1949-01-07*], Oslo, memo DE-UO, 3 pp.

The Research Institute of Industrial Economics by its Director Morten Tuveng had presented an exposition giving a strongly negative judgement of the work by Frisch et al 1948-10-21 IDa, see *Morgenbladet* Ed. 1949-01-13b IDb and Tuveng 1949-01-20 IDc. In the present correspondence Director Tuveng explains his disagreement with some points of the DE-UO analysis; Frisch turns down Tuveng's criticism.

IDa:446 IDb:1857 IDc:1860

- 461 1949-02-14 *Foreløpig rapport nr. 2 om arbeidet med optimal-skattsystemet [A preliminary report No 2 on the work on the optimum tax system]*, Oslo, memo DE-UO, 12 pp.
From an introductory note: A first orientation (on the optimum tax system) was given in a memo Frisch 1949-01-11 IDa. The present memo gives the results of some calculations from cases with regulated labour market. A preliminary report No 3 is announced to discuss cases with unregulated labour market. The theory is not to be dealt with in the preliminary reports, but is announced to be thoroughly treated in the final complete presentation. It seems that neither a report No 3 nor a final presentation ever appeared.
IDa:458, 1149
- 462 1949-02-19 *Hvorledes likvidmassen hos publikum kan beregnes [How the mass of liquid assets held by the general public can be estimated]*, Oslo, memo DE-UO, 22+2 pp.
Assisted by A. Amundsen. Some introductory remarks (translated): "If one wants to go deep into the matter, the discussion of *the liquidity* of a concern or an individual becomes rather complicated. ... We will not go that deep into the matter. We shall be content with considering what we may call the *liquid mass*, i.e. the total amount of some kinds of financial assets, held on a given point of time."
- 463 1949-03-07 *Kjøpepress, prispress og kvantumspress [Buying pressure, price pressure and quantity pressure]*, Oslo, memo DE-UO, 46 pp.
From the introduction: The buying pressure was dealt with in Frisch 1933d IDa (English translation 1951c IDb, German translation 1965b IDc and 1968b IDd), and also in some memos from DE-UO, among others in 1947-10-03 IDe, 1948-01-18 IDf and 1948-05-10 IDg. The concept had recently been discussed critically in a group of theoreticians - among others Professor Haavelmo. The present presentation is an attempt to clear up certain questions which have been raised in these discussions. The focus has, however, been narrowed down in some respects, especially with regard to the meaning of the notions *conjectural quantity variations* and *action parameters*.
IDa:46, 897, 967 IDb:115, 917, 977 IDc:187, 923, 982 IDd:208, 924, 984 IDe:411, 911 IDf:424, 912 IDg:441, 831
- 464 1949-03-13 *Samfunnsøkonomi og økonomisk demokrati [Economics and economic democracy]*, Oslo, memo DE-UO, 45 pp.
See the annotations to Frisch 1949-09-28a IDa.
IDa:477, 1159
- 465 1949-03-21 *Betalingsmiddelforskyvninger hos publikum [Shifts of the means of payments in the private sector]*, Oslo, memo DE-UO, 4 pp.
Assisted by A. Amundsen The present paper is embodied in Frisch 1949-03-24 IDa.
IDa:466
- 466 1949-03-24 *Betalingsmiddelforskyvninger hos publikum. Litt om hvorledes de kan beregnes og noen tilleggsmerknader om de årsaker som kan virke på dem [Shifts of the means of payment in the private sector. Some considerations about how they can be estimated and some additional remarks on causes which can act on them]*, Oslo, memo DE-UO, 31 pp.
Assisted by A. Amundsen
- 467 1949-03-28 *Price-wage-tax policies as instruments in maintaining optimal employment - A working paper*, Oslo, memo DE-UO, 58 pp.
Assisted by Svein Brenna, Thor Johnsen and Sven Vigger. The memo is identical with the

first seven chapters of the UN document Frisch 1949-04-18 IDa. The memo gives first a birds-eye-view of the problem, then a detailed presentation of the model to be used, named the Oslo Sub-Model. It differs most significantly from the later Oslo models by not having any input-output part. See also Frisch 1949-09-23 IDb (with annotations), 1949-09-28b IDc, 1953-02-12 IDd and 1955f IDE. 1955f is reproduced as Frisch 1995v IDf (in Bjerkholt).

IDA:468, 1153 IDb:475, 1157 IDc:478, 1160 IDd:576, 1187 IDE:134, 1201 IDf:270, 1371

- 468 1949-04-18 *Price-wage-tax-subsidy policies as instruments in maintaining optimal employment - A memorandum on analytical machinery to be used in discussions on causes of and remedies to unemployment*, UN Document E/CN.1/Sub.2/13, 67 pp.
A memorandum (an Oslo Sub-Model work) submitted to the United Nations Sub-Commission on Employment and Economic Stability. Also as memo from DE-UO, Frisch 1953-02-12 IDa, see the annotations.
IDA:576, 1187
- 469 1949-04-20 *Repercussion studies at Oslo*, Oslo, memo DE-UO, 7 pp.
Original issue: Frisch 1948d IDa, see the annotations.
IDA:102, 1044
- 470 1949-04-27 *Statement of Professor Ragnar Frisch, member of the Sub-Commission on Employment and Economic Stability, concerning the report of the third session of the Sub-Commission on Employment and Economic Stability*, United Nations, Economic and Employment Commission, UN Document E/CN.1/67, 10 pp.
Frisch gives a severe and thoroughgoing - and also rather provocative - criticism of the work done so far by the Sub-Commission in order to fulfil the obligations embodied in its terms of reference. Reference is given to the UN Documents E/CN.1/66 and E/CN.1/Sub.2/13 (the latter is recorded in this bibliography as Frisch 1949-04-18 IDa). Copy of the present document is available at UB Oslo (DE-UO); not for lending.
IDA:468, 1153
- 471 1949-05-03 *Noen grunnproblemer i velferdsanalysen [Some basic problems in the welfare analysis]*, Oslo, memo DE-UO, 18 pp.
- 472 1949-05-24 *Svar på spørsmål om pris-lønns-skatt-subsidiesystemet [Answers to questions on the price-wage-tax-subsidy system]*, Oslo, memo DE-UO, 2 pp.
- 473 1949-06-08 *Utdrag fra et særvotum i De Forente Nasjoners underkommissjon for sysselsetting og økonomisk stabilitet [Extract from a special vote in the United Nations' Sub-Commission for Employment and Economic Stability]*, Oslo, memo DE-UO, 3 pp.
It is referred to Document E/CN.1/67, see Frisch 1949-04-27a IDa.
IDA:
- 474 1949-09-20 *Vil devalueringen minske Norges dollarinntekter? [Will the devaluation reduce Norway's dollar income?]*, Oslo, memo DE-UO, 4 pp.
- 475 1949-09-23 *Mathematical appendix to a memorandum on price-wage-tax-subsidy policies as instruments in maintaining optimal employment*, Oslo, memo DE-UO, 28 pp.
Assisted by Svein Brenna, Thor Johnsen and Sven Vigger. Footnote on p 0: "The main memorandum appeared as a UN Document E/CN.1/Sub.2/13, 18 April 1949." (Reference for the UN Document: Frisch 1949-04-18 IDa.) See also Frisch 1949-03-28 IDb, 1949-09-28b IDc and 1953-02-12 IDd. The present appendix came in print as 1955f IDE. A reprint appeared as 1995v IDf (in Bjerkholt). The model in the present memo is later (in Frisch 1949-09-28b) named the Oslo Sub-Model.
IDA:468, 1153 IDb:467, 1152 IDc:478, 1160 IDd:576, 1187 IDE:134, 1201 IDf:270, 1371
- 476 1949-09-26 *Innledningsmerknader ved begynnelsen av forelesningene over*

- reperkusjonsanalyse [Introductory remarks at the start of the lectures on repercussion analysis], Oslo, memo DE-UO, 7 pp.*
- 477 1949-09-28a *Om desisjonsmodeller [On decision models], Oslo, memo DE-UO, 12 pp.*
From the list of contents (translated): 1. Some remarks on economic democracy and why it is necessary to popularize also some of the latest research achievements in macroeconomic planning. 2. The general analysis of interaction in economics. 3. Short on the notion "the number of degrees of freedom in a system". It is referred to the memoranda Frisch 1949-03-13 IDa and 1949-09-23 IDb and to the UN Document 1949-04-18 IDc for a list of variables and a closer discussion of the model (the Oslo Sub-Model).
IDA:464, 1151 IDb:475, 1157 IDc:468, 1153
- 478 1949-09-28b *Tilleggsliste over variable og relasjoner i "submodellen" [Additional list of variables and relations in the "Sub-Model"], Oslo, memo DE-UO, 2 pp.*
See Frisch 1949-09-23 IDa.
IDA:475, 1157
- 479 1949-10-08 *Attempt at clarification of certain national income concepts, Oslo, memo DE-UO, 14 pp.*
Footnote 2 on p 1: "The notation here used conforms to the standards of the "Ecocirc-system"" It is referred to Frisch 1948-03-08 IDa.
IDA:434, 936
- 480 1949-10-16 *Axiomatic remarks on some national income concepts, Oslo, memo DE-UO, 11 pp.*
Copy of a letter to Richard Stone.
- 481 1949-10-24 *Reperkusjons-spill. Eksempel 1 - "Arbeiderregjeringens" politikk [Repercussion games. Example 1 - The policy of "the Labour Party Government"], Oslo, memo DE-UO, 4 pp.*
Lecture notes by Per Kleppe and Arne Amundsen. The policy of "the Labour Party Government" is defined. Further discussions are presented in Frisch 1949-10-29 IDa. See also Frisch 1950-01-23 IDb with references to related repercussion games.
IDA:482, 1162 IDb:493, 1173
- 482 1949-10-29 *Reperkusjons-spill. Eksempel 1 - "Arbeiderregjeringens" politikk [Repercussion games. Example 1 - The policy of "the Labour Party Government"], Oslo, memo DE-UO, 10 pp.*
Assisted by Svein Brenna and Sven Vigger. The policy of "the Labour Party Government" is defined in Frisch 1949-10-24 IDa. Further discussions are presented in the present memo. See also Frisch 1950-01-23 IDb with references to related repercussion games.
IDA:481, 1161 IDb:493, 1173
- 483 1949-11-02 *Reperkusjons-spill. Eksempel 2 - "Høyre regjeringens" politikk [Repercussion games. Example 2 - The policy of "the Conservative Party Government"], Oslo, memo DE-UO, 3 pp.*
Lecture notes by Arild Holland, Per Krog, Oddvar Omre and David Vikøren. The policy of "the Conservative Party Government" is defined here, and is discussed further in Frisch 1949-11-05 IDa. See also Frisch 1950-01-23 IDb with references to related repercussion games.
IDA:484, 1164 IDb:493, 1173
- 484 1949-11-05 *Reperkusjons-spill. Eksempel 2 - "Høyre regjeringens" politikk [Repercussion games. Example 2 - The policy of "the Conservative Party Government"], Oslo, memo DE-UO, 6 pp.*
With Sven Vigger. The policy of "the Conservative Party Government" is defined in Frisch 1949-11-02 IDa and is discussed further in the present memo. See also Frisch 1950-01-23 IDb with references to related repercussion games.
IDA:483, 1163 IDb:493, 1173
- 485 1949-11-10 *Reperkusjons-spill. Eksempel 3 - Formuleringen av "venstreregjeringens" politikk [Repercussion games. Example 3 - The formulation of the policy of "the Liberal Party Government"], Oslo, memo DE-UO, 2 pp.*
Lecture notes by Rolf Høgsæt, Trygve Mølmen and Bjørn Thalberg. The policy of "the

Liberal Party Government" is formulated in the present memo and is further discussed in Frisch 1949-11-12 IDa. See also Frisch 1950-01-23 IDb with references to related repercussion games.

Ida:486, 1166 IDb:493, 1173

- 486 1949-11-12 *Reperkusjons-spill [Repercussion games]*, Oslo, memo DE-UO, 5 pp.
Lecture notes by Per Kleppe and Sven Vigger. The policy of "the Liberal Party Government" is defined in Frisch 1949-11-10 IDa (example 3). Implications of this policy are discussed in the present memo. On pp 3-5 of the present memo a version of the policy of "the Labour Party Government" is formulated (example 4). Implications of this formulation are discussed in Frisch 1949-11-18 IDb. See also Frisch 1950-01-23 IDc with references to related repercussion games.
Ida:485, 1165 IDb:488, 1168 IDc:493, 1173
- 487 1949-11-16 *Remarks on multicompensatory trade*, Oslo, memo DE-UO, 2 pp.
The issue was first treated in 1947ai IDa.
Ida:96, 1139
- 488 1949-11-18 *Reperkusjons-spill. Eksempel 4 - Konsekvenser av "arbeiderregjeringens" politikk [Repercussion games. Example 4 - Implications of the policy of "the Labour Party Government"]*, Oslo, memo DE-UI, 4 pp.
Lecture notes by Arne Amundsen and Sven Vigger. A version of the policy of "the Labour Party Government" (example 4) is formulated on pp 3-5 of Frisch 1949-11-12 IDa. Implications of that formulation are discussed in the present memo. See also Frisch 1950-01-23 IDb with references to related repercussion games.
Ida:486, 1166 IDb:493, 1173
- 489 1949-11-25 *Reperkusjons-spill. Konsekvenser av den politikken som er angitt i spill nr. 5, nr. 6 og nr. 7 [Repercussion games. Implications of the policies presented in the games Nos 5, 6 and 7]*, Oslo, memo DE-UO, 5 pp.
Lecture notes by Arne Amundsen and Sven Vigger. The games Nos 5, 6 and 7 are presented in Frisch 1949-11-12 IDa. See also Frisch 1950-01-23 IDb with references to related repercussion games.
Ida:486, 1166 IDb:493, 1173
- 490 1949-12-14 *Foreløpig rapport til Matematikuttvalget av Norges Teknisk-Naturvitenskapelige Forskningsråd om numerisk løsning av store lineære likningssystemer [Preliminary report to Matematikuttvalget av Norges Teknisk-Naturvitenskapelige Forskningsråd on solving numerically large linear equation systems]*, Oslo, memo DE-UO, 8 pp.
- 491 1950-01-18 *Memorandum on optimum forms of liberalization and on multicompensatory trade*, Submitted to the UN Sub-Commission on Employment and Economic Stability, DE-UO, 6 pp.
UN Document E/CN.1/Sub.2/15, 1950-24-01. Frisch refers to 1949-04-18 IDa. He specifies, in general terms, some conditions which a policy towards liberalization should fulfil. He suggests the Sub-Commission to consider the problem of *the optimum form of liberalization*. And regarding international trade he points at what he has published on multicompensatory trade, Frisch 1948c IDb. A few copies of the memorandum are available at DE UO; not for lending.
Ida:468, 1153 IDb:101, 1143
- 492 1950-01-21 *Inversjon av lineære likningssystemer [Inversion of linear equation systems]*, Oslo, memo DE-UO, 4 pp.
With Gustav Leunbach.
- 493 1950-01-23 *Determinerings-skjemaet som hjelpemiddel under spesifiseringen av desisjonsmodellen [The determination form as a remedy for specifying the decision model]*, Oslo, memo DE-UO, 9 pp.
Assisted by Arne Amundsen and Hans Jacob Kreyberg. From the introductory passage (translated here): "In Frisch 1949-11-05 IDa p 5 a short classification is given as to the distinction in principle between assumption parameters, target parameters and means parameters. We shall use *the determination form* (italicized here) to make the meaning of assumptions, targets and means as clear as possible. The form is illustrated by

- demonstrating how to use it on some of the examples which were treated in the repercussion games (gone through in the autumn term of 1949)". See Frisch 1949-10-24 IDb, 1949-10-29 IDc, 1949-11-02 IDd, 1949-11-10 IDE, 1949-11-12 IDf, 1949-11-18 IDg and 1949-11-25 IDh.
IDA:484, 1164 IDb:481, 1161 IDc:482, 1162 IDd:483, 1163 IDE:485, 1165 IDf:486, 1166 IDg:488, 1168 IDh:489, 1169
- 494 1950-01-24 *Nøklefunksjonsmetoden for dekomponering av tidsrekker [The key function method for decomposing time series]*, Oslo, memo DE-UO, 4 pp.
 A brief summary of the key function method for decomposing time series. A more complete treatment is given in the articles Frisch 1928 IDa, 1931e IDb and 1934b IDc.
IDA:16, 956, 1011 IDb:28, 962 IDc:337, 970
- 495 1950-01-27 *Skisse til optimalavl på fremmedbestøvede planter [An outline of an optimum breeding on cross-pollinated plants]*, Oslo, memo DE-UO, 8 pp.
- 496 1950-02-03 *Hovedsynspunkter for arbeidet med den økonomiske samgripingsanalyse (desisjonsmodellen) [Basic viewpoints for the work on the economic interaction analysis (the decision model)]*, Oslo, memo DE-UO, 13 pp.
 A passage of the present memorandum (translated): "The first stage of the work on the Oslo interacting model - the first approach towards a comprehensive decision model - we now consider finished. The main result is presented in the UN memorandum Frisch 1949-04-18 IDa and in a series of more special memoranda (listed on p 13 in the present memo). Now we are working on the second stage. A closer description of the plans is given in Frisch 1949c IDb and in the present memorandum." Under the work on the general interacting problems Frisch claims that there have been observed a number of serious misapprehensions. He gives a list of four such misapprehensions and argues strongly against each of them. The final outcome of the second stage became the Oslo Median Model. A critical discussion of the present memorandum is given in *Farmand*. Editor 1950-02-25 IDc and 1950-03-11 IDd.
IDA:468, 1153 IDb:105, 1148 IDc:1878 IDd:1880
- 497 1950-02-04 *On the notion of equilibrium and disequilibrium*, Oslo, memo DE-UO, 7 pp.
 Reprint of Frisch 1936d IDa.
IDA:65, 971
- 498 1950-02-06 *Aksiomatisk oppbygging av inntektsbegrepet og dets bestanddeler i en ikke-isolert sektor [Axiomatic building up of the income concept and its components in a non-isolated sector]*, Oslo, memo DE-UO, 6 pp.
 The symbolism used in the present memorandum is in all essentials in accordance with the one that was adopted in earlier works on the ecocirc system, see e.g. Frisch 1948-03-08 IDa. The concept system of the present work was supposed to be used (and it actually became used) in the new form of the decision model foreshadowed in Frisch 1950-02-03 IDb.
IDA:434, 936 IDb:496, 1174
- 499 1950-02-07 *Sumfunksjonen og fraktilfunksjonen [The cumulative function and the percentile function]*, Oslo, memo DE-UO, 10 pp.
- 500 1950-02-16 *Skisse til organiseringen av et matematisk-statistisk forsknings- og undervisningsinstitutt i Norge [An outline of the organizing of a mathematical-statistical research and teaching institute in Norway]*, Oslo, memo DE-UO, 2 pp.
- 501 1950-02-19 *Stabilitetsbedømmelse ved hjelp av Poissons fordeling [Assessment of stability by means of the Poisson distribution]*, Oslo, memo DE-UO, 4 pp.
- 502 1950-03-07 *Fra førkrigstid til etterkrisetid i sosialøkonomikken [From pre-war time to post-depression time in economics]*, Oslo, memo DE-UO, 7 pp.
 Reprint from *Studentene 1913*, Oslo 1938.
- 503 1950-03-11 *Fordelingen av største og minste kjennemerkeverdi ved gjentatte observasjoner [The distribution of highest and lowest observation in case of repeted samples]*, Oslo, memo DE-UO, 16 pp.

- 504 1950-03-29 *Notater til teoretisk statistikk. Ekskurs 103. Tchebycheffs ulikhet [Notes on theoretical statistics. Excursus 103. Chebyshev's inequality]*, Oslo, memo DE-UO, 11 pp.
- 505 1950-03-30 *Notater til teoretisk statistikk. Ekskurs 106. Nærmere om den binomiale fordeling [Notes on theoretical statistics. Excursus 106. Further about the binomial distribution]*, Oslo, memo DE-UO, 10 pp.
- 506 1950-04-09 *Notater til teoretisk statistikk. Ekskurs 107. Terminologi og grunnbegreper i estimeringsteorien [Notes on theoretical statistics. Excursus 107. Terminology and basic concepts in the theory of estimation]*, Oslo, memo DE-UO, 10 pp.
- 507 1950-04-11 *A summary of some of Professor Haavelmo's publications*, Oslo, memo DE-UO, 4 pp.
Assisted by Hans Jacob Kreyberg.
- 508 1950-04-17 *Rapport nr. 2 til matematikmaskinutvalget om det forberedende arbeid med en iterasjonsmetode til numerisk løsning av store lineære likningssystemer ved hjelp av hullkortmaskiner [Report no 2 to the computer committee on the preparatory work on an iteration method for solving numerically large linear equation systems by means of punching machines]*, Oslo, memo DE-UO, 3 pp.
- 509 1950-04-18 *Professor Tinbergen's Wage-and-Devaluation model*, Oslo, memo DE-UO, 7 pp.
- 510 1950-04-19 *Memorandum on optimum forms of liberalization and on multicompensatory trade*, Oslo, memo DE-UO, 6 pp.
- 511 1950-04-28 *Notater til teoretisk statistikk. Ekskurs 202. Er det stokastisk sett noe oppnådd ved å få flere opplysninger? Og hva er det i tilfelle som oppnås? [Notes on theoretical statistics. Excursus 202. Is it from a stochastic point of view something achieved by getting more information? And if so, what is achieved?]*, Oslo, memo DE-UO, 8 pp.
- 512 1950-05-09 *Notater til teoretisk statistikk. Ekskurs 204. Lineære regresjoner [Notes on theoretical statistics. Excursus 204. Linear regressions]*, Oslo, memo DE-UO, 15 pp.
- 513 1950-05-14 *Notat om reformer i den personlige inntekts- og formuesskatt [A note on reforms of the income tax and the wealth tax of individuals]*, Oslo, memo DE-UO, 5 pp.
- 514 1950-05-22 *Markoffs teorem om hvorledes de elementære regresjoner kan begrunnes estimeringsmessig [Markoff's theorem on how the elementary regressions can be substantiated]*, Oslo, memo DE-UO, 14 pp.
The present memo was replaced by Frisch 1951-02-06 IDa.
IDa:530, 1071
- 515 1950-08-08 *Variansanalyse for data som danner et fullstendig kryssløp [Analysis of variance for data which form a complete data matrix]*, Oslo, memo DE-UO, 51 pp.
- 516 1950-09-06 *Numerisk løsning av store lineære likningssystemer [Numerical solution of large linear equation systems]*, Oslo, memo DE-UO, 8 pp.
Assisted by Sven Vigger.
- 517 1950-09-12 *Økonomisk kryssløpsanalyse - Referat av professor Frisch' forelesninger i høstsemesteret 1950 [Economic input-output analysis - Notes of Professor Frisch's lectures in the autumn term of 1950]*, Oslo, memo DE-UO, 12 pp.
Lecture notes by Bjørn Thalberg.
- 518 1950-09-13 *Disposisjon til "Innføring i teoretisk statistikk del 1: Elementer av den*

- matematiske statistikk*" [An outline of "An introduction to theoretical statistics part I: Elements of mathematical statistics"], Oslo, memo DE-UO, 9 pp.
- 519 1950-09-15 *Økonomisk kryssløpsanalyse - Referat av professor Frisch' forelesninger i høstsemestret 1950* [Economic input-output analysis - Notes of Professor Frisch's lectures in the autumn term of 1950], Oslo, memo DE-UO, 20 pp.
Lecture notes by Alette Rømming and Bjørn Thalberg.
- 520 1950-09-16a *En analyse av forbruksøkonomien (etterspørselsstrukturen) i Norge* [An analysis of the economics of consumption (the demand structure) in Norway], Oslo, memo DE-UO, 12 pp.
- 521 1950-09-16b *De statistiske grunnbegreper* [The basic statistical concepts], Oslo, memo DE-UO, 22 pp.
- 522 1950-09-18a *Nomenklaturen for analysen av forbruksøkonomien i Norge* [The nomenclature for the analysis of the economics of consumption in Norway], Oslo, memo DE-UO, 6 pp.
- 523 1950-09-18b *Økonomisk kryssløpsanalyse - Referat av professor Frisch' forelesninger i høstsemestret 1950* [Economic input-output analysis - Notes of Professor Frisch's lectures in the autumn term of 1950], Oslo, memo DE-UO, 13 pp.
Lecture notes by Alette Rømming and Bjørn Thalberg.
- 524 1950-09-21 *Økonomisk kryssløpsanalyse - Referat av professor Frisch' forelesninger i høstsemestret 1950* [Economic input-output analysis - Notes of Professor Frisch's lectures in the autumn term of 1950], Oslo, memo DE-UO, 10 pp.
Lecture notes by Alette Rømming and Bjørn Thalberg.
- 525 1950-09-26 *Økonomisk kryssløpsanalyse - Referat av professor Frisch' forelesninger i høstsemestret 1950* [Economic input-output analysis - Notes of Professor Frisch's lectures in the autumn term of 1950], Oslo, memo DE-UO, 13 pp.
Lecture notes by Alette Rømming and Bjørn Thalberg. This memo contains a resumé of the preceding sections, a supplementary note written by Ragnar Frisch, a note written at Driebergen on Sept. 28 1950 after discussions with among others Professor Leontief, a review of notes of Frisch's lectures on input-output analysis, and finally a table of contents covering all stenciled lecture notes of Frisch's lectures on input-output analysis in the autumn term of 1950.
- 526 1951-01-05 *Forbrukertype og aggregeringsproblemer* [Consumer type and aggregation problems], Oslo, memo DE-UO, 6 pp.
Assisted by Alette Rømming and Thor Johnsen. A note on the front page (translated): "(Report from a conference 1951-01-03 in the working group for the consumer economy of Norway. The members present: Frisch, Johnsen and Miss Rømming.)"
- 527 1951-01-11 *Statens plikt til sirkulasjonsregulering* [The Government's obligation to circulation regulation], Oslo, memo DE-UO, 35 pp.
A statement in parenthesis on the front cover: "Nedtegnet i hast 10. - 12. desember 1932" [Put down in haste 10 - 12 December 1932]. The memo was at that time labelled "not for publication". It was distributed confidentially to a number of distinguished politicians and bank people and was discussed in a meeting as well. "It was a miserable meeting. I had the impression that to put forward these thoughts in that circle was as to run one's head against the wall. Those who now ordinarily deal with such concepts as the national budget and the national accounts, trade cycle regulating taxes, trade cycle regulating account in the Central Bank of Norway, ..., etc, etc, will hardly understand how the situation was in 1932." (Frisch in the preface of the memo. Translated.) Reprinted (slightly shortened) as Frisch 1995bj IDa. Refer also to Frisch 1933i IDb.
IDa:315, 1383 IDb:53
- 528 1951-01-31 *Kort notat om determinantregning* [A short note on determinants], Oslo, memo DE-UO, 12 pp.
- 529 1951-02-05 *Outline of a system of multicompensatory trade*, Oslo, memo DE-UO, 10 pp.
A second printing of a memo from DE-UO, Frisch 1948-03-04 IDa, see the annotations.
IDa:432, 1145

- 530 1951-02-06 *Markoffs teorem om hvorledes en elementær empirisk regresjon kan begrunnes estimeringsmessig [Markov's theorem on how an elementary empirical regression can be substantiated]*, Oslo, memo DE-UO, 19 pp.
A note on p 1 (translated): "The present memo constitutes paragraph 74 of "Elements of the mathematical statistics". It replaces memorandum of 1950-05-22." See Frisch 1950-05-22 IDa. The present paragraph enters into chapter 7, "Regression analysis", which will consist of the paragraphs: 71. Empirical regressions, 72. Stochastic regressions, 73. The normal regression, 74. Markov's theorem on how an elementary empirical regression can be substantiated.
IDA:514, 1067
- 531 1951-02-08 *Tetthet og masse ved en statistisk fordeling [Density and mass of a probability distribution]*, Oslo, memo DE-UO, 25 pp.
A note on the front page (translated): Paragraph 21 of "Elements of mathematical statistics".
- 532 1951-02-13 *Sammenhengen mellom produksjonselastisiteter og produksjonskoeffisienter [The connection between production elasticities and production coefficients]*, Oslo, memo DE-UO, 4 pp.
- 533 1951-02-15 *En iterasjonsmetode for numerisk løsning av kryssløpslikningene [An iterative method for numerical solution of the input-output equations]*, Oslo, memo DE-UO, 13 pp.
- 534 1951-02-18 *Prøverekning på numerisk løsning av kryssløpslikningene [A test calculation on numerical solution of the input-output equations]*, Oslo, memo DE-UO, 16 pp.
With Odd Aukrust.
- 535 1951-02-19 *Numerisk løsning og sifferkontroll ved store lineære likningssystemer [Numerical solution and accuracy control of large linear equation systems]*, Oslo, memo DE-UO, 26 pp.
- 536 1951-02-21 *Generelt om avledete fordelingslover [On derived probability distributions]*, Oslo, memo DE-UO, 75 pp.
Note on page 1 (translated): Paragraph 25 of "Elements of the mathematical statistics".
- 537 1951-02-28 *Numerisk løsning av kryssløpslikningene når produksjonskoeffisientene ikke er konstante [Numerical solution of the input-output equations when the production coefficients are not constant]*, Oslo, memo DE-UO, 9 pp.
- 538 1951-03-05 *Kontrollmetoder ved iterasjonsløsning av store lineære likningssystemer [Checking methods when solving iteratively large linear equation systems]*, Oslo, memo DE-UO, 5 pp.
- 539 1951-03-12 *Monopole - polypole - La notion de force dans l'économie*, Oslo, memo DE-UO, 16 pp.
A reprint of Frisch 1933d IDa.
IDA:46, 897, 967
- 540 1951-03-17 *Seleksjons-iterasjonsmetoden og en prospektiv restleddsformel ved numerisk løsning av store lineære likningssystemer [The selection-iteration method and a prospective remainder formula for numerical solution of large linear equation systems]*, Oslo, memo DE-UO, 8 pp.
- 541 1951-04 *Reknemetoder og rekneundervisning i folkeskolen [Methods of calculation and the way of teaching arithmetic in the primary school]*, Oslo, A typewritten note, DE-UO, 7 pp.
A typewrittenn note at DE-UO, for reading and copying.
- 542 1951-05-08 *Correlation and scatter in statistical variables*, Oslo, memo DE-UO, 62 pp.
A reprint of Frisch 1929b IDa.
IDA:18, 1013

- 543 1951-05-10 *Rapport til Matematikmaskinutvalget av Norges Teknisk-Naturvitenskapelige Forskningsråd om utført forsøksarbeid med numerisk løsning av store lineære likningssystemer [Report to Matematikmaskinutvalget av Norges Teknisk-Naturvitenskapelige Forskningsråd about experimental work done on solving numerically large linear equation systems]*, Oslo, memo DE-UO, 3 pp.
- 544 1951-05-23 *Numerisk løsning av store lineære likningssystemer [Solving numerically large linear equation systems]*, Oslo, memo DE-UO, 5 pp.
With Harold Hotelling. Copy of a letter of 17 March 1951 to Harold Hotelling from Ragnar Frisch and copy of a letter of 19 April 1951 from Harold Hotelling to Ragnar Frisch.
- 545 1951-06-09 *Hypoteseprøving på grunnlag av antallet av forskjellige iakttagelser [Hypothesis testing on the basis of the number of different observations]*, Oslo, memo DE-UO, 133 pp.
Refer to Frisch 1952-04-25 IDa.
IDa:560, 1083
- 546 1951-06-18 *Aggregeringsproblemet fra produksjonsteoretisk synspunkt [The aggregation problem from the standpoint of the theory of production]*, Oslo, memo DE-UO, 14 pp.
Published in print as Frisch 1958a IDa (Festschrift to Frederik Zeuthen).
IDa:145, 887
- 547 1951-06-19 *Proporsjonalitetsforenklet kryssløpsberegning [A proportionally simplified input-output computation]*, Oslo, memo DE-UO, 8 pp.
- 548 1951-06-25 *Regresjonsbestemmelse kontra gruppeberegningsbestemmelse av Engel-elasticiteten [Determination of the Engel elasticity by regression versus by group calculation]*, Oslo, memo DE-UO, 3 pp.
- 549 1951-09-10 *Estimeringsteori - Avsnitt 51-55 av "Elementer av den matematiske statistikk" [Theory of estimation - Paragraphs 51-55 of "Elements of mathematical statistics"]*, Oslo, memo DE-UO, 91 pp.
Lectures by Ragnar Frisch. Elaborated notes by Leif Johansen.
- 550 1951-09-20 *L'emploi des modèles pour l'élaboration d'une politique économique rationnelle*, Oslo, memo DE-UO, 51 pp.
Note on the front page: "Extrait de la Revue d'Économie Politique Nos 5 et 6, Paris 1950".
Refer to Frisch 1950c IDa.
IDa:107, 1170
- 551 1951-09-26 *Investment and consumption as factors in economic cycles*, Oslo, memo DE-UO, 6 pp.
In this paper, which according to a note on the front page was written in 1934, Frisch deals with two seemingly contradicting observations. One was made by Wesley C. Mitchell and J. M. Clark separately, indicating that capital production moves approximately in synchrony with the growth rate of consumption. J. Tinbergen maintained, however, that he had found a strong connection between capital production and the size of consumption, but either no influence at all, or even a negative rather than a positive influence from the consumption growth rate. Frisch believed that the explanation to this apparent incompatibility must be that Mitchell and Clark had considered the relation between *capital-starting* and consumption, while Tinbergen had studied the relation between the *carry-on-activity* (of capital production) and consumption. Frisch discusses this hypothesis within his propagation-impulse model and seems to arrive at a confirmative conclusion. Refer to Frisch 1931b IDa and 1933i IDb.
IDa:25, 959 IDb:50, 968
- 552 1951-09-30 *Fordeling av stikkprøver over strata når formålet er størst mulig sikkerhet i prediksjonen av en totalhyppighet [Distribution of random samples over strata when the objective is maximum reliability in the prediction of a total frequency]*, Oslo, memo DE-UO, 4 pp.
- 553 1951-10-01 *Spesielle fordelingslover. Hefte I - Avsnitt 26, 27 og 31 - 34 av "Elementer*

- av den matematiske statistikk" [*Several probability distributions. Volume I - The paragraphs 26, 27 and 31 - 34 of "Elements of mathematical statistics"*], Oslo, memo DE-UO, 92 pp.
- 554 1951-12-15 *Knut Wicksell. A cornerstone in modern economic theory*, Oslo, memo DE-UO, 46 pp.
Frisch pays great homage to Knut Wicksell. Later printed (under the title "Frisch on Wicksell") as Frisch 1952c IDa.
IDa:119
- 555 1952-02-15 *Konferanse om statistikkpensumet for de sosialøkonomiske studenter [Conference on the syllabus in statistics for students in economics]*, Oslo, memo DE-UO, 3 pp.
Participants: Ragnar Frisch, Trygve Haavelmo, Leif Johansen and Tore Thonstad.
- 556 1952-02-17 *Linear programmering - Referat av professor Ragnar Frisch's forelesning 15. februar 1952 [Linear programming - Report of Professor Ragnar Frisch's lecture February 15 1952]*, Oslo, memo DE-UO, 15 pp.
Notes by Leif Johansen.
- 557 1952-02-22 *Spesielle fordelingslover. Hefte II - Kap. 4 av "Elementer av den matematiske statistikk" [Several probability distributions. Volume II - Chapter 4 of "Elements of mathematical statistics"]*, Oslo, memo DE-UO, 186 pp.
Assisted by Leif Johansen.
- 558 1952-03-11 *Konferanse om statistikkpensumet for de sosialøkonomiske studenter [Conference on the syllabus in statistics for students of economics]*, Oslo, memo DE-UO, 2 pp.
Participants: Ragnar Frisch, Trygve Haavelmo and Alette Hanssen-Bauer.
- 559 1952-03-19 *Betalingsmiddelforskyvninger mellom sektorer i et lands næringsliv [Shifts of the means of payments among sectors in a country's trades and industries]*, Oslo, memo DE-UO, 42 pp.
In co-operation with Arne Amundsen. Subtitle: En prinsipiell utredning med anvendelse på data for Norge 1948. Bilag til Innstilling fra Penge- og Finansrådet, januar 1952 [A fundamental discussion with application on data for Norway 1948. Supplement to Report from Penge- og Finansrådet, January 1952].
- 560 1952-04-25 *The occurrence test*, Oslo, memo DE-UO, 52 pp.
Refer to Frisch 1951-06-09 IDa, 1952-05-02 IDb and Johansen 1952-02-09 IDc.
IDa:545, 1075 IDb:561, 1084 IDc:1895
- 561 1952-05-02 *Beleggtallsberegning [Calculation of occurrence numbers]*, Oslo, memo DE-UO, 16 pp.
Refer to Frisch 1952-04-25 IDa.
IDa:560, 1083
- 562 1952-08-09 *Hypoteseprøvingsteori - Kap. 6 av "Elementer av den matematiske statistikk" [Theory of hypothesis testing - Chapt. 6 of "Elements of mathematical statistics"]*, Oslo, memo DE-UO, 100 pp.
Lectures by Ragnar Frisch. Elaborated notes by Leif Johansen.
- 563 1952-08-18 *Nyorientering av den økonomiske teori. Økonomikken som eksperimentalvitenskap [New orientation of economic theory. Economics as an experimental science]*, Oslo, memo DE-UO, 13 pp.
A reproduction of Frisch's inaugural lecture from 1932. See Frisch 1932j IDa with annotations.
IDa:39
- 564 1952-10-03 *Annual survey of general economic theory: The problem of index numbers*, Oslo, memo DE-UO, 12 pp.
The publication is identical with the first twelve pages of Frisch 1936a IDa, see the annotations.
IDa:63, 819

- 565 1952-10-04 *Forskningsplanmøte 23. september 1952 om kryssløpsanalyse med særlig anvendelse på norske forhold [Research plan conference September 23 1952 on input-output analysis with particular application to Norwegian conditions]*, Oslo, memo DE-UO, 13 pp.
Participants in the conference: From the Central Bureau of Statistics, Oslo: Leiv Vidvei; from the Economic Policy Department: Hermod Skånland and Robert F. Nordén; and from the Department of Economics, University of Oslo: Ragnar Frisch, Leif Johansen, Hans Jacob Kreyberg and Sven Vigger.
- 566 1952-10-16 *Økonomisk demokrati [Economic democracy]*, Oslo, memo DE-UO, 20 pp.
The memorandum contains - with minor changes - two articles from the journal *Kontakt*, of October 1950 and February 1951. Refer to Frisch 1950g IDa and 1951g IDb.
IDa:111, 1171 IDb:118, 1177
- 567 1952-10-24 *Innholdsfortegnelse for "Innføring i teoretisk statistikk del I: Elementer av den matematiske statistikk" [List of contents for "Introduction to theoretical statistics part I: Elements of mathematical statistics"]*, Oslo, memo DE-UO, 9 pp.
- 568 1952-11-06a *Reperkusjonsanalytiske problemer som kan studeres på grunnlag av vare- og tjenestetilgangen oppdelt etter tilrekningsandeler, hovedkategorier av goder og næringssektorer [Repercussion-analytical problems which can be studied on the basis of the flow of goods and services divided by shares of input requirements, main categories of goods, and industry sectors], Professor Ragnar Frisch's forelesninger i høstsemesteret 1952 [Professor Ragnar Frisch's lectures in the autumn of 1952]*, Oslo, memo DE-UO, 156 pp.
Lectures in the autumn term of 1952, further touched up in the spring term of 1953.
Elaborated notes by Leif Johansen.
- 569 1952-11-06b *Reperkusjonsanalytiske problemer som kan studeres på grunnlag av vare- og tjenestetilgangen oppdelt etter tilrekningsandeler, hovedkategorier av goder og næringssektorer [Repercussion-analytical problems which can be studied on the basis of the flow of goods and services divided by shares of input requirements, main categories of goods, and industry sectors], Professor Ragnar Frisch's forelesninger i høstsemesteret 1952 [Professor Ragnar Frisch's lectures in the autumn term of 1952]*, Oslo, memo DE-UO, 9 pp.
Lecture notes by Leif Johansen.
- 570 1952-11-14 *Forskningsplanmøte 28. oktober 1952 om de næringsdrivendes inntektsstruktur i Norge [Research Plan Conference October 28 1952 on the income structure of the trades-folk in Norway]*, Oslo, memo DE-UO, 17 pp.
Besides staff people at the Department of Economics there were representatives from a number of institutions outside the University: Norwegian Union of Commercial and Office Employers, Oslo Taxation Authorities, the Price Directorate, the Inspector of Taxes in Akerhus, the Bureau of Statistics in Oslo, and National Bureau of Statistics.
- 571 1952-11-18 *Forslag til norsk matematisk-statistisk nomenklatur [Proposal to a Norwegian mathematical-statistical nomenclature]*, Oslo, memo DE-UO, 11 pp.
Norwegian Statistical Association appointed in October 1950 a committee consisting of Svein Brenna, Ragnar Frisch, Olav Reiersøl and Erling Sverdrup, to put forward a proposal of "words and expressions from theoretical statistics which ought to be translated into the Nordic languages in the first round". The committee's proposal is put forward in the present memo.
- 572 1952-12-22 *Jamføring mellom iterasjonsmetoden og eliminasjonsmetoden til løsning av store lineære likningssystemer [A comparison of the iterative method and the elimination method for solving large linear equation systems]*, Notat til medlemmene av Matematikkmaskinutvalget [Note to the members of Matematikkmaskinutvalget], Oslo, memo DE-UO, 10 pp.
- 573 1953-01-14 *En to-parametrig monoton strekningstransformasjon for grafisk framstilling når den ene eller begge de variable kan anta meget store verdier [A two-parametric monotonous stretching transformation for graphic*

- representation when one variable or both can have very large values*], Oslo, memo DE-UO, 6 pp.
Assisted by Thor Johnsen. A stretching transformation means a transformation which - if it is one-sided and horizontal - reduces (visually) the steepness of the curve.
- 574 1953-01-26 *Noen forskjellige slags priser som kan brukes ved verdsetting av statuspostene og deres forandringer [Different kinds of prices which can be used for evaluating the items of the balance sheet and their changes]*, Oslo, memo DE-UO, 7 pp.
- 575 1953-02-10 *Hva er et nasjonalbudsjett? [What is a national budget?]*, Oslo, Report of a speech on the radio, 7 pp.
- 576 1953-02-12 *Price-wage-tax-subsidy policies as instruments in maintaining optimal employment - A memorandum on analytical machinery to be used in discussions on causes of and remedies to unemployment*, Oslo, memo DE-UO, 65 pp.
The model was named the (Oslo) Sub-Model. Footnote on p 1: "Originally submitted as a memorandum to the United Nations Sub-Commission on Employment and Economic Stability 18 April 1949". The identification of the UN Document: E/CN.1/Sub.2/13, see Frisch 1949-04-18 IDa. See also Frisch 1949-03-28 IDb, 1949-09-23 IDc, 1949-09-28b IDd and 1955f IDe. A reprint of the 1955f article is issued as Frisch 1995v IDf (in Bjerkholt).
IDA:468, 1153 IDb:467, 1152 IDc:475, 1157 IDd:478, 1160 IDE:134, 1201 IDf:270, 1371
- 577 1953-03-24 *Ekstrakt fra memorandum av 6. november 1952. Om reperkusjonsanalytiske problemer [Extract from memorandum of 6 November 1952. On repercussion-analytical problems]*, Oslo, memo DE-UO, 156 pp.
Frisch's lectures in the autumn term of 1952, further touched up in the spring term of 1953. Elaborated notes by Leif Johansen. Refer to Frisch 1952-11-06a IDa.
IDA:568, 1183
- 578 1953-04-08 *Samfunnsmodell anvendt i en analyse av hvordan de økonomiske faktorer griper inn i hverandre [A model of the society used in an analysis of how the economic factors interact]*, Oslo, memo DE-UO, 14 pp.
Lecture given at the annual meeting in Norges almenvitenskapelige forskningsråd April 8 1953.
- 579 1953-04-18 *Regresjonsteori. Pkt. 71a og 74a-h av "Elementer av den matematiske statistikk". [Regression theory. Section 71a and 74a-h of "Elements of mathematical statistics"]*, Oslo, memo DE-UO, 34 pp.
- 580 1953-05-20 *Et plausibelt prinsipp for valg av inverse vektorer [A plausible principle for choice of inverse weights]*, Oslo, memo DE-UO, 2 pp.
- 581 1953-06-25 *Some basic principles of price of living measurements*, Oslo, memo DE-UO, 19 pp.
The introductory sentences: "The following is an attempt to discuss some basic principles of cost of living measurements in a form which is stripped of mathematical technicalities. Emphasis is placed on the *meaning* of the magnitudes that enter into the computations and on a discussion of *why* we perform certain computational operations on these magnitudes." The lines of thought of the paper were presented originally to economics students at Oslo. In 1947 they were given in an address to students and faculty members at Harvard and Princeton. Issued in print as Frisch 1954b IDa.
IDA:126, 842
- 582 1953-08-17 *On welfare theory and Pareto regions*, Oslo, memo DE-UO, 65 pp.
This original English issue was presented as an appendix to a paper "From national accounts to macro-economic decision models" (see Frisch 1955b IDa), read at the meeting of the International Association for Research in Income and Wealth, at Castelgandolfo (near Rome), 1-6 September 1953. A French translation was published in 1954, see Frisch 1954d IDb. The original English version was published in print in 1959, see Frisch 1959c IDc and the annotations.

IDA:130, 949, 1200 IDb:128, 920 IDc:149, 922

- 583 1953-08-27 *From national accounts to macro-economic decision models*, Oslo, memo DE-UO, 27 pp.
Note to the title: "A synopsis of ideas to be presented at the meeting of the International Association for Research in Income and Wealth, Rome, September 1953". Published in print (with a few minor changes) as Frisch 1955b IDa.
IDA:130, 949, 1200
- 584 1953-10-15 *Matematisk teori for maksima og minima [Mathematical theory for maxima and minima]*, Oslo, memo DE-UO, 130 pp.
Assisted by Leif Johansen. Partly reports of and partly manuscripts for lectures given during the autumn term of 1953. A French reproduction (in collaboration with A. Nataf) was published as Frisch 1960d IDa, and an English translation (from the French issue) was published as Frisch 1966f IDb. See the annotations.
IDA:155, 1470 IDb:197, 1495
- 585 1953-10-18 *Logaritmepotensialmetoden til løsning av lineære programmeringsproblemer [The logarithmic potential method for solving linear programming problems]*, Oslo, memo DE-UO, 11 pp.
See the annotations to Frisch 1954-10-18 IDa for references to other works by Frisch on the logarithmic potential method. Pp 9-11 of the present memo is a supplement which in the main is reproduced from the *Econometrica*- article 1934a IDb, subsection 23, pp 430-435.
IDA:613, 1432 IDb:54, 1136
- 586 1953-11-07 *Litt analytisk geometri i flere dimensjoner [Some multi-dimensional analytic geometry]*, Oslo, memo DE-UO, 13 pp.
- 587 1953-11-13 *Substitumalutforming av logaritmepotensialmetoden til løsning av lineære programmeringsproblemer [Substitumal formulation of the logarithmic potential method for solving linear programming problems]*, Oslo, memo DE-UO, 3 pp.
For references to works on the logarithmic potential methods, see the annotations to Frisch 1954-10-18 IDa.
IDA:613, 1432
- 588 1953-11-20 *Innledning til produksjonsteorien. Annet hefte [Introduction to the theory of production. Second volume]*, Oslo, memo DE-UO, 119 pp.
Refer to Frisch 1941b IDa, particularly to the annotations. It must be understood, although it is not stated explicitly, that the present work is the second volume of the sixth edition of the Introduction to the theory of production. See also Frisch 1961-04 IDb.
IDA:359, 875 IDb:760, 888
- 589 1953-11-27 *Levekostnad og levestandard [Cost of living and standard of living]*, Oslo, memo DE-UO, 21 pp.
Three radio speeches given in the autumn 1953.
- 590 1953-12-04 *Leveprisberegning når det foreligger husholdningsregnskapsdata i hvert tidspunkt [Cost of living calculation when data from housekeeping accounts are available at every point of time]*, Oslo, memo DE-UO, 3 pp.
- 591 1953-12-13 *Matematikk og politikk [Mathematics and politics]*, Oslo, A typewritten note, DE-UO, 6 pp.
A typewritten note available at DE-UO, for reading and copying.
- 592 1953-12-15 *Konvergensskjerping ved gruppedannelser under enveis-iterasjonsløsning av lineære likningssystemer [Speeding up the convergence by creating groups under one-way iterative solving of linear equation systems]*, Oslo, memo DE-UO, 3 pp.
- 593 1954-01-14 *Notater i forbindelse med logaritmepotensialmetoden til løsning av lineære programmeringsproblemer [Notes in connection with the logarithmic potential method for solving linear programming problems]*, Oslo, memo DE-UO, 48 pp.

See the annotations to Frisch 1954-10-18 IDa for references to other works by Frisch in which the logarithmic potential method is dealt with.

IDA:613, 1432

- 594 1954-02-22 *Hvis det gjøres en oppfinnelse eller skjer en rasjonalisering i en bestemt sektor, vil derved sektorens relative andel av nasjonalproduktet øke eller minske? [If an invention or a rationalization is made in some sector, would then the sector's relative share of the national product increase or decrease?]*, Oslo, memo DE-UO, 6 pp.
Two more questions are put: Would the sector's absolute share increase or decrease? Would its total product all together increase or decrease?
- 595 1954-03-07 *Finalhopp og substitumalfølging ved lineær programmering [Final jumps and moving along the substitumal in linear programming]*, Oslo, memo DE-UO, 8 pp.
The substitumal, a name coined by Frisch, means the same as the expansion curve in the theory of production.
- 596 1954-03-29 *Trunkering som forberedelse til finalhopp ved lineær programmering [Truncation as a preparation for a final jump in linear programming]*, Oslo, memo DE-UO, 6 pp.
- 597 1954-04-30 *Kryssløpsanalyse - Referat av Ragnar Frisch's forelesninger holdt i høstsemestret 1953 [Input-output analysis - Notes of Ragnar Frisch's lectures given in the autumn term of 1953]*, Oslo, memo DE-UO, 93 pp.
Lecture notes by stud. oecon. Nils Bakke and stud. oecon. Ole Bredal. Formula control and proofreading by stud. oecon. Hans Jacob Hylin. The notes read through and corrected by Ragnar Frisch. With a supplement by P. J. Bjerve.
- 598 1954-05-01 *Basis-variabelmetoden til løsning av lineære programmeringsproblemer [The basis-variable method for solving linear programming problems]*, Oslo, memo DE-UO, 21 pp.
- 599 1954-05-03 *Sur un problème d'économie pure*, Oslo, memo DE-UO, 35 pp.
Note: Extrait de Norsk Matematisk Forenings Skrifter . Serie 1. Nr 16. See Frisch 1926h IDa, with annotations.
IDA:12, 811, 1008
- 600 1954-05-05 *Simplex-metoden til løsning av lineære programmeringsproblemer [The simplex method for solving linear programming problems]*, Oslo, memo DE-UO, 14 pp.
- 601 1954-05-07 *Generelle merknader om løsningsstrukturen ved det lineære programmeringsproblem [General remarks on the solution structure of the linear programming problem]*, Oslo, memo DE-UO, 12 pp.
- 602 1954-05-29 *Extracts from letters from Professor Ragnar Frisch to Professor Mahalanobis*, Calcutta, Indian Statistical Institute, 11 pp.
The originals are kept at the University of Oslo Library's collection of letters. A copy is available at DE-UO (Boks 56, Oppdrag i India (1954-55)), not for lending.
- 603 1954-06-16 Foreword, in Mukherjee, M.: *A scheme for collecting and utilizing data on the Indian economy*, Oslo, memo DE-UO, 1 p.
Foreword to Mukherjee 1954-06-16 IDa.
IDA:1900
- 604 1954-06-21 *Methods of solving linear programming problems*, Oslo, memo DE-UO, 91 pp.
Synopsis of a lecture to be given at the International Seminar on Input-Output Analysis, Varenna (Lake Como) June - July 1954. The paper deals with both the simplex method and the logarithmic potential method. For references to other works on the logarithmic potential method, see the annotations to Frisch 1954-10-18 IDa.
IDA:613, 1432
- 605 1954-08-05 *Linear expenditure functions. An expository paper*, Oslo, memo DE-UO, 8 pp.

Printed as Frisch 1954a IDa.

IDa:125, 841

- 606 1954-08-13 *Nye notater i forbindelse med logaritmepotensialmetoden til løsning av lineære programmeringsproblemer [New notes in connection with the logarithmic potential method for solving linear programming problems]*, Oslo, memo DE-UO, 74 pp.
For references to works on the logarithmic potential method, see the annotations to Frisch 1954-10-18 IDa.
IDa:613, 1432
- 607 1954-08-23 *Merknad om formuleringen av det lineære programmeringsproblem [A remark on the formulation of the linear programming problem]*, Oslo, memo DE-UO, 3 pp.
- 608 1954-09-05 *Prinsipielt om formen på hovedmatriksen for makroøkonomisk programmering [Fundamental reflections on the form of the main matrix in macro-economic programming]*, Oslo, memo DE-UO, 10 pp.
- 609 1954-09-10 *Statistical versus theoretical relations in economic macrodynamics*, Oslo, memo DE-UO, 16 pp.
The second issue of Frisch's memorandum 1938-07-17 IDa to the Business Cycle Conference at Cambridge, England, 18-20 July 1938. The first issue: 1948-11-06b IDb. Later issues in print: 1995bo IDc (in Bjerkholt) and 1995b IDd (in Hendry and Morgan). Tinbergen's reply: Tinbergen 1948-11-06 IDE and 1995 IDf (in Hendry and Morgan). See the annotations to Frisch 1938-07-17.
IDa:355, 1034 IDb:449, 1049 IDc:320, 1135 IDd:250, 1122 IDE:1849 IDf:2075
- 610 1954-09-14 *Generelt om forsøkene på å nå fram til en global økonomisk analyse [General reflections on the attempts to arrive at a global economic analysis]*, Oslo, memo DE-UO, 12 pp.
Professor Frisch's lecture 10 September 1954. Lecture note by Sigmund Kjos, read through and corrected by Professor Frisch.
- 611 1954-09-28 *Jamføring mellom 1948-modellen og medianmodellen [A comparison between the 1948 model and the Median Model]*, Oslo, memo DE-UO, 17 pp.
Frisch's lectures 24 September 1954. Lecture notes by Sigmund Kjos, read through and corrected by Frisch.
- 612 1954-10-12 *En generalisering av begrepet elementær regresjon [A generalization of the concept elementary regression]*, Oslo, memo DE-UO, 5 pp.
- 613 1954-10-18 *Principles of linear programming. With particular reference to the double gradient form of the logarithmic potential method*, Oslo, memo DE-UO, 219 pp.
For works on the logarithmic potential method, see Frisch 1953-10-18 IDa, 1953-11-13 IDb, 1954-01-14 IDc, 1954-06-21 IDd, 1954-08-13 IDE, 1955-05-07 IDf, 1955-05-13 IDg, 1956-01-10 IDh and 1956f IDi.
IDa:585, 1419 IDb:587, 1421 IDc:593, 1423 IDd:604, 1429 IDE:606, 1430 IDf:631, 1436 IDg:632, 1211, 1437 IDh:638, 1216, 1445 IDi:141, 1443
- 614 1954-11-26 *Planning for economic development in India. A memorandum on the broad macroeconomic aspects of the problem*, in the series *Studies relating to planning for national development*, Indian Statistical Institute, Calcutta, 23 pp.
The memorandum seems to be a letter to Professor Mahalanobis.
- 615 1954-12-11 *A short memorandum on a technique for elaborating the new five-year plan for India*, in the series *Studies relating to planning for national development*, Indian Statistical Institute, Calcutta, Working paper No 5/R.U. 1.4, 13 pp.
- 616 1954-12-25 *General remarks on the programming matrix*, in the series *Studies relating to planning for national development*, Indian Statistical Institute, Calcutta, Working paper No 11/R.U. 11.7, 11 pp.

- 617 1954-12-29 *A basic instrument in the planning work: The technical description sheet, in the series Studies relating to planning for national development*, Indian Statistical Institute, Calcutta, Working paper No 13/R.U. 1.9, 12 pp.
- 618 1955-01-11 *A letter to Professor Mahalanobis*, Calcutta, 6 pp.
Two main points are treated: 1) A few words on preparing the material for the conference with the Prime Minister on 27 January 1955, including preparing a preliminary joint paper to him - all this material in non-technical language. 2) The working out of a complete planning system taking account of administrative problems as well as problems of computations and the training of Indians to carry on after the foreign experts have left the country.
- 619 1955-01-16 *Investment, consumption and employment under a balanced expansion*, in the series *Studies relating to planning for national development*, Indian Statistical Institute, Calcutta, Working paper No 14/R.U. 1.10, 7 pp.
- 620 1955-01-20 *The programming chart with a preliminary draft of a nomenclature of production sectors*, in the series *Studies relating to planning for national development*, Indian Statistical Institute, Calcutta, Working paper No 15/R.U. 1.11, 12 pp.
- 621 1955-01-25 *The methodology of planning in an underdeveloped country*, in the series *Studies relating to planning for national development*, Indian Statistical Institute, Calcutta, Working paper No 20/R.U. 1.13, 14 pp.
- 622 1955-02-04 *A sequence of calculations for determining an optimal plan frame by means of linear programming*, in the series *Studies relating to planning for national development*, Indian Statistical Institute, Calcutta, Working paper No 22/R.U. 1.14, 36 pp.
- 623 1955-02-15 *Some preliminary results on experimental plan frame No.1*, in the series *Studies relating to planning for national development*, Indian Statistical Institute, Calcutta, Working paper No 23/R.U. 1.15, 3+27 pp.
- 624 1955-02-26 *The compact form of the Gaussian algorithm for solving linear equations and inverting matrices in the general case where the original matrix need not be symmetrical*, in the series *Studies relating to planning for national development*, Indian Statistical Institute, Calcutta, Working paper No 26/R.U. 1.16, 19 pp.
- 625 1955-03-12 *Experimental plan frame No.1. Structure of the set up and numerical results*, in the series *Studies relating to planning for national development*, Indian Statistical Institute, Calcutta, Working paper No 34/R.U. 1.19, 41 pp.
- 626 1955-03-29 *A labour saving method of performing freedom truncations in linear programming. Part I*, Oslo, memo DE-UO, 21 pp.
See Frisch 1955-04-15 IDa.
IDa:629, 1434
- 627 1955-04-13 *Notes made during computational work on linear programming problems in connection with national planning*, Indian Statistical Institute, Calcutta, mimeographed notes, 22 pp.
The notes were produced during February-March 1955, in connection with the work on the project described in Frisch 1955-03-12, IDa.
IDa:625, 1209
- 628 1955-04-14 *Diskriminasjon i den internasjonale handel [Discrimination in international trade]*, Oslo, memo DE-UO, 4 pp.
Reproduced from Frisch's article in the Norwegian newspaper *Aftenposten*, 1948-01-16 IDa. see the annotations.
IDa:1654
- 629 1955-04-15 *A labour saving method of performing freedom truncations in linear programming. Part II*, Oslo, memo DE-UO, 8 pp.
See Frisch 1955-03-29 IDa.

IDA:626, 1433

- 630 1955-05-05 *The elimination method for solving linear equations*, Oslo, memo DE-UO, 5 pp.
- 631 1955-05-07 *The logarithmic potential method for solving linear programming problems*, Oslo, memo DE-UO, 16 pp.
Synopsis of an exposition to be made on 1 June 1955 in the seminar of Professor Rene Roy, Paris. For other references, see the annotations to Frisch 1954-10-18 IDa.
IDA:613, 1432
- 632 1955-05-13 *The logarithmic potential method of convex programming. With particular application to the dynamics of planning for national development*, Oslo, memo DE-UO, 35 pp.
Synopsis of a communication to be presented at the international colloquium in Paris 23-28 May 1955. For other references, see the annotations to Frisch 1954-10-18 IDa.
IDA:613, 1432
- 633 1955-05-25 *Linear and convex programming problems studied by means of the double gradient form of the logarithmic potential method*, Oslo, memo DE-UO, 16 pp.
Synopsis of a presentation to be given in the Seminar of Professor Allais, Paris 26 May 1955.
- 634 1955-10-11 *Multiplex-metoden for løsning av lineære programmeringsproblemer [The multiplex method for solving linear programming problems]*, Oslo, memo DE-UO, 31 pp.
- 635 1955-10-17 *The multiplex method for linear programming*, Oslo, memo DE-UO, 49 pp.
An article in *Sankhyá*, Frisch 1957b IDa, is, except for some minor corrections, identical with the present memo. See the annotations. A memo Frisch 1958-09-12 IDb has the same title, but gives a different treatment of the subject, see the annotations.
IDA:142, 1450 IDb:683, 1461
- 636 1956-01-02 *Submodell, Medianmodell og Refimodell [Sub Model, Median Model and Refi Model]*, Oslo, memo DE-UO, 24 pp.
The heading of chapter I reads: "From national accounts to macro-economic decision models". Thus identical with the title of the article 1955b IDa (in *Income and Wealth*). However, in the present mimeographed version only the main sections immediately connected with the interflow matrix defined in Tab. II are reproduced.
IDA:130, 949, 1200
- 637 1956-01-03 *The logarithmic potential method for linear programming formulated with a view to electronic computation*, Oslo, memo DE-UO, 5 pp.
Some remarks of how the method can be shaped to be amenable to electronic computation.
- 638 1956-01-10 *Macroeconomics and linear programming*, Oslo, memo DE-UO, 48 pp.
The memo is fairly similar to Frisch 1956b IDa. It contains, however, more detailed discussions on several points. See the annotations to 1956b. For references to other works on the logarithmic potential method, see the annotations to Frisch 1954-10-18 IDb.
IDA:138, 1213, 1442 IDb:613, 1432
- 639 1956-02-07 *Skrankemodifikasjoner ved lineær programmering [Modifications of constraints in linear programming]*, Oslo, memo DE-UO, 13 pp.
- 640 1956-02-19 *Polytomisk og dikotomisk intervjuing for å bestemme vektene i en preferanseindeks eller viktigheten av de enkelte formålsbeskrivelser ved lineær programmering [Polytomic and dichotomic interviewing in order to decide the weights in a preference index or the importance of the individual preference constraints in linear programming]*, Oslo, memo DE-UO, 29 pp.
Assisted by Per Meinich.
- 641 1956-03-05 *Preferansefunksjonens koeffisienter bestemt på grunnlag av svarene på dikotomiske spørsmål [The coefficients of the preference function decided*

- from the answers to dichotomic questions*], Oslo, memo DE-UO, 7 pp.
- 642 1956-03-16 *Om målsettingsformuleringen ved nasjonal planlegging [On the formulation of objectives in national planning]*, Oslo, memo DE-UO, 5 pp.
The memo became reissued in print as Frisch 1957c IDa, with minor changes.
IDa:143, 1225
- 643 1956-09-02 *Oppdelingsmetoden for beregning av den inverse av en gitt matriks [The splitting-up method for computing the inverse of a given matrix]*, Oslo, memo DE-UO, 4 pp.
- 644 1956-09-20 *Kontrollmetoder for matriksinvertering og overføring av lineære likninger til basisform [Checking methods for matrix inversion and transforming of linear equations into a basic form]*, Oslo, memo DE-UO, 12 pp.
- 645 1956-09-27 *Typer av regnemaskiner som er eller kan tenkes å bli tilgjengelige i Norge [Types of computers that are or may conceivably become available in Norway]*, Oslo, memo DE-UO, 6 pp.
- 646 1956-09-28 *Innledning til produksjonsteorien, første hefte, 8. utgave [Introduction to the theory of production, first volume, eight edition]*, Oslo, memo DE-UO, 245 pp.
Assisted by Per Meinich. See the annotations to Frisch 1946c IDa.
IDa:364, 876
- 647 1956-10-10 *Main features of the Oslo Median Model*, Oslo, memo DE-UO, 37 pp.
Bjerkholt and Longva 1980 IDa on Frisch's contributions to the theory of macroeconomic planning (p 12): "Professor Ragnar Frisch, s contributions ... were pioneering and far-reaching. ... Of more direct interest for our exposition are his contributions to the philosophy and methodology of macro-economic model building. ... His efforts in this field were not limited to theoretical studies, he initiated a number of pioneering attempts to build models of the Norwegian economy at a time when the available data and computing equipment could not do justice to his ambitious aims. Some of these earley models of the 1950's, in particular the Oslo Median Model, ... are direct precursors of the first MODIS model.
IDa:1998
- 648 1956-10-15 *Notes on the main organs and operation technique of the Oslo electronic computer Nusse*, Oslo, memo DE-UO, 6 pp.
- 649 1956-10-18 *Condensed description of the multiplex method for linear programming*, Oslo, memo DE-UO, 20 pp.
- 650 1956-10-21 *Supplementary remarks on the Oslo Median Model*, Oslo, memo DE-UO, 27 pp.
- 651 1956-11-09 *Introduction to the Oslo Median Model*, Oslo, memo DE-UO, 2 pp.
The present note reproduces in the main the introductory section of Frisch 1956-10-10 IDa (Main features ...).
IDa:647, 1220
- 652 1956-11-13 *Notat om pris-lønnsspiralen [A note on the price-wage spiral]*, Oslo, memo DE-UO, 11 pp.
- 653 1956-11-15b *Kvadratisk preferansefunksjon bestemt ved intervjudata og anvendt for konveks programmering [Quadratic preference function decided from interview data and applied in convex programming]*, Oslo, memo DE-UO, 74 pp.
- 654 1957-01-07 *Single step building up and building down of the inverse of a symmetric matrix*, Oslo, memo DE-UO, 28 pp.
- 655 1957-01-21 *The multiplex method for linear and quadratic programming*, Oslo, memo DE-UO, 62 pp.

- 656 1957-02-01 *The compact method for solving symmetric linear equations and inverting symmetric matrices*, Oslo, memo DE-UO, 22 pp.
Refer to Frisch 1957-11-07 IDa, 1958-09-30 IDb, and 1967-01-27 IDc.
IDa:663, 1457 IDb:686, 1462 IDc:809, 1497
- 657 1957-02-05 *Normalized moments in the Oslo Median Model with explanations*, Oslo, memo DE-UO, 4 pp.
- 658 1957-02-14 *Numerical determination of a quadratic preference function for use in macroeconomic programming*, Oslo, memo DE-UO, 37 pp.
This is the original issue. The first printed issue 1961i IDa. Reprints: 1963f IDb and 1995ac IDc. Also issued as reprint No 11 from DE-UO. See the annotations to 1961i.
IDa:163, 1105, 1298 IDb:178, 1106, 1316 IDc:280, 1127, 1372
- 659 1957-02-26 *Generalities on planning*, Oslo, memo DE-UO, 26 pp.
Published in print as Frisch 1960a IDa.
IDa:152, 1262
- 660 1957-04-26 *The single step form of the multiplex method*, Oslo, memo DE-UO, 14 pp.
- 661 1957-06-04 *Oslo decision models. A summary of work done on the Sub Model, the Median Model and models of similar types, as well as a draft of the Refi Model*, Oslo, memo DE-UO, 47 pp.
- 662 1957-09-11 *Linear dependencies and a mechanized form of the multiplex method for linear programming*, Oslo, memo DE-UO, 20 pp.
- 663 1957-11-07 *A numerical example illustrating the compact method for solving symmetric linear equations*, Oslo, memo DE-UO, 3 pp.
It is referred to Frisch 1957-02-01 IDa. See also Frisch 1958-09-30 and 1967-01-27.
IDa:656, 1453 IDb:686, 1462 IDc:809, 1497
- 664 1957-11-14 *Etterspørselslære. 1. hefte [Theory of demand. Volume 1]*, Oslo, memo DE-UO, 42 pp.
- 665 1957-11-16 *Hovedmatriksen for refimodellen [The main matrix for the Refi Model]*, Oslo, working note DE-UO, 11 pp.
- 666 1957-11-27 *The compact method for solving linear equations and inverting matrices in the non symmetric case*, Cairo, Memorandum No 1 to the National Planning Committee, 20 pp.
- 667 1957-11-30 *Some basic notions of input-output analysis. Being section 1 of a general interflow theory for use in economic planning*, Cairo, Memorandum No 2 to the National Planning Committee, 12 pp.
- 668 1957-12-20 *The first steps in Kernel planning. (With an explanation on the use of the multiplex method when the number of conditional equations is small)*, Cairo, Memorandum No 6 to the National Planning Committee, 15 pp.
- 669 1957-12-27 *Programming the wheat policy for Egypt*, Cairo, Memorandum No 7 to the National Planning Committee, 29 pp.
Prepared in cooperation with Dr.F.Sherif.
- 670 1958-01-07 *A non technical summary of some viewpoints on wheat programming in Egypt*, Cairo, Memorandum No 9 to the National Planning Committee, 7 pp.
- 671 1958-01-10 *Numerical determination of a macroeconomic preference function*, Cairo, Memorandum No 11 to the National Planning Committee, 60 pp.
- 672 1958-01-17 *Inter-regional input-output analysis. With some remarks on foreign trade optimalization in a given region*, Cairo, Memorandum No 12 to the National Planning Committee, 14 pp.
- 673 1958-02-07 *General theory of the Kernel model*, Oslo, memo DE-UO, 187 pp.

A reprint of section 11 was later issued as Frisch 1958-04-25 IDa and still later published in print as Frisch 1959a IDb.

IDA:677, 848 IDb:147, 849, 921

- 674 1958-02-20 *Investeringer som kostnadselementer ved å flytte kapasitetskranker i økonomisk lineær programmering [Investments as cost elements when moving capacity bounds in economic linear programming]*, Oslo, memo DE-UO, 9 pp.
- 675 1958-03-01 *Etterspørselslære. 2. hefte [Theory of demand. Volume 2]*, Oslo, memo DE-UO, 29 pp.
- 676 1958-03-12 *Den symmetrisk stabiliserte regresjon [The symmetrically stabilized regression]*, Oslo, memo DE-UO, 5 pp.
 "The symmetrically stabilized regression", defined in the present memorandum, is discussed in the three-variable case. A generalization to the four-variable case is done by Amundsen 1958-08-01 IDa.
IDA:1918
- 677 1958-04-25 *A complete scheme for computing all direct and cross demand elasticities in a model with many sectors*, Oslo, memo DE-UO, 23 pp.
 A note on the front page: "This is a reprint of section 11 of a more extensive memorandum of 7 February 1958". Refer to Frisch 1958-02-07 IDa. The present work was later published in print as Frisch 1959a IDb.
IDA:673, 1235 IDb:147, 849, 921
- 678 1958-06-03 *Elektroprogrammering i Norge. Forord til en rapport [Electro-programming in Norway. Preface to a report]*, Oslo, memo DE-UO, 10 pp.
 Preface to a report produced by H. J. A. Kreyberg in cooperation with Tore Johansen, titled *Sosialøkonomisk jamføring mellom alternative anvendelser av elektrisk kraft i Norge. Rapport nr. 1: Opplegg, hovedtabeller og analyse av allokeringalternativer*, dated 1958-05-14. Both the report (with the preface) and the preface separately were written as memo DE-UO, however, neither were distributed. Copies are available for lending at DE-UO.
- 679 1958-08-14 *Structure of the Norwegian input-output work on 1954 data*, Oslo, memo DE-UO, 5 pp.
- 680 1958-08-15 *Tregghetsmetoden til beregning av endringer i en matriks av observasjoner med foreskrevne marginale totaler og andre betingelser [The method of inertia for computing changes in a sample matrix with prescribed marginal totals and other specific conditions]*, Oslo, memo DE-UO, 13 pp.
 Refer to Frisch 1958-08-23 IDa, 1958-09-17 IDb and 1958-09-25 IDc.
IDA:682, 1100 IDb:684, 1101 IDc:685, 1102
- 681 1958-08-22 *Noen elementer av økonomisk vekstteori [Some elements of economic growth theory]*, Oslo, memo DE-UO, 15 pp.
- 682 1958-08-23 *Tregghetsmetoden ved observasjonsmatrikser når et vilkårlig antall av elementer eller relasjoner er foreskrevne [The method of inertia in sample matrices when an arbitrary number of elements or relations are prescribed]*, Oslo, memo DE-UO, 43 pp.
 Refer to Frisch 1958-08-15 IDa, 1958-09-17 IDb and 1958-09-25 IDc.
IDA:680, 1099 IDb:684, 1101 IDc:685, 1102
- 683 1958-09-12 *The multiplex method for linear programming*, Oslo, memo DE-UO, 63 pp.
 The memo has the same title as Frisch 1955-10-17 IDa, but gives a different presentation, reflecting what has been achieved through research since 1955, see the annotations to the 1955 memo and to Frisch 1957b IDb. An introductory note on p 1 reads: "This paper is a very condensed statement of a method whose theoretical foundation I have developed in a number of memoranda and notes from the University Institute of Economics, Oslo, during the last years."
IDA:635, 1440 IDb:142, 1450
- 684 1958-09-17 *Tregghetsmetoden anvendt på de relative avvik i en observasjonsmatriks [The*

- method of inertia applied on the relative deviations in a sample matrix*], Oslo, memo DE-UO, 32 pp.
Refer to Frisch 1958-08-15 IDa, 1958-08-23 IDb and 1958-09-25 IDc.
IDa:680, 1099 IDb:682, 1100 IDc:685, 1102
- 685 1958-09-25 *Et numerisk eksempel på anvendelse av treghetsmetoden for estimering av finansmatriksen [A numerical example of applying the method of inertia on estimating the financial matrix]*, Oslo, memo DE-UO, 16 pp.
Refer to Frisch 1958-08-15 IDa, 1958-08-23 IDb, 1958-09-17 IDc and 1958-09-25 IDd.
IDa:680, 1099 IDb:682, 1100 IDc:684, 1101 IDd:685, 1102
- 686 1958-09-30 *Solving linear equations and inverting matrices when an optimum elimination order is used*, Oslo, memo DE-UO, 20 pp.
Assisted by Sven Vigger. It is referred to Frisch 1957-02-01 IDa and the memorandum 1957-11-27 IDb to the National Planning Committee, Cairo. See also Frisch 1967-01-27 IDc.
IDa:656, 1453 IDb:666, 1230, 1458 IDc:809, 1497
- 687 1958-10-01 *A numerical example of a linear programming problem*, Oslo, memo DE-UO, 3 pp.
- 688 1958-10-14 *A method of working out a macroeconomic plan frame with particular reference to the evaluation of development projects, foreign trade and employment*, Oslo, memo DE-UO, 48 pp.
A note on the front page: "This memorandum is issued as a memorandum from the Institute of Economics at the University of Oslo, but can at the same time be classified as my memorandum No. 16 to the National Planning Committee, Cairo."
- 689 1958-11-07 *The investment plan frame. A tool for selecting the optimum investment policy that will not deteriorate the balance of payments and not tend to produce inflation*, Cairo, Memorandum No 17 to the National Planning Committee, 10 pp.
- 690 1958-11-10 *A pilot investment decision frame for Egypt*, Cairo, Memorandum No 18 to the National Planning Committee, 69 pp.
- 691 1958-11-11 *An overall feasibility test for economic development projects*, Cairo, Memorandum No 19 to the National Planning Committee, 15 pp.
- 692 1958-12-20 *Practical procrdures for overall optimum investment planning in Egypt*, Cairo, Memorandum No 21 to the National Planning Committee, 19 pp.
- 693 1959-01-27 *A powerful method of approximation in optimum investment computations of the normal type. With particular reference to tha case where the number of investment projects is large*, Cairo, Memorandum No 22 to the National Planning Committee, 68 pp.
A handwritten note (in Norwegian; translated here): An improved presentation is given in the Oslo memo Frisch 1959.06.01.
- 694 1959-01-31 *Dual formulation of the phasing problem in investment planning*, Cairo, Memorandum No 23 to the National Planning Committee, 47 pp.
- 695 1959-02-10 *A concrete investment priority table for Egypt*, Cairo, Memorandum No 24 to the National Planning Committee, 20 pp.
- 696 1959-02-27 *The preparation of a draft investment plan for Egypt*, Cairo, Memorandum No 25 to the National Planning Committee, 12 pp.
- 697 1959-03-15 *Elsås-modellen og dens utbygging for programmeringsformål [The Elsås model and its extension for programming purposes]*, Oslo, memo DE-UO, 11 pp.
- 698 1959-04-20 *Aggregat-Refi-modeller [Aggregate Refi models]*, Oslo, memo DE-UO, 71 pp.
Assisted by Eva-Karin Karlsen, Per Schreiner and Arne Dag Johansen.

- 699 1959-04-23 *Flow chart for automatic computation according to the multiplex method*, Oslo, memo DE-UO, 2 p.
Note on the front page: "Based on the memorandum of 12 September 1958 from the University Institute of Economics and the report F-375, March 1959 by Mr. Ole-Johan Dahl, Norwegian Defence Research Establishment". Refer to Frisch 1958-09-12 IDa.
IDa:683, 1461
- 700 1959-04-27 *Optimal investments under limited foreign resources. Part I*, Oslo, memo DE-UO, 5 pp.
Refer to Frisch 1959-07-15b IDa.
IDa:711, 1259
- 701 1959-05-02 *Organization of multiplex work on desk machines*, Oslo, memo DE-UO, 5 pp.
- 702 1959-05-03 *The admission preference method for finding a point in the admissible region and for modifying bounds in linear programming problems*, Oslo, memo DE-UO, 10 pp.
- 703 1959-05-14 *A summary of the simplex method*, Oslo, memo DE-UO, 19 pp.
- 704 1959-06-01 *A powerful method of approximation in optimum investment computations of the normal type. With particular reference to the case where the number of investment projects is large*, Oslo, memo DE-UO, 45 pp.
A note on the front page: "Paper to be presented at the meeting of the Econometric Society, Amsterdam, September 1959."
- 705 1959-06-07 *A macroeconomic interflow table with specification of competitive imports*, Oslo, memo DE-UO, 16 pp.
- 706 1959-06-17 *A comparison between the multiplex method and the simplex method*, Oslo, memo DE-UO, 4 pp.
A note on the front page: "The basic ideas are given in my paper "The multiplex method for linear programming", Sankhyá, The Indian Journal of Statistics, September 1957."
Refer to Frisch 1957b IDa.
IDa:142, 1450
- 707 1959-06-21 *Note on the steering problem in macroeconomic programming*, Oslo, memo DE-UO, 4 pp.
- 708 1959-06-25 *Practical rules for interview determination of one-sided and two-sided preference coefficients in macroeconomic decision problems*, Oslo, memo DE-UO, 16 pp.
- 709 1959-06-29 *Aggregat-Refi-modeller. Del II [Aggregate Refi models. Part II]*, Oslo, memo DE-UO, 9 pp.
- 710 1959-07-15a *Optimal investments under limited foreign resources. Part II*, Oslo, memo DE-UO, 190 pp.
Refer to Frisch 1959-07-15b IDa.
IDa:711, 1259
- 711 1959-07-15b *Optimal investments under limited foreign resources. Part I and part II*, Oslo, memo DE-UO, 196pp.
Part I and part II are also produced separately as Frisch 1959-04-27 IDa and Frisch 1959-07-15a IDb respectively.
IDa:700, 1252 IDb:710, 1258
- 712 1959-09-27 *V. V. Novozhilov's method of process selection and its transformation into a linear programming problem*, Oslo, memo DE-UO, 4 pp.
- 713 1959-10-18 *A reconsideration of Domar's theory of economic growth*, Oslo, memo DE-UO, 9 pp.
Published in print as Frisch 19611 IDa and 1995ba IDb (in Bjerkholt).
IDa:166 IDb:307

- 714 1959-10-30 *Føring av hovedbok for tallstørrelser [Keeping of ledger for numerical quantities]*, Oslo, memo DE-UO, 7 pp.
- 715 1959-11-17 *A generalized form of the Refi interflow table*, Oslo, memo DE-UO, 27 pp.
- 716 1959-12-11 *Utkast til organisert samarbeid om et forbedret analytisk grunnlag for norsk nasjonalbudsjettering [A draft for an organized cooperation on an improved analytical basis for a Norwegian national budgeting]*, Oslo, memo DE-UO, 11 pp.
With Hans Heli.
- 717 1959-12-18 *The smoothing of an interference table*, Oslo, memo DE-UO, 10 pp.
Reproduced in print, first as Frisch 1967d IDa; reissued as Frisch 1995bh IDb.
IDa:207, 1496 IDb:313, 1504
- 718 1960h *Summary of the paper No.205: Quadratic programming by the multiplex method in the general case where the quadratic form may be singular*, Tokyo, 5 pp.
Refer to Frisch 1960-04-09 IDa and 1961k IDb.
IDa:741, 1473 IDb:165, 1478
- 719 1960-01-06 *Interflow table for the Channel Model*, Cairo, National Planning Committee, 2 pp.
In cooperation with Dr.I.Abdel-Rahman, Dr.Nazih Deif and members of the staff.
- 720 1960-01-13 *The double bounded simplex technique*, Cairo, Memorandum No 27 to the National Planning Committee, 23 pp.
- 721 1960-01-19 *Current notes from Prof. Frisch. No.1*, Cairo, National Planning Committee, 4 pp.
A note to all units which are working on the Cairo Channel Model. List of contents: 1. The purpose of the Current notes 2. Work sheet for elaboration of carry-on-coefficients 3. Elaboration of the standard equations in terms of all channels' startings.
- 722 1960-01-24 *Current notes from Prof. Frisch. No 2*, Cairo, National Planning Committee, 10 pp.
A note to all units which are working on the Cairo Channel Model. List of contents: 1. The concept of already-committed-to projects 2. Maintenance and replacement 3. The distinction between construction facilities, construction activity and the current account operations in sectors (for instance in housing) 4. The limitational complementarity between investments.
- 723 1960-01-25 *Current notes from Prof. Frisch. No 3*, Cairo, National Planning Committee, 10 pp.
A note to all units which are working on the Cairo Channel Model. List of contents: 1. The private demand for housing 2. The demand for intratown transportation 3. A numerical example of the role of the investment carry-on coefficients 4. Special training (vocational and technical).
- 724 1960-01-26 *Current notes from Prof. Frisch. No 4*, Cairo, National Planning Committee, 7 pp.
List of contents: 1. Capacity and output in the sectors railways and intertown roads 2. The consequential and the autonomous part of an investment starting 3. The extradecisional startings.
- 725 1960-01-27 *Current notes from Prof. Frisch. No 5*, Cairo, National Planning Committee, 6 pp.
List of contents: 1. The committed-to part of investment in housing 2. The channel 256, construction facilities 3. Cif or fob prices for imported machinery 4. Payment through exports of Egyptian goods 5. Projects that are of a "continous" sort 6. Railway side tracks and other capital outfit connected with a storage facility.
- 726 1960-01-28 *Current notes from Prof. Frisch. No 6*, Cairo, National Planning Committee, 9 pp.

- List of contents: 1. Certain import goods becoming competitive in the planning period 2. Prices to be used for recording imports and exports.
- 727 1960-01-31a *Current notes from Prof. Frisch. No 7*, Cairo, National Planning Committee, 10 pp.
List of contents: 1. The solution or the equations for consequential startings 2. The subiteration 3. The subelimination 4. Reducing the number of the degrees of freedom by considering average capacities.
- 728 1960-01-31b *Current notes from Prof. Frisch. No 8*, Cairo, National Planning Committee, 14 pp.
Note: This issue of the current notes summarizes the data needed for programming the Channel model. These data are partly coefficients and partly certain absolute figures.
- 729 1960-02-04 *Current notes from Prof. Frisch. No.9*, Cairo, National Planning Committee, 18 pp.
List of contents: 1. Nature of the matrix in the capacity of decision method 2. Time shape of the capacity effect coefficients 3. Computation of the automoments 4. The singular and the non-singular case 5. The computational form to be used 6. Bounds on the investment startings.
- 730 1960-02-11 *Current notes from Prof. Frisch. No.10*, Cairo, National Planning Committee, 10 pp.
The national profit rate on an investment project.
- 731 1960-03-04a *Current notes from Prof. Frisch. No.11*, Cairo, National Planning Committee, 9 pp.
Macroeconomic policy making through the Channel Model. Points to be discussed in meeting 5 March 1960.
- 732 1960-03-04b *Current notes from Prof. Frisch. No.12*, Cairo, National Planning Committee, 17 pp.
List of contents: 1. Balance producing prices 2. The concept of the capital output ratio 3. Further considerations on the private demand for housing and for intratown transportation 4. Transformation of structural demand equations from one base year to another.
- 733 1960-03-11 *Current notes from Prof. Frisch. No.13*, Cairo, National Planning Committee, 15 pp.
List of contents: 1. A project that aims at progressively substituting domestically produced special parts for imported parts 2. The exports from the sector trade and financial services 3. Investment planning vs investment pushing 4. Should the developmenmt be in the form of a balanced or unbalanced growth? 5. Discovering and releasing new resources or making an optimal use of available resources? 6. Discipline and responsibility 7. The ultimate purpose.
- 734 1960-03-12 *Current notes from Prof. Frisch. No.14*, Cairo, National Planning Committee, 13 pp.
List of contents: 1. Time stretching the capacity curve for new projects to make it applicable to non modern capital stock 2. Computation of the committed to capacities.
- 735 1960-03-17 *Medium range projecting*, Cairo, 3 pp.
Letter to Dr. Abdel-Rahman.
- 736 1960-03-20 *Current notes from Prof. Frisch. No.15*, Cairo, National Planning committee, 12 pp.
Coordination between the Channel Model and National Budgeting.
- 737 1960-03-23 *Current notes from Prof. Frisch. No.16*, Cairo, National Planning Committee, 14 pp.
The infra effect of investments.
- 738 1960-03-25 *Current notes from Prof. Frisch. No.17*, Cairo, National Planning Committee, 10 pp.
Why national planning?

- 739 1960-03-30 *Current notes from Prof. Frisch. No.18*, Cairo, National Planning Committee, 21 pp.
A survey of tables and data to be included in memorandum No.28.
- 740 1960-04-05 *The Cairo programming equations, Current notes No.19 from Prof. Ragnar Frisch*, Oslo and Cairo, memo DE-UO, 15 pp.
- 741 1960-04-09 *Quadratic programming by the multiplex method in the general case where the quadratic form may be singular*, Oslo, memo DE-UO, 64 pp.
Refer to Frisch 1960h IDa and 1961k IDb.
IDa:718, 1471 IDb:165, 1478
- 742 1960-04-21 *Speed with safety through national planning*, Cairo, National Planning Committee, 42 pp.
The present memo made manuscript for the article in *L'Egypte Contemporaine*, Frisch 1960g IDa. (Note: Corrected edition.)
IDa:158, 1266
- 743 1960-06-12 *Current notes from Prof. Frisch. No.20*, Cairo, National Planning Committee, 28 pp.
A survey of possible uses of the Channel Model.
- 744 1960-06-14 *Current notes from Prof. Frisch. No.21*, Cairo, National Planning Committee, 10 pp.
The "skeleton model".
- 745 1960-06-19 *Current notes from Prof. Frisch. No.22*, Cairo, National Planning Committee, 16 pp.
Basic philosophy of national planning.
- 746 1960-06-24 *Current notes from Prof. Frisch. No.23*, Cairo, National Planning Committee, 1 p.
A general method of achieving equational consistency.
- 747 1960-06-27 *The Oslo Refi interflow table*, Oslo, memo DE-UO, 15 pp.
In co-operation with Hans Heli, Tore Johansen, H. J. A. Kreyberg, Per Schreiner, Jan Serck-Hanssen and Tore Thonstad.
- 748 1960-08-23 *Synopsis of a channel model for macroeconomic programming*, Oslo, memo DE-UO, 3 pp.
- 749 1960-08-27a *Mixed linear and quadratic programming by the multiplex method*, Oslo, memo DE-UO, 33 pp.
Assisted by Eva-Karin Karlsen. Refer to Frisch 1860-08-27b IDa and 1960-11-07.
IDa:750, 1475 IDb:751, 1476
- 750 1960-08-27b *Mixed linear and quadratic programming by the multiplex method. Draft of contents*, Oslo, memo DE-UO, 2 pp.
Assisted by Eva-Karin Karlsen and part 10 in cooperation with Ole-Johan Dahl. Refer to Frisch 1960-08-27a IDa.
IDa:749, 1474
- 751 1960-11-07 *Mixed linear and quadratic programming by the multiplex method*, Oslo, memo DE-UO, 21 pp.
Frisch described (in a note on the front page of Frisch 1960-08-27a IDa) the present memo as a non-technical summary of the memo 1960-08-27a. The present memo was published in print in a Festschrift to Professor Johan Åkerman, Lund, Sweden, see Frisch 1961g IDb with annotations.
IDa:749, 1474 IDb:162, 1477
- 752 1961-01-02 *Forord og avsnitt III.d [Preface and section III.d]*, in Kreyberg, Hans Jacob: *Oversikt over Keynes-modellene [A survey of the Keynes models]*, Oslo, memo DE-UO, 1-4 and 17-20.
Frisch in a passage of the preface (translated): My co-operation came mainly to be co-ordinating. I have *inter alia* divided the exposition in four separate models, where I

have stated clearly the number of the degrees of freedom in each model and have distinguished between "registered" variables and relations on the one side (which define the essential feature of the model) and "accessoric" variables and relations on the other side (which would change the model structure and possibly change the number of the degrees of freedom if they were added to the model). More essential points of co-ordination are presented on pp 2, 3 and 4.

- 753 1961-01-18a *Foredrag om økonomisk-politiske emner [Lectures on economic-political topics]*, Oslo, memo DE-UO, 75 pp.
With Gunnar Bøe, Leif Johansen and Tore Thonstad. For Frisch's lecture see Frisch 1961-01-18b IDa.
Ida:754
- 754 1961-01-18b *Pengeøkonomi og realøkonomi [Money economics and real economics]*, in Frisch, Ragnar et al: *Foredrag om økonomisk-politiske emner [Lectures on economic-political topics]*, Oslo, memo DE-UO, 1-12.
A note to Frisch's lecture (translated here): "Lecture of March 5 1948 in a series of lectures by university teachers, organized by Sentralkomiteen for øket arbeidseffektivitet. Previously printed in the book "Aktuelle økonomiske problemer" ["Current economic problems"], issued by the mentioned committee."
- 755 1961-01-24 *The logic of electronic computers*, Oslo, memo DE-UO, 4 pp.
Reprint from *Statsøkonomisk Tidsskrift* of parts of a lecture at a seminar October 1960 in Norsk Utenrikspolitisk Institutt [The Norwegian Institute of International Affairs], Oslo.
- 756 1961-02 *The Oslo-Kongsberg family Frisch*, Oslo, DE-UO memo, 7 pp.
Never distributed. A copy is available at DE-UO, in a folder labelled "The Oslo-Kongsberg family Frisch". Not for lending.
- 757 1961-02-01 *Prolegomena to a pressure-analysis of economic phenomena*, Oslo, memo DE-UO, 4 pp.
Reprint of section 2 of a paper in *Metroeconomica*, Frisch 1949b IDa, (with some minor modifications in the form of presentation). The *Metroeconomica* article is reprinted and issued as Frisch 1995ax IDb (in Bjerkholt). An excerpt of the article is issued as Frisch 1995aw IDc (in Hendry and Morgan).
Ida:104, 975 IDb:301, 993 IDc:300, 992
- 758 1961-02-16 *Menneskefaktoren i utviklingslandene [The human factor in the developing countries]*, Oslo, memo DE-UO, 5 pp.
Based on a talk at a seminar in Norsk Utenrikspolitisk Institutt [The Norwegian Institute of International Affairs], Oslo, 19 January 1961. A note on the front page: Not for publication.
- 759 1961-02-22 *Infraeffekt og kvadratisk programmering. Et generelt makro-programmeringsopplegg med spesialiseringmuligheter. [Infra effect and quadratic programming. A general macro programming arrangement with openings for specializations]*, Oslo, memo DE-UO, 11 pp.
- 760 1961-04 *Oppslagsregister og repetisjonsliste for produksjonsteorien bind 2 [Entry index and repetition list to the theory of production, second volume]*, Oslo, memo DE-UO, 7 pp
Refer to Frisch 1953-11-20 IDa.
Ida:588, 885
- 761 1961-04-28 *Arbeidsnotat om programmering i refi-modellen [Working note on programming in the refi model]*, Oslo, note DE-UO, 1 p.
- 762 1961-05-05 *Verdifaste låneformer [Indexed loan forms]*, Oslo, memo DE-UO, 17 pp.
Republished in print as Frisch 1961n IDa. also as reprint No 119 from DE-UO.
Ida:167
- 763 1961-05-13 *A survey of types of economic forecasting and programming and a brief description of the Oslo Channel Model*, Oslo, memo DE-UO, (60+12)pp=72 pp
Stated on the front cover: "To Accademia Nazionale dei Lincei - this paper is respectfully

- dedicated as a token of gratitude". As regards the content this contribution and 1961-10-20 IDa (and 1962g IDb) are fairly similar. The present one contains more about the general mathematical problem of the Oslo Channel Model.
IDa:768, 1304 IDb:172, 1309
- 764 1961-06-08 *Tenkningens slave, ikke dens herre [The slave of thinking, not its master]*, Oslo, memo DE-UO, 6 pp.
 A broadcasting talk made 8 June 1961 on the use of electronic computers in economics. Published as feature article in *Aftenposten*, Oslo, 1961-06-15 IDa.
IDa:1700
- 765 1961-06-28 *Litt om desisjonsmodeller i regional planlegging [Some reflections on decision models in regional planning]*, Oslo, memo DE-UO, 3 pp.
 Published as article in *Sosialøkonomen* 1961f IDa.
IDa:161, 1297
- 766 1961-09-23 *Five of the interventions of Ragnar Frisch at the Paris ISI Conference 1961 and at the Geneva Input-Output Conference 1961*, Oslo, memo DE-UO, 12 pp.
- 767 1961-10-05 *Maksimering av en meget generell funksjon under meget generelle bibetingelser [Maximizing a very general function subject to very general side conditions]*, Oslo, memo DE-UO, 7 pp.
- 768 1961-10-20 *Preface to the Oslo Channel Model - A survey of types of economic forecasting and programming*, Oslo, memo DE-UO, 44 pp.
 The same as the printed publication 1962g IDa. Issued also as reprint No 15 from DE-UO. An in many ways similar contribution is 1961-05-13 IDb.
IDa:172, 1309 IDb:763, 1301
- 769 1962b *Confidential report to His Excellency Abdel Latif El Boghady, Vicepresident of the United Arab Republic, from Professor Ragnar Frisch*, Oslo, DE-uo, 34 pp.
 A report based on work done by Frisch during several visits to the National Planning Committee, Cairo, as a United Nations expert, and on extensive computations carried out on the Norwegian Defence Organization electronic computer at Kjeller near Oslo under Frisch's supervision, using the Cairo data. It is referred to Frisch 1960g IDa and, without closer specifications, to several memoranda and current notes written for the National Planning Committee during Frisch's stays in Cairo.
IDa:158, 1266
- 770 1962d *Notater til økonomisk teori. 5. utgave [Notes on economic theory. Fifth edition]*, Oslo - Bergen, Universitetsforlaget, 265 pp.
 From the preface (translated): "This edition is an unchanged reprint from the fourth edition of the excursuses 2, 4 - 14 and 16 and of the paragraphs a and b of excursus 18. Moreover the appendices 9 and 10 are included. ... The numbering of the excursuses is kept as it was in the fourth edition. ..."
- 771 1962-03-08 *Tentative formulation of the multiplex method for the case of a large number of basis variables*, Oslo, memo DE-UO, 8 pp.
- 772 1962-07-20a *Draft of a multilateral trade clearing agency*, Oslo, memo DE-UO, 7 pp.
 With Joan Robinson. The memorandum contains "Speech on 18 July 1962 at the Britain-Commonwealth-EFTA Conference in London" by Joan Robinson, and "Tentative draft of a multilateral trade clearing agency. Address on 17 July 1962 at the Britain-Commonwealth-EFTA Conference in London" by Ragnar Frisch. Refer to Robinson 1962 IDa and Frisch 1962a IDb.
IDa:1933 IDb:168, 1305
- 773 1962-07-20b *Tentative draft of a multilateral trade clearing agency - . Address on 17 July 1962 at the Britain-Commonwealth-EFTA Conference in London, in Draft of a multilateral trade clearing agency*, Oslo, memo, DE-UO, 3-7.
 See Frisch 1962a IDa with annotations.
IDa:168, 1305

- 774 1962-07-29 *Parametric solution and programming of the Hicksian model*, Oslo, memo DE-UO, 40 pp.
Assisted by Ashok K. Parikh. Published in print as Frisch 1964f IDa, see the annotations.
IDa:184, 1487
- 775 1962-08-17 *Economic planning and the growth problem in developing countries*, Oslo, memo DE-UO, 15 pp.
Lecture at the United Nations International Seminar in Norway (Gol, Halingdal) 8-17 August 1962: "Cooperation between developed and less developed countries".
- 776 1962-09-20 *Inflasjonsløs vekst [Growth without inflation]*, Oslo, note DE-UO, 7 pp.
Manuscript for Frisch's lectures August 21 1962.
- 777 1962-11-28a *Dynamic utility*, Oslo, memo DE-UO, 8 pp.
An analysis done as a reaction to a lecture by Sir Roy Harrod at the University of Oslo 27 November 1962. Came first in print as Frisch 1964a IDa, see the annotations.
IDa:179, 851, 981
- 778 1962-12-07 *Prinsipiell diskusjon om makroøkonomiske virkemidler [A fundamental discussion on macro-economic policy instruments]*, Oslo, memo DE-UO, 6 pp.
A correspondence between Petter Jakob Bjerve, at the time general manager of Central Bureau of Statistics of Norway, and Ragnar Frisch. Also reproduced in Andvig 1994 IDa.
IDa:2051
- 779 1963-01-03 *An implementation system for optimal national economic planning without detailed quantity fixation from a central authority*, Oslo memo DE-UO, 40 pp.
Printed as Frisch 1963b IDa and reprinted as Frisch 1976b IDb (in Long) and Frisch 1995o IDc (in Bjerkholt). Also as reprint No 18 from DE-UO.
IDa:174, 1314 IDb:235, 1364 IDc:263, 1369
- 780 1963-02-03 *A multilateral trade clearing agency*, Oslo, memo DE-UO, 11 pp.
Published in print as Frisch 1963d IDa (see the annotations) and 1964d IDb. See also Frisch 1967b IDc.
IDa:176, 1315 IDb:182, 1327 IDc:205, 1351
- 781 1963-02-07 *Matematisk teori for multilateral clearing, Del I [Mathematical theory for multilateral clearing, Part I]*, Oslo, memo DE-UO, 19 pp.
See Alstadheim 1963-04-04 IDa and Alstadheim 1967 IDb. See also Frisch 1967b IDc. Further references in the annotations to Frisch 1963d IDd.
IDa:1951 IDb:1962 IDc:205, 1351 IDd:176, 1315
- 782 1963-10-03 *Et numerisk eksempel som viser hvorledes prinsipper fra "The Oslo Channel Model" kan brukes for å avgjøre valg mellom investeringsprosjekter [A numerical example which shows how principles from "The Oslo Channel Model" can be used to decide choices between investment projects]*, Oslo, memo DE-UO, 72 pp.
In cooperation with Aina Uhde and Håvard Alstadheim. Reproduced in print as Frisch 1969 IDa.
IDa:209, 1353
- 783 1963-10-04 *Nonplex-metoden i dens rene basisform [The nonplex method in its pure basic form]*, Oslo, memo DE-UO, 49 pp.
With Kåre N. Edvardsen. Assisted by Håvard Alstadheim. In the *pure basic form* of the nonplex method the primordial system of equational conditions is solved such that all the variables are expressed as single-valued functions of free variables (in Frisch's terminology "basic variables"). This form is discussed in considerable detail in the present memo. Flow charts for computations are also presented. The presentation is confined to the case where, in the basic form of the system, the dependant variables as well as the preference function are expressed as *quadratic functions* of the free variables and where no assumptions are made about the non-singularity or the positive or negative definiteness of the quadratic forms involved. This means that one can no longer say whether a local

- optimum is also a global one. See Frisch 1963-11-14 IDa for a discussion of the nonplex method in its *subconditional form*.
 IDa:785, 1486
- 784 1963-10-17 Foreword, in Fraser 1963-10-17 *New ways of planning for growth in Britain*, Oslo, memo DE-UO, 1 p.
 From the foreword: "We are extremely glad that T. C. Fraser, Industrial Director of the National Economic Development Office, London, has consented to bringing out as a memorandum from the Oslo University Institute of Economics his talk in Oslo 17 September 1963 on the British planning activity organized in National Economic Development Council ... It is highly significant and important that through the work of N.E.D.C. "planning" has now become a respectable concept that may be talked about even in conservative circles in Great Britain. ... This it not saying that I believe the N.E.D.O. *scientific method* of approaching planning is the best. I have a strong feeling that it is not an effective and rational procedure from a more advanced viewpoint. ...". See Fraser 1963-10-17 IDa.
 IDa:1953
- 785 1963-11-14 *The nonplex method in its subconditional form*, Oslo, memo DE-UO, 18 pp.
 Assisted by Håvard Alstadheim. The *pure basic form* of the nonplex method - as distinct from its *subconditional form* - is a form where all equational conditions are solved such that all the variables are expressed as single-valued functions of a number of "free variables" (in Frisch's terminology "basic variables"). This form is discussed in considerable detail in Frisch 1963-10-04 IDa (in Norwegian). In the *subconditional form* of the nonplex method, presented and discussed in the present memo, the primordial equation system is not reduced to a system of basic equations. The reasons for using the subconditional form are explained in the introductory section of the 4 October 1963 memorandum. The present version is published in print as Frisch 1963e IDb and reissued as reprint No 16 from DE-UO.
 IDa:783, 1485 IDb:177, 1484
- 786 1963-11-24 *An iterative solution of a transportation problem in linear programming*, Oslo, memo DE-UO, 6 pp.
 An introductory remark: "As manuscript for this memorandum has been used a photostate copy of Professor Frisch's longhand letter to Dr. Jaroslav Habr of 24 November 1963". The problem in focus is an ordinary simple balanced transportation problem with m suppliers and n customers.
- 787 1963-12-07 *Model 1. Investment requirements under a given time shape of current final demand*, Cairo, Memo. 102: The Institute of National Planning, 22 pp.
 Note: "The numbering of my new series of memoranda starts on 101 to avoid confusion with the several memoranda I have written to the former "National Planning Committee"".
- 788 1963-12-13a *Explanation to tabs. 1 - 14 in Appendix to Memo. 102*, Cairo, The Institute of National Planning, 14 pp.
- 789 1963-12-13b *HOW TO PLAN ? In national planning everything has its price, and economic policy making means a compromise among several desiderata*, Cairo, memo. 102: The Institute of National Planning, 114 pp.
 An introductory remark: "The purpose of this Model is to use Egyptian data to illustrate how the basic principle described in the title of this memorandum will work in the Egyptian situation. ... The present Model is designed to shed light on problems connected with the elaboration of the five year plan whose execution is to start in the year 1965/66, i.e. in the year beginning 1 July 1965. ...".
- 790 1964-02-10 *Inseeking by the nonplex method in nonlinear programming*, Cairo, Memo. 104, The Institute of National Planning, 15 pp.
- 791 1964-02-28 *National economic planning and the role of the economist working with quantitative methods*, University of Pittsburgh, Graduate School of Public and International Affairs (GSPIA), 7 pp.
 Remarks by Professor Ragnar Frisch on 28 February 1964 at Dean Stone's Dessert Seminar "Stone's Throw", University of Pittsburgh. Applied quantitative techniques in sectoral planning. Frisch's Pittsburgh papers 1964.

- 792 1964-03 *A condensed description of the nonplex method for programming with strongly non-linear bounds and/or a strongly non-linear preference function*, Pittsburgh, Graduate School of Public and International Affairs (GSPIA), 25 pp.
- 793 1964-03-20 *Macroeconomic planning and the basic policy chart*, University of Pittsburgh, The Faculty-Student Seminar - GSPIA, 13 pp.
The lecture was based on a public lecture delivered on 8 February 1964 in the Egyptian Society for Political economy, Legislation and Statistics, see Frisch 1964-02-08 IDa. GSPIA is an abbreviation for Graduate School of Public and International Affairs.
IDa:
- 794 1964-03-25 *The nonplex method for programming with non-convex bounds and/or a non-concave preference function*, Presented at the Conference on National Economic Planning, University of Pittsburgh, March 25-26, 1964, DE-UO, 39 pp.
Revised edition, April 1964. Frisch's Pittsburgh papers (1964). Frisch points in the introduction at the difficulties caused by the infra-effect of investment: "... I believe that at the present stage, it is impossible to indicate a method that will *certainly* and in all cases lead to an optimum optimum in the general case. But pilot computations have shown that the non-plex method has a fair chance ... where nature has not been too shrewd" A few copies are available at UB Oslo (DE-UO); not for lending.
- 795 1964-03-29a *An interviewing technique for determining linear (and constant) preference coefficients*, Pennsylvania USA, memo from GSPIA, UN of Pittsburgh, 14 pp.
GSPIA stands for Graduate School of Public and International Affairs.
- 796 1964-03-29b *Optimal implementation*, Pennsylvania USA, memo from GSPIA, UN of Pittsburgh, 34 pp.
GSPIA stands for Graduate School of Public and International Affairs. The article was later issued in print as Frisch 1966h IDa and 1966g IDb.
IDa:199, 1346 IDb:198, 1345
- 797 1964-04-08 *An interviewing technique for determining linear (and constant) preference coefficients*, Pittsburgh, Graduate School of Public and International Affairs (GSPIA), 14 pp.
Applied quantitative techniques in sectoral planning. Frisch's Pittsburgh papers 1964.
- 798 1964-04-09 *The interpretation of growth rate, savings rate and output-to-capital ratio in a decision model*, Pittsburgh, Graduate School of Public and International Affairs (GSPIA), 24 pp.
Applied quantitative techniques in sectoral planning. Frisch's Pittsburgh papers (1964).
- 799 1964-05-13 *The 13. May version of the chief move in the inseeking part of the nonplex method for programming with non-convex bounds and/or a non-concave preference function*, Oslo, memo DE-UO, 5 pp.
- 800 1964-10-12 *Notat om frihetsgrader i makroøkonomiske planleggingsmodeller [A note on degrees of freedom in macroeconomic planning models]*, Oslo, memo DE-UO, 7 pp.
- 801 1964-11-01 *En ny form for antiinflatøriske inntektspolitikk [A new form of anti-inflationary income policy]*, Oslo, memo DE-UO, 9 pp.
- 802 1964-11-13 *The nonplex method for strongly nonlinear programming*, Oslo, memo DE-UO, 2522p.
Synopsis of a presentation to be given at the IBM Symposium on econometrics, Blaricum, Holland, 17-20 November 1964.
- 803 1965f *The relationship between primary investment and reinvestment*, *Economics Translation Series No 8* (ed: Chipman, John S.), Minnesota, DE - University of Minnesota (mimeographed), 43 pp.
English translation of 1927b IDa. Translated by Einar Hope.
IDa:13

- 804 1965-04-23 *The nonplex method for non convex programming*, Oslo, memo DE-UO, 11 pp.
Synopsis of a presentation to be given at the ESTÖ (Institut für europäische Studien) International Conference, Graz, Austria, 3-9 May 1965).
- 805 1965-05-08 *How mathematical programming may be used to great advantage in the federal part of Yugoslav economic planning*, Oslo, memo DE-UO, 6 pp.
An introductory note: "This memorandum reproduces (with some minor verbal changes) a letter I wrote in the night between 8 and 9 May in Graz, Austria, after an ESTØ conference of Western and Eastern economists". The mentioned letter was written to Professor Dusan Sabolovic.
- 806 1965-09-11 *From growth models to realistic decision models*, Rome, the First World Congress of the Econometric Society, 13.
Invited address given on 11 September 1965 at the first World Congress of the Econometric Society, held in Rome. Also presented as a token of friendship to Sir Roy Harrod.
- 807 1965-09-27 *On the solution of difference equations with constant coefficients and an arbitrary additional function of time*, Oslo, memo DE-UO, 22 pp.
An introductory note: "The present memorandum reproduces parts of the paper "Parametric Solution and Programming of the Hicksian Model" (printed in *Essays on Econometrics and Planning*, presented to Professor P. C. Mahalanobis on the occasion of his 70th birthday). A preliminary version was given in Memorandum of 27 July, 1962." Refer to Frisch 1964f IDa and 1962-07-29 IDb.
IDa:184, 1487 IDb:774, 1483
- 808 1965-12-14 *General outlook on a method of advanced and democratic macroeconomic planning*, Oslo, memo DE-UO, 25 pp.
The first two of eight lectures given at the Centro Internazionale Matematico (CIME) Summer Session L'Aquila, Italy 30 August - 7 September 1965. Note: "To appear (in English) in the compte rendu of the Conference under the editorship of Professor Bruno de Finetti and (in Italian) in the "Rassegna Economica, Banco di Napoli" under the editorship of Professor Giuseppe Palomba."
- 809 1967-01-27 Arbeidsnotat om SERB metoden (SE = Selected elimination order, RB = Repeated back solution) for høy-nøyaktig løsning av lineære ligninger med minimale regneomkostninger [A working note on the SERB method (SE = Selected elimination order, RB = Repeated back solution) for high accuracy solving of linear equations with minimum computation costs], DE-UO, 8 pp,
It is referred to Frisch 1958-09-30 IDa. See also Frisch 1957-02-01 IDb and 1957-11-07 IDc. The present note was never distributed outside DE-UO. A few copies are available at UB Oslo (DE-UO); not for lending.
IDa:686, 1462 IDb:656, 1453 IDc:663, 1457
- 810 1969-02-03 Economic steering by incentives instead of by commands, Oslo, MS DE-UO, 15 pp.
MS for *Acta Oeconomica* Budapest. Lecture in Budapest on 5 April 1968 in a meeting organized by the Hungarian Economic Association.

II.3

SCIENTIFIC WORKS ON ECONOMICS, MATHEMATICS AND STATISTICS CLASSIFIED BY SUBJECTS

II.3.1 Utility theory, consumer adaptation, and index theory

- 811 1926h Sur un problème d'économie pure, *Norsk Matematisk Forenings Skrifter*, Oslo, Series 1 No 16, 1-40.
In this article, which is Frisch's first work on economics and his first work in his own quantification programme, he formulates axioms, of "the first" and of "the second kind", of the consumer's choice, which imply the existence of an ordinal resp. a cardinal utility function. Then he uses the cardinal approach in an empirical study for determining the marginal utility of money for several consumer groups. Reissued as Frisch 1954-05-03 IDa and 1957d IDb. An English translation is published (in Chipman et al) as Frisch 1971d IDc and republished (in Bjerkholt) as Frisch 1995aj IDd. See also *New methods...* 1932h IDe. A line from these early works of Frisch's extends forth to his article "A complete scheme ..", 1959a IDf, see the annotations.
IDA:599, 843, 1090 IDb:144, 845, 1096 IDc:218, 852, 1115 IDd:287, 864, 1129 IDE:37, 815, 1020 IDf:147, 849, 921
- 812 1930c Necessary and sufficient conditions regarding the form of an index number which shall meet certain of Fisher's tests, *Journal of the American Statistical Association*, Vol 25, 397-406.
Frisch demonstrates that if prices and quantities are chosen arbitrarily, there exists no relative index number, comparing situations at two points of time, that satisfies simultaneously several of the tests presented by Fisher 1922 IDa. A comment to Frisch's article is given by Subramanian 1934 IDb and a reply by Frisch 1934d IDc. The article is reissued as Frisch 1995a IDd (in Bjerkholt). Some remarks about Fisher's tests and references to later literature on the subject are given by Chipman 1998 IDe pp 72-73.
IDA:1741 IDb:1776 IDc:56, 816 IDd:277, 863 IDE:2091
- 813 1931a Der Einfluss von Veränderungen des Preisniveaus auf den Grenznutzen des Geldes, *Zeitschrift für Nationalökonomie*, Vol 2, 625-631.
- 814 1932f Méthodes nouvelles pour mesurer l'utilité marginale, *Revue d'Économie Politique*, Vol 46, 1-28.
With Jacques Moret. The article consists of two parts. Part II (14-28) is Frisch's presentation at the Econometric Society meeting, Lausanne 1931, while part I (1-14) is Jacques Moret's introduction to Frisch's work. See also Frisch 1932g IDa, (*New methods...*).
IDA:37, 815, 1020
- 815 1932h *New methods of measuring marginal utility*, Tübingen, Verlag von J. C. B. Mohr (Paul Siebeck), 142 pp.
Dedicated: "To Irvin Fisher - the pioneer of utility measurement". Reissued as 1978 IDa. Italian translation 1937g IDb. Discussed *inter alia* in Bilimovic 1933 IDc, Burk 1936 IDd and Bergson 1966 IDE (pp 93-122). Rewied by Schultz 1933 IDf and Bowley 1932 IDg. Considerable criticism has been levelled against the idea of measurable utility and assumptions of want-independence. A thorough and critical discussion, based on a purely ordinalistic point of view, is found in Samuelson, Paul Anthony 1947: *Foundations of*

economic analysis, Harvard University Press, Cambridge. The matter is also mentioned by Arrow 1960b IDh (p 177), which caused Samuelson to give a new thorough discussion of it in his obituary article 1974 IDi. Critical discussions directed specifically towards Frisch's *New methods...* are given by Allen 1933 IDj, Fagan 1938 IDk, and Vinci 1933 IDl. See also Chipman 1998 IDm pp 60-67 for an elucidation of basic points of the measurable utility controversy.

IDA:242, 856, 1118 IDb:71, 822, 1031 IDc:1767 IDd:1786 IDE:1958 IDf:1768 IDg:1760 IDh:1923 IDi:1984 IDj:1766 IDk:1797 IDl:1770 IDm:2091

- 816 1934d Reply to Mr. Subramanian's note, *Journal of the American Statistical Association*, Vol 29, 317-317.
See Subramanian 1934 IDa.
IDA:1776
- 817 1935a *Byttemarkeds og valgbehandlings teori - Hefte I - Referat av professor Ragnar Frisch's forelesninger høstsem. 1931 og vårsem. 1932 - Annen utgave [Barter market and choice theory - Volume I - Notes of Professor Ragnar Frisch's lectures in the autumn term 1931 and the spring term 1932 - Second edition]*, Oslo, mimeo DE-UO, III+103 pp.
Second issue (1935) in which some corrections and additions are carried out.
- 818 1935-03-15 *Ekskurs om den progressive beskatning [Excursus on progressive taxation]*, Oslo, memo DE-UO, 11 pp.
Note of Professor Frisch's lecture 15 March 1935.
- 819 1936a Annual survey of general economic theory: The problem of index numbers, *Econometrica*, Vol 4, 1-38.
Errata on p 192. This survey paper gives a thorough summing-up, corrections and systematic amplifications of contemporary ideas on the subject. A central point is an analysis of inequalities bounding the cost-of-living index by the Laspeyres and Pasche price indices. Frisch based on second-hand access to a work by Konüs (later in English, 1939 IDa) and on Haberler 1927 IDb and 1929 IDc and gives corrective comments on a number of other contributions. An exposition by Schultz 1939 was astonishing in making no mention of Frisch or Haberler, while praising less trustworthy works. "From then on it seems that ... the Haberler-Frisch propositions ... were buried alive ..." (Chipman 1998 IDd pp 69-70). Rediscoveries did not come until the 1970s and early 1980s (Pollak 1971 IDE, Afriat 1972 IDf, Samuelson and Swamy 1974 IDg, Samuelson 1974 IDh, Diewert 1981 IDi and 1990 IDj), "although Frisch and Haberler were still not given their full due" (Chipman *loc cit*). Comments: Bowley 1938 IDk, Mendershausen 1938 IDl, Rao 1947 IDm and 1949 IDn. See also Frisch 1938a IDo. (Continue as annotations to Frisch 1938a).
IDA:1802 IDb:1743 IDc:1745 IDd:2091 IDE:1975 IDf:1976 IDg:1985 IDh:1984 IDi:2004 IDj:2032 IDk:1796 IDl:1799 IDm:1823 IDn:1852 IDo:74, 824
- 820 1937a General choice-field theory, in *Report of the Third Annual Research Conference on Economics and Statistics, held by Cowles Commission for Research in Economics 28 June - 23 July 1937*, Colorado Springs, Colorado, 64-69.
The paper made manuscript for three lectures, given 14, 21 and 22 July 1937. A fourth lecture on choice-field theory, "Price-of-living comparisons between different countries", was given 23 July 1937 and is shortly referred to on p 95 of the conference report. The same matter was treated in a paper presented at the international congress of mathematicians, Oslo 1936, Frisch 1937h IDa.
IDA:72, 823
- 821 1937e *Methods of measuring the relative cost of living*, Washington D. C., mimeographed report, 21 pp.
A note on the front page: "Professor Frisch ... met with statisticians and economists representing a number of Government agencies in Washington D. C. on July 26 and 27 1937 to discuss methods of measuring costs of living. This report is a summary dictated by Professor Frisch. A few copies of the report are available at DE-UO. Not for lending.
- 822 1937g Nuovi metodi di misura del l'utilità marginale, in Guiseppe Bottai e Celestino Arena (eds): *Economia pura della Nuova Collana di Economisti*, Torino, Unione Tipografico-Editrice Torinese, 385-512.

- Translation of 1932h IDa.
IDA:37, 815, 1020
- 823 1937h Price index comparisons between structurally different markets, *Comptes rendus du Congrès International des Mathématiciens Oslo 1936*, Oslo, A. W. Brøggers Boktrykkeri A/S, Vol 2, 220-222.
See the annotations to Frisch 1937a IDa.
IDA:68, 820
- 824 1938a The double-expenditure method, *Econometrica*, Vol 6, 85-90.
In 1936a IDa Frisch developed - following a suggestion by A. L. Bowley - *the double expenditure method* for constructing index numbers, aiming at giving an approximation to the exact indifference-defined price index. An objection was raised by Wald 1939 IDb and in a way rejected by Frisch in a footnote (as editor) to Wald's article. A short discussion of the method is given by Chipman 1998 IDc, pp 70-72. Reproductions of 1936a: Frisch 1952-10-03 IDd (the first twelve pages) and 1995a IDe (in Bjerkholt). A Portuguese translation of 1936a: Frisch 1950e IDf. In the present note some numerical examples are presented to illustrate the closeness of the approximation. Reproduction: Frisch 1995h IDg (in Bjerkholt).
IDA:63, 819 IDb:1803 IDc:2091 IDd:564, 837 IDe:249, 858 IDf:109, 832 IDg:256, 860
- 825 1943b En byggekostnadsindeks grunnlagt på de faktiske byggeforhold til enhver tid [A cost-of-building index based on the current building conditions], *Statsøkonomisk Tidsskrift*, Vol 57, 1-220.
Assisted by Helge Seip, Sven Vigger and Magne Lund. Also issued as Publikasjon nr 16 from DE-UO.
- 826 1947j Ekskurs 11. Litt skatteoverveltningsteori [Excursus 11. A short note on tax shifting theory], in Frisch, Ragnar: *Notater til økonomisk teori. 4. utgave, første hefte [Notes on economic theory. Fourth edition, first volume]*, Oslo, mimeo DE-UO, 133-150.
The simplest cases are treated: the pure free competition market - i.e. when a supply curve faces a demand curve - and the pure monopoly market - i.e. when a monopolist faces a demand curve.
- 827 1947q Ekskurs 18. Generell etterspørselsteori [Excursus 18. General demand theory], in Frisch, Ragnar: *Notater til økonomisk teori. 4. utgave, annet hefte [Notes on economic theory. Fourth edition, second volume]*, Oslo, mimeo DE-UO, 263-349,
- 828 1947u Ekskurs 4. Etterspørsel og etterspørselskurver [Excursus 4. Demand and demand curves], in Frisch, Ragnar: *Notater til økonomisk teori, 4. utgave, første hefte [Notes on economic theory, fourth edition, first volume]*, Oslo, mimeo DE-UO, 10-41.
- 829 1947v Ekskurs 5. Tilbud og tilbudskurver [Excursus 5. Supply and supply curves], in Frisch, Ragnar: *Notater til økonomisk teori. 4. utgave, første hefte [Notes on economic theory, fourth edition, first volume]*, Oslo, mimeo DE-UO, 42-62.
- 830 1947ae *Noen trekk av konjunkturlæren (Med et tillegg om levestandard og prisindeks) [Some elements of the business cycle theory (With a supplement on standard of living and price index)]*, Oslo, H. Aschehoug & co (W. Nygaard), 107 pp.
The bulk of the book (all but the supplement) is a slightly revised reprint of 1932e IDa.
The first part gives a purely descriptive exposition of trade cycles. Later chapters deal with several factors which might contribute towards explaining trade cycles. Chapter 7 (pp 47-57) surveys briefly explanations put forward by older scholars such as Malthus, Ricardo, John Stuart Mill, Jean Baptiste Say, Karl Marx, Tugan-Baranovskij and others, and also theories by newer theoreticians like Knut Wicksell and John M. Keynes. The book is reviewed by *Farmand*. Edit. 1947-08-23 IDb.
IDA:34, 965 IDb:1831
- 831 1948-05-10 *Kjøpepresset og etterspørgernes tilpassing når det finnes kvantumsbegrensete goder [The buying pressure and the adaptation of the demanders when there*

- are goods in short supply*], Oslo, memo DE-UO, 6 pp.
Refer to Frisch 1949-03-07 IDa.
IDA:463
- 832 1950e O problema dos números-índice, *Revista Brasileira de Estatística*, Vol 11, 187-214.
Originally issued in English: 1936a IDa, see the annotations.
IDA:63, 819
- 833 1950-09-16a *En analyse av forbruksøkonomien (etterspørselsstrukturen) i Norge [An analysis of the economics of consumption (the demand structure) in Norway]*, Oslo, memo DE-UO, 12 pp.
- 834 1950-09-18a *Nomenklaturen for analysen av forbruksøkonomien i Norge [The nomenclature for the analysis of the economics of consumption in Norway]*, Oslo, memo DE-UO, 6 pp.
- 835 1951-01-05 *Forbrukertype og aggregeringsproblemer [Consumer type and aggregation problems]*, Oslo, memo DE-UO, 6 pp.
Assisted by Alette Rømning and Thor Johnsen. A note on the front page (translated): "(Report from a conference 1951-01-03 in the working group for the consumer economy of Norway. The members present: Frisch, Johnsen and Miss Rømning.)"
- 836 1952d A note on Pierre Gorra's contribution on index numbers, *Econometrica*, Vol 20, 687-687.
- 837 1952-10-03 *Annual survey of general economic theory: The problem of index numbers*, Oslo, memo DE-UO, 12 pp.
The publication is identical with the first twelve pages of Frisch 1936a IDa, see the annotations.
IDA:63, 819
- 838 1953-06-25 *Some basic principles of price of living measurements*, Oslo, memo DE-UO, 19 pp.
The introductory sentences: "The following is an attempt to discuss some basic principles of cost of living measurements in a form which is stripped of mathematical technicalities. Emphasis is placed on the *meaning* of the magnitudes that enter into the computations and on a discussion of *why* we perform certain computational operations on these magnitudes." The lines of thought of the paper were presented originally to economics students at Oslo. In 1947 they were given in an address to students and faculty members at Harvard and Princeton. Issued in print as Frisch 1954b IDa.
IDA:126, 842
- 839 1953-11-27 *Levekostnad og levestandard [Cost of living and standard of living]*, Oslo, memo DE-UO, 21 pp.
Three radio speeches given in the autumn 1953.
- 840 1953-12-04 *Leveprisberegning når det foreligger husholdningsregnskapsdata i hvert tidspunkt [Cost of living calculation when data from housekeeping accounts are available at every point of time]*, Oslo, memo DE-UO, 3 pp.
- 841 1954a Linear expenditure functions. An expository article, *Econometrica*, Vol 22, 505-510.
Also as memo from DE-UO, Frisch 1954-08-05 IDa. A reprint of the article is published (in Bjerkholt) as Frisch 1995r IDb.
IDA:605, 844 IDb:266, 862
- 842 1954b *Some basic principles of price of living measurements*. A survey article, *Econometrica*, Vol 22, 407-421.
The introductory sentences read: "The following is an attempt to discuss some basic principle of cost of living measurements in a form which is stripped of mathematical technicalities. Emphasis is placed on the *meaning* of the magnitudes that enter into the computations and on a discussion of *why* we perform certain computational operations on these magnitudes." The lines of thought of the present paper were presented originally to economics students at Oslo. In 1947 they were given in an address to students and faculty

- members at Harvard and Princeton. The paper was originally published as Frisch 1953-06-25 IDa.
IDA:581, 838
- 843 1954-05-03 *Sur un problème d'économie pure*, Oslo, memo DE-UO, 35 pp.
 Note: Extrait de Norsk Matematisk Forenings Skrifter . Serie 1. Nr 16. See Frisch 1926h IDa, with annotations.
IDA:12, 811, 1008
- 844 1954-08-05 *Linear expenditure functions. An expository paper*, Oslo, memo DE-UO, 8 pp.
 Printed as Frisch 1954a IDa.
IDA:125, 841
- 845 1957d *Sur un problème d'économie pure, Metroeconomica*, Vol 9, 79-111.
 A reissue of 1926h IDa, see the annotations. An English translation: 1971d IDb.
IDA:12, 811, 1008 IDb:218, 852, 1115
- 846 1957-11-14 *Etterspørselslære. 1. hefte [Theory of demand. Volume 1]*, Oslo, memo DE-UO, 42 pp.
- 847 1958-03-01 *Etterspørselslære. 2. hefte [Theory of demand. Volume 2]*, Oslo, memo DE-UO, 29 pp.
- 848 1958-04-25 *A complete scheme for computing all direct and cross demand elasticities in a model with many sectors*, Oslo, memo DE-UO, 23 pp.
 A note on the front page: "This is a reprint of section 11 of a more extensive memorandum of 7 February 1958". Refer to Frisch 1958-02-07 IDa. The present work was later published in print as Frisch 1959a IDb.
IDA:673, 1235 IDb:147, 849, 921
- 849 1959a *A complete scheme for computing all direct and cross demand elasticities in a model with many sectors, Econometrica*, Vol 27, 177-196.
 Frisch develops methods for estimating all elasticities in a complete system of demand functions. The approach is based on the assumption of want-independence, thus there is a clear line from his earlier works on utility theory and measurement, 1926h IDa (*Sur un problème ..*) and 1932h IDb (*New methods ...*), to the present one. Frisch's "complete scheme" has been widely applied and has obtained great practical importance. In Norway it was in the first place used by Professor Leif Johansen in his doctoral thesis (the MSG model), which in turn provided the basis for much of the work of planning carried out under the auspices of the Ministry of Finance. Frisch's system or systems inspired by his work have been applied in several other countries as well. A reprint is published (in Bjerkholt) as Frisch 1995f IDc. Chipman 1998 IDd gives an explanation of the "complete scheme" on pp 76-78. Hylland 1982-01-14 IDe presents Frisch's results "in a hopefully more accessible form".
IDA:12, 811, 1008 IDb:37, 815, 1020 IDc:254, 859, 928 IDd:2091 IDe:2006
- 850 1962-11-28a *Dynamic utility*, Oslo, memo DE-UO, 8 pp.
 An analysis done as a reaction to a lecture by Sir Roy Harrod at the University of Oslo 27 November 1962. Came first in print as Frisch 1964a IDa, see the annotations.
IDA:179, 851, 981
- 851 1964a *Dynamic utility, Econometrica*, Vol 32, 418-424.
 An analysis written in reaction to a lecture by Sir Roy Harrod at the University of Oslo 27 November 1962. Originally issued as memo from DE-UO, Frisch 1962-11-28a IDa. A reprint published (in Bjerkholt) as Frisch 1995j IDb. Also issued as reprint No 21 from DE-UO.
IDA:777, 850, 980 IDb:258, 861, 988
- 852 1971d *On a problem in pure economics*, in Chipman, John S., Leonid Hurwicz, Marcel K. Richter and Hugo F. Sonnenschein (eds): *Preferences, utility, and demand - A Minnesota symposium*, New York, Chicago, San Francisco, Atlanta, Harcourt Brace Jovanovich, Inc., 386-423.
 The article is translated by John S. Chipman from the original French issue Frisch 1926h IDa, see the annotations. Reprinted as Frisch 1995aj IDb (in Bjerkholt).

IDA:12, 811, 1008 IDb:287, 864, 1129

- 853 1974a Az általános közgazdasági elmélet időszerű kérdésénekáttekintése. Az indexszámok problémája [Annual survey of general economic theory: The problem of index numbers], in Frisch, Ragnar: *Kvantitatív és dinamikus közgazdaságtan*, Budapest, Közgazdasági és Jogi Könyvkiadó, 137-180.
Translation by Csath, Magdolna of Frisch 1936a IDa, see the annotations. See Frisch 1974f IDb.
IDA:63, 819 IDb:227
- 854 1974c Az elméleti közgazdaságtan egyik problémájáról [Sur un problème d'économie pure], Frisch, Ragnar: *Kvantitatív és dinamikus közgazdaságtan*, Budapest, Közgazdasági és Jogi Könyvkiadó, 35-72.
Translation by Szegedy, Miklós of Frisch 1926h IDa, see the annotations. See Frisch 1974f IDb.
IDA:12, 811, 1008 IDb:227
- 855 1977 Indeksproblemet [The index problem], in Gørtz, Erik and Drud Hansen, Jørgen (eds): *Indeks teori*, Odense, Odense Universitetsforlag, 21-36.
A reprint of section j of Excursus 18 (Frisch 1947q IDa).
IDA:385, 827
- 856 1978 *New methods of measuring marginal utility*, Philadelphia, Penn., Porcupine Press, 142 pp.
A facsimile edition of 1932h IDa.
IDA:37, 815, 1020
- 857 1994b More pitfalls in demand and supply curve analysis, in Darnell, Adrian C. (ed): *The history of econometrics - Volume II*, Aldershot England (Brookfield Vermont USA), Edward Elgar Publishing Limited (E. E. Publishing Company), 54-60.
A reprint of Frisch 1934c IDa, see the annotations. See also the annotations to Frisch 1933g IDb.
IDA:55, 1025 IDb:49, 1024
- 858 1995a Annual survey of general economic theory: The problem of index numbers, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume I*, Aldershot UK, Brookfields US, Edward Elgar, 51-88.
A reprint of Frisch 1936a IDa, see the annotations.
IDA:63, 819
- 859 1995f A complete scheme for computing all direct and cross demand elasticities in a model with many sectors, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume I*, Aldershot UK, Brookfield US, Edward Elgar, 95-114.
A reprint of Frisch 1959a IDa.
IDA:147, 849, 921
- 860 1995h The double-expenditure method, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume I*, Aldershot UK, Brookfield US, Edward Elgar, 89-90.
A reprint of Frisch 1938a IDa. See the annotations to 1936a IDb.
IDA:74, 824 IDb:63, 819
- 861 1995j Dynamic utility, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*. Aldershot UK, Brookfield US, Edward Elgar, 471-477.
A reprint of Frisch 1964a IDa, see the annotation.
IDA:179, 851, 981
- 862 1995r Linear expenditure functions. An expository article, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*, Aldershot UK, Brookfield US, Edward Elgar, 457-462.
A reprint of Frisch 1954a IDa.

IDa:125, 841

- 863 1995å Necessary and sufficient conditions regarding the form of an index number which shall meet certain of Fisher's tests, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume I*, Aldershot UK, Brookfield US, Edward Elgar, 41-50.
A reprint of Frisch 1930c IDa.
IDa:23, 812
- 864 1995aj On a problem in pure economics, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch - Volume I*, Aldershot UK, Brookfield US, Edward Elgar, 3-40.
A reprint of Frisch 1971d IDa (in Chipman et al), which is an English translation by John S. Chipman from the original French issue Frisch 1926h IDb, see the annotations.
IDa:218, 852, 1115 IDb:12, 811, 1008

II.3.2 Theory of production

- 865 1926i Under hvilke betingelser gjelder den setning, at når alle produksjonsfaktorer får en godtgjørelse efter sin grenseproduktivitet, så vil den samlede godtgjørelse svare til den samlede produktverdi? [Under which conditions is the theorem valid, that when every production factor gets a remuneration in accordance with its marginal product, then the total remuneration will correspond to the total product value?], Oslo, DE-UO, 38 pp.
Frisch's trial lecture, prescribed topic, delivered October 7 1926. Not printed. A handwritten manuscript is available at DE-UO in folder labelled "Prøveforelesning over oppgitt emne (7.10.1926) Produksjonsteori". The defence was held on October 13 1926. See Frisch 1926g IDa.
IDA:11, 1007
- 866 1927e *Tekniske og økonomiske produktivitetslover [Technical and economic productivity laws]*, Notes of Dr. Ragnar Frisch's lectures in the autumn term 1926, Oslo, memo DE-UO, 26 pp.
The lectures were given in the autumn term of 1926. Stenciled and issued with Dr. Frisch's permission by the Committee of the Students of Economics (Sosialøkonomiske Studerendes Utvalg). See the annotations to 1937d IDa.
IDA:353, 874
- 867 1929f Økonomisk teori [Economic theory], *Statsøkonomisk Tidsskrift*, Vol 43, 229-272.
A thorough criticism of a German textbook, Engländer, O. 1929: *Theorie der Volkswirtschaft, Erster Teil, Preisbildung und Preisaufbau*, Vienna, Verlag von Julius Springer. It is an attack on a certain way of explaining and discussing economic theory in textbooks, a way that, though used by the old Austrians, did not in Frisch's opinion satisfy the standards that should be set for scientific thinking and reasoning. An account of Frisch's critique is given in Andvig 1986 IDa pp 26-28. See also Frisch 1932d IDb with annotations.
IDA:2013 IDb:33, 870, 896
- 868 1930b *Marginal and limitational productivity*, New Haven, mimeographed notes of lectures at Yale University, 104 pp.
A few copies are available at UB Oslo (DE-UO); not for lending.
- 869 1931h *Tekniske og økonomiske produktivitetslover - Omarbeidede og forkortede referater utarbeidet på grunnlag av professor R. Frisch's forelesninger og notater [Technical and economic productivity laws - Revised and shortened accounts worked out from Professor R. Frisch's lectures and notes]*, Oslo, mimeo DE-UO, 76 pp.
Accounts by Unni Munkebye and Peter B. Helgeby. Frisch (in the preface of 1941b IDa): "Only the most elementary could be included, and neither had I opportunity to go carefully through the issue" (translated). The dating is uncertain; however, statements in the preface to 1941b indicate that the present issue should be dated 1931.
IDA:359, 875
- 870 1932d Einige Punkte einer Preistheorie mit Boden und Arbeit als Produktionsfaktoren, *Zeitschrift für Nationalökonomie*, Vol 3, Heft 1, 62-104.
Frisch was incited during his study of Oscar Engländer's book *Theorie der Volkswirtschaft ...* to write the present article, see Frisch 1929f IDa. He still considered his criticism of Engländer's book correct, and announced that he planned to write a critical study for *die Zeitschrift für Nationalökonomie*. But first he wanted to make clear his own understanding of how a constructive theory in this field should be. That was the object of the present article. The criticism, he said, will be given in a later article. That article did never appear. See Andvig 1986 IDb pp 26-28.
IDA:22, 867, 895 IDb:2013

- 871 1935a *Byttemarkeds og valgbehandlings teori - Hefte I - Referat av professor Ragnar Frisch's forelesninger høstsem. 1931 og vårsem. 1932 - Annen utgave [Barter market and choice theory - Volume I - Notes of Professor Ragnar Frisch's lectures in the autumn term 1931 and the spring term 1932 - Second edition]*, Oslo, mimeo DE-UO, III+103 pp.
Second issue (1935) in which some corrections and additions are carried out.
- 872 1935e *Grenseproduktivitetsdata fra Freia Chokolade Fabrik [Marginal product data from Freia Chokolade Fabrik]*, Oslo, mimeo DE-UO, 10 pp.
From the introductory remarks (translated): "The following is an example of using actual data from a part of a production process at Freia Chokolade Fabrik." Refer to Frisch 1935h IDa. The present lecture note appeared as excursus 1 in *Notater til grunnkursus i økonomisk teori [Notes to basic course in economic theory]*, Frisch 1939c IDb.
IDa:62, 873 IDb:356
- 873 1935h The principle of substitution. An example of its application in the chocolate industry, *Nordisk Tidsskrift for Teknisk Økonomi*, Vol 1, 12-27.
The contribution is probably the first known example of using a specific technique, later known as establishing an engineering production function (see Førsumund 1995-11 IDa and 1999-03 IDb). The article is reissued as Frisch 1995at IDc (in Bjerkholt).
IDa:2081 IDb:2116 IDc:297, 894
- 874 1937d *Innledning til produksjonsteorien [Introduction to the theory of production]*, Oslo, mimeo DE-UO, Incomplete.
It is apparent from the later edition numbers that the present edition is *post-dated* the fifth one. From the historical sketch given by Frisch in the preface to the first volume of the sixth edition, 1941b IDa, the issues prior to the present one should be dated: 1927, 1929, 1931 and 1931-33. For 1927e IDb, 1931h IDc and 1937d (the present issue) a few copies are available at DE-UO (not for lending); for 1931h no date is given, and for 1937c a last part has been removed. For the issues 1929 and 1931-33 all copies seem for the time being to be lost.
IDa:359, 875 IDb:327, 866 IDc:332, 869
- 875 1941b *Innledning til produksjonsteorien, første hefte, [Introduction to the theory of production, first volume]*, Oslo, mimeo DE-UO, ssss-trykk, 129 pp.
From several circumstances the second volume was not issued until 1953, see Frisch 1953-11-20 IDa. In the preface of the present volume Frisch gives a historical sketch of his work on the development of the theory of production. There he says *inter alia* (translated): "At the implementation of the new examination rules there was a need for a new and more coordinated presentation. I wrote this myself. It was issued in stenciled form in 1937 under the title *Innledning til produksjonsteorien [Introduction to the theory of production]*. I did not want to have it printed as I had not yet managed to make the presentation as smooth as I would prefer. The subject matter of these earlier issues has been used also in the neighbouring countries. Thus Professor F. Zeuthen effected in 1931 a stenciled resumé of the 1927 issue (added some exercise questions etc) for use at the University of Copenhagen. My way of presentation has also been used in some other contributions." See also 1937d IDb with annotations. As to later issues, see the annotations to 1946c IDc.
IDa:588, 885 IDb:353, 874 IDc:364, 876
- 876 1946c *Innledning til produksjonsteorien, 7. utgave, første hefte [Introduction to the theory of production, seventh edition, first volume]*, Oslo, mimeo DE-UO, ssss-trykk, 132 pp.
A slightly revised edition of 1941b IDa. A more thoroughly revised edition appeared in 1956, 1956-09-28 IDb, and the ninth edition, the first printed one, in 1962, 1962c IDc. All these editions are of the first volume, though for the 1962c edition this is stated only in the preface. As to the content, the 1962c edition and the edition of 1956-09-28 are practically identical. A French and an English edition of both volumes put together appeared in 1963, 1963c IDd, and in 1965, 1965k IDe, respectively.
IDa:359, 875 IDb:646, 886 IDc:169, 889 IDd:175, 890 IDe:192, 891
- 877 1947m Ekskurs 14. En oversikt over Marshalls verdilære [Excursus 14. A general view of Marshall's theory of value], in Frisch, Ragnar: *Notater til økonomisk*

- teori. 4. utgave, første hefte [Notes on economic theory. Fourth edition, first volume]*, Oslo, mimeo DE-UO, 177-203.
An English translation published as Frisch 1950a IDa. Also as reprint No 114 from DE-UO.
IDa:106, 882, 916
- 878 1947n Ekskurs 15. Oppdelingen av de faste omkostninger [Excursus 15. The division of the fixed costs], in Frisch, Ragnar: *Notater til økonomisk teori. 4. utgave, første hefte [Notes on economic theory. Fourth edition, first volume]*, Oslo, memo DE-UO, 204-208.
It is referred to Marshall's theory of value.
- 879 1947s Ekskurs 2. Den intensive og den ekstensive dyrkingsgrense. Grunnrentens definisjon [Excursus 2. The intensive and the extensive cultivation limit. Definition of the rent], in Frisch, Ragnar: *Notater til økonomisk teori, 4. utgave, første hefte [Notes on economic theory, fourth edition, first volume]*, Oslo, mimeo DE-UO, 1-9.
- 880 1947x Ekskurs 7. Elastisitetpåvirket tilpassing. Litt monopolpristeori [Excursus 7. Elasticity-influenced adjustment. A short note on monopoly price theory], in Frisch, Ragnar: *Notater til økonomisk teori, 4. utgave, første hefte [Notes on economic theory, fourth edition, first volume]*, Oslo, mimeo DE-UO, 77-91.
- 881 1947-10-05 *Ad produksjonsteorien. Bedriftens reaksjon overfor endringer i produktpris og faktorpriser [Re the theory of production. The firm's reaction to changes in product-price and factor-prices]* Oslo, memo DE-UO, 12 pp.
- 882 1950a Alfred Marshall's theory of value, *The Quarterly Journal of Economics*, Vol 64, 495-524.
The publication is an English translation of Frisch 1947m IDa. Also as reprint No 114 from DE-UO.
IDa:381, 877, 903
- 883 1951-02-13 *Sammenhengen mellom produksjonselastisiteter og produksjonskoeffisienter [The connection between production elasticities and production coefficients]*, Oslo, memo DE-UO, 4 pp.
- 884 1951-06-18 *Aggregeringsproblemet fra produksjonsteoretisk synspunkt [The aggregation problem from the standpoint of the theory of production]*, Oslo, memo DE-UO, 14 pp.
Published in print as Frisch 1958a IDa (Festschrift to Frederik Zeuthen).
IDa:145, 887
- 885 1953-11-20 *Innledning til produksjonsteorien. Annet hefte [Introduction to the theory of production. Second volume]*, Oslo, memo DE-UO, 119 pp.
Refer to Frisch 1941b IDa, particularly to the annotations. It must be understood, although it is not stated explicitly, that the present work is the second volume of the sixth edition of the Introduction to the theory of production. See also Frisch 1961-04 IDb.
IDa:359, 875 IDb:760, 888
- 886 1956-09-28 *Innledning til produksjonsteorien, første hefte, 8. utgave [Introduction to the theory of production, first volume, eighth edition]*, Oslo, memo DE-UO, 245 pp.
Assisted by Per Meinich. See the annotations to Frisch 1946c IDa.
IDa:364, 876
- 887 1958a *Aggregeringsproblemet fra produksjonsteoretisk synspunkt [The aggregation problem from the standpoint of the theory of production]*, in Milhøj, P. (ed): *Festschrift til Frederik Zeuthen*, Copenhagen, Nationaløkonomisk Forening, 91-106.
Issued as an annex to *Nationaløkonomisk Tidsskrift*, Vol 96, 1958. Originally issued as Frisch 1951-06-18 IDa.
IDa:546, 884
- 888 1961-04 Oppslagsregister og repetisjonsliste for produksjonsteorien bind 2 [Entry

- index and repetition list to the theory of production, second volume], Oslo, memo DE-UO, 7 pp
Refer to Frisch 1953-11-20 IDa.
IDA:588, 885
- 889 1962c *Innledning til produksjonsteorien, 9. utgave [Introduction to the theory of production, ninth edition]*, Oslo, UF, 252 pp.
The first printed issue of Frisch's theory of production. It is presented in the preface as the first volume. See 1937d IDa with annotations. Reprinted in 1971. Expanded French, English and Italian translations were issued as 1963c IDb, 1965k IDc and 1966e IDd respectively. See also 1941b IDe with annotations. Reprint of pp 15-42 as Frisch 1995p IDf (in *Troen på nøkken*).
IDA:353, 874 IDb:175, 890 IDc:192, 891 IDd:196, 892 IDe:359, 875 IDf:264, 893
- 890 1963c *Lois techniques et économiques de la production*, Paris, Dunod, Finance et économie appliquée volume 14, 362 pp.
Translated from Norwegian by Marc Gilliard. The book comprises the content of both first volume (1946c IDa) and second volume (1953-11-20 IDb) of *Innledning til produksjonsteorien [Introduction to the theory of production]*. An English translation 1965k IDc, and an Italian translation 1966e IDd.
IDA:364, 876 IDb:588, 885 IDc:192, 891 IDd:196, 892
- 891 1965k Theory of production, Dordrecht-Holland, D. Reidel Publishing Company, 370 pp.
Translated by R. I. Christophersen. Reviewed in *Econometrica* by Boot 1967 IDa. The book comprises the content of both first volume (1962c IDb) and second volume (1953-11-20 IDc) of *Innledning til produksjonsteorien [Introduction to the theory of production]*. To catch a glimpse of the development of the theory during the "gestation period" from the late twenties through the thirties, see the annotations to 1931h IDd, 1937d IDe and 1941b IDf. A French translation: 1963c IDg.
IDA:1963 IDb:169, 889 IDc:588, 885 IDd:332, 869 IDe:353, 874 IDf:359, 875 IDg:175, 890
- 892 1966e *Leggi tecniche ed economiche della produzione industriale*, Milan, Etas Kompass, 532 pp.
Translation of 1963c IDa by Luigi M. Bianchi. Introduction by Luigi Frey, xiii-xxxvi.
IDA:175, 890
- 893 1995p *Innledning til produksjonsteorien [Introduction to the theory of production]*, in Frisch, Ragnar: *Troen på nøkken*, Oslo, Det Blå Bibliotek, UF, 97-108.
A reprint of pp 15-42 of Frisch 1962c IDa (*Innledning til ...*). A few passages are omitted.
IDA:169, 889
- 894 1995at The principle of substitution. An example of its application in the chocolate industry, in Bjerkholt, O. (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume I*, Aldershot UK, Brookfield US, Edward Elgar, 256-271.
A reprint of 1935g IDa, see the annotation.
IDA:62, 873

II.3.3 Market economy and welfare theory

- 895 1929f Økonomisk teori [Economic theory], *Statsøkonomisk Tidsskrift*, Vol 43, 229-272.
A thorough criticism of a German textbook, Engländer, O. 1929: *Theorie der Volkswirtschaft, Erster Teil, Preisbildung und Preisaufbau*, Vienna, Verlag von Julius Springer. It is an attack on a certain way of explaining and discussing economic theory in textbooks, a way that, though used by the old Austrians, did not in Frisch's opinion satisfy the standards that should be set for scientific thinking and reasoning. An account of Frisch's critique is given in Andvig 1986 IDa pp 26-28. See also Frisch 1932d IDb with annotations.
Ida:2013 IDb:33, 870, 896
- 896 1932d Einige Punkte einer Preistheorie mit Boden und Arbeit als Produktionsfaktoren, *Zeitschrift für Nationalökonomie*, Vol 3, Heft 1, 62-104.
Frisch was incited during his study of Oscar Engländer's book *Theorie der Volkswirtschaft* ... to write the present article, see Frisch 1929f IDa. He still considered his criticism of Engländer's book correct, and announced that he planned to write a critical study for *die Zeitschrift für Nationalökonomie*. But first he wanted to make clear his own understanding of how a constructive theory in this field should be. That was the object of the present article. The criticism, he said, will be given in a later article. That article did never appear. See Andvig 1986 IDb pp 26-28.
Ida:22, 867, 895 IDb:2013
- 897 1933d Monopole - Polypole - La notion de force dans l'économie, *Tillægshäfte til Nationaløkonomisk Tidsskrift*, Vol 71, 241-259.
Tillægshæftet [The supplement] is issued as Festschrift at the eightieth anniversary of Harald Westergaard. Reissued in English as 1951c IDa and 1995y IDb (Bjerkholt), and in German as 1965b IDc and 1968b IDd. An assessment of Frisch's work is given by Keppler, J. 1994: *Monopolistic competition theory*, Baltimore and London, The Johns Hopkins University Press, pp 92-93. It is also assessed by Arrow 1960b IDe, where this work and Frisch 1949b IDf (Prolegomena to a pressure analysis ...) are regarded as important contributions on economic dynamics.
Ida:115, 917, 977 IDb:273, 990 IDc:187, 923, 982 IDd:208, 924, 984 IDe:1923 IDf:104, 975
- 898 1939a The Dupuit taxation theorem, *Econometrica*, Vol 7, 145-150.
A comment on Hotelling, Harold 1938: The general welfare in relation to problems of taxation and of railway and utility rates, *Econometrica*, Vol 6, 242-269. Frisch objected to a conclusion in Hotelling's article. He found a slip in Hotelling's argument and deduced the right solution. Hotelling agreed. Hotelling's response 1939b IDa. Frisch's further note 1939b IDb and Hotelling's final note 1939a IDc. Frisch's first comment was reprinted (in Bjerkholt) as Frisch 1995i IDd. Chipman 1998 IDe elucidates the Frisch-Hotelling debate on pp 74-76.
Ida:1801 IDb:79, 899 IDc:1800 IDd:257, 929 IDe:2091
- 899 1939b A further note on the Dupuit taxation theorem, *Econometrica*, Vol 7, 156-157.
Frisch's rejoinder to Hotelling 1939b IDa. Hotelling gives a final note in 1939a IDb.
Ida:1801 IDb:1800
- 900 1941d Priskartellisk prisdannelse [Price formation under price cartels], *Statsøkonomisk Tidsskrift*, Vol 55, 270-274.
- 901 1941-03 *Polypolteori. Forelesninger av professor Ragnar Frisch [Polypoly theory. Lectures by Professor Ragnar Frisch]*, Oslo, mimeo DE-UO, S.S.S.S-trykk, 52 pp.
Notes of Professor Frisch's lectures during the spring term of 1940.

- 902 1947i Ekskurs 10. Litt om prisdannelsen for sammenhengende goder [Excursus 10. A short note on the price formation for connected goods], in Frisch, Ragnar: *Notater til økonomisk teori, 4. utgave, første hefte [Notes on economic theory, fourth edition, first volume]*, Oslo, mimeo DE-UO, 103-132.
- 903 1947m Ekskurs 14. En oversikt over Marshalls verdilære [Excursus 14. A general view of Marshall's theory of value], in Frisch, Ragnar: *Notater til økonomisk teori, 4. utgave, første hefte [Notes on economic theory, fourth edition, first volume]*, Oslo, mimeo DE-UO, 177-203.
An English translation published as Frisch 1950a IDa. Also as reprint No 114 from DE-UO.
IDa:106, 882, 916
- 904 1947o Ekskurs 16. Markedsmekanismen under rasjonering [Excursus 16. The market mechanism under rationing], in Frisch, Ragnar: *Notater til økonomisk teori, 4. utgave, første hefte [Notes on economic theory, fourth edition, first volume]*, Oslo, mimeo DE-UO, 209-215.
- 905 1947u Ekskurs 4. Etterspørsel og etterspørselskurver [Excursus 4. Demand and demand curves], in Frisch, Ragnar: *Notater til økonomisk teori, 4. utgave, første hefte [Notes on economic theory, fourth edition, first volume]*, Oslo, mimeo DE-UO, 10-41.
- 906 1947v Ekskurs 5. Tilbud og tilbudskurver [Excursus 5. Supply and supply curves], in Frisch, Ragnar: *Notater til økonomisk teori, 4. utgave, første hefte [Notes on economic theory, fourth edition, first volume]*, Oslo, mimeo DE-UO, 42-62.
- 907 1947y Ekskurs 8. Forskjellen mellom prisbestemmende og prisbestemte omkostninger [Excursus 8. The difference between price determinative and price determined costs], in Frisch, Ragnar: *Notater til økonomisk teori, 4. utgave, første hefte [Notes on economic theory, fourth edition, first volume]*, Oslo, mimeo DE-UO, 92-95.
- 908 1947z Ekskurs 9. Et par eksempler fra lokaliseringsteorien [Excursus 9. Some examples from the theory of localization], in Frisch, Ragnar: *Notater til økonomisk teori, 4. utgave, første hefte [Notes on economic theory, fourth edition, first volume]*, Oslo, mimeo DE-UO, 96-102.
- 909 1947aj Randmerknader til Marshalls Book V and Book VI [Marginalia to Marshall's Book V and Book VI], in Frisch, Ragnar: *Notater til økonomisk teori, 4. utgave, første hefte [Notes on economic theory, fourth edition, first volume]*, Oslo, mimeo DE-UO, 244-262.
- 910 1947-08-20 *Om den statistiske bestemmelse av krysssetterspørslene i en gruppe av behovssammenhengende goder [On the statistical determination of the cross-demands in a group of want-connected goods]*, Oslo, memo DE-UO, 3 pp.
- 911 1947-10-03 *Prinsipiell definisjon av begrepet kjøpepress [Definition of the concept buying pressure]*, Oslo, memo DE-UO, 2 pp.
Refer to Frisch 1949-03-07 IDa.
IDa:463
- 912 1948-01-18 *Hvorledes en øking i tilgangen av et knapphetsgode (f.eks. en rasjonert vare) virker på likevektsstørrelsene i byttemarkedet [How an increased influx of a good in short supply (i.e. a rationed good) acts on the equilibrium values in the barter market]*, Oslo, memo DE-UO, 4 pp.
- 913 1948-01-22 *Det samfunnsøkonomiske optimumsproblem må formuleres som et problem om å maksimere et nytteoverskudd [The economic optimization problem of the society should be formulated as a problem of maximizing a utility surplus]*, Oslo, memo DE-UO, 5 pp.
- 914 1948-01-26 *Et fundamentalpunkt i den statiske lære om markedsmekanismen: Overbestemthet når produksjonssiden og konsumsjonssiden ses i sammenheng*

[A fundamental point in the static theory of the market mechanism: An overdeterminedness when the producer side and the consumer side are seen together], Oslo, memo DE-UO, 10 pp.

- 915 1949-05-03 *Noen grunnproblemer i velferdsanalysen [Some basic problems in the welfare analysis]*, Oslo, memo DE-UO, 18 pp.
- 916 1950a Alfred Marshall's theory of value, *The Quarterly Journal of Economics*, Vol 64, 495-524.
The publication is an English translation of Frisch 1947m IDa. Also as reprint No 114 from DE-UO.
Ida:381, 877, 903
- 917 1951c Monopoly - Polypoly - The concept of force in the economy, *International Economic Papers*, No 1, 23-36.
Originally issued in French: 1933d IDa, see the annotations. Translated into English by W. Beckerman. Also issued in German: 1965b IDb and 1968b IDc. A reprint of the English version is issued as Frisch 1995y IDd (in Bjerkholt).
Ida:46, 897, 967 IDb:187, 923, 982 IDc:208, 924, 984 IDd:273, 990
- 918 1951-03-12 *Monopole - polypole - La notion de force dans l'économie*, Oslo, memo DE-UO, 16 pp.
A reprint of Frisch 1933d IDa.
Ida:46, 897, 967
- 919 1953-08-17 *On welfare theory and Pareto regions*, Oslo, memo DE-UO, 65 pp.
This original English issue was presented as an appendix to a paper "From national accounts to macro-economic decision models" (see Frisch 1955b IDa), read at the meeting of the International Association for Research in Income and Wealth, at Castelgandolfo (near Rome), 1-6 September 1953. A French translation was published in 1954, see Frisch 1954d IDb. The original English version was published in print in 1959, see Frisch 1959c IDc and the annotations.
Ida:130, 949, 1200 IDb:128, 920 IDc:149, 922
- 920 1954d La théorie de l'avantage collectif et les régions de Pareto, *Économie Appliquée*, Vol 7, 211-280.
Translated from the original English text, memo from DE-UO 1953-08-17 IDa, by Georges T. Guilbaud. The English version was published in print in 1959c IDb, see the annotations. The French text was reissued as reprint No 116 from DE-UO.
Ida:582, 919 IDb:149, 922
- 921 1959a A complete scheme for computing all direct and cross demand elasticities in a model with many sectors, *Econometrica*, Vol 27, 177-196.
Frisch develops methods for estimating all elasticities in a complete system of demand functions. The approach is based on the assumption of want-independence, thus there is a clear line from his earlier works on utility theory and measurement, 1926h IDa (Sur un problème ..) and 1932h IDb (New methods ...), to the present one. Frisch's "complete scheme" has been widely applied and has obtained great practical importance. In Norway it was in the first place used by Professor Leif Johansen in his doctoral thesis (the MSG model), which in turn provided the basis for much of the work of planning carried out under the auspices of the Ministry of Finance. Frisch's system or systems inspired by his work have been applied in several other countries as well. A reprint is published (in Bjerkholt) as Frisch 1995f IDc. Chipman 1998 IDd gives an explanation of the "complete scheme" on pp 76-78. Hylland 1982-01-14 IDE presents Frisch's results "in a hopefully more accessible form".
Ida:12, 811, 1008 IDb:37, 815, 1020 IDc:254, 859, 928 IDd:2091 IDE:2006
- 922 1959c *On welfare theory and Pareto regions*, *International Economic Papers*, No 9, 39-92.
The paper was worked out in the main in the autumn of 1950; it was subsequently revised and presented as an appendix to the paper "From national accounts ...", read at the meeting of the International Association for Research in Income and Wealth, Castelgandolfo (near Rome), September 1953. That paper appeared in *Income and wealth - Series IV*, 1955b IDa. The appendix, although originally written in English, was first published in print in

- French translation, 1954d IDb. The original English version was issued as memo from DE-UO, 1953-08-17 IDc, and now reproduced in the present article (from a footnote on p 39). A reprint is published (in Bjerkholt) as Frisch 1995am IDd. A review of *International Economic Papers* No 9 (including Frisch's article) appeared in *The Economic Journal*, 1960, Vol 70, 564-568; the criticism of Frisch's article: 565-566.
IDA:130, 949, 1200 IDb:128, 920 IDc:582, 919 IDd:290, 930
- 923 1965b Monopol - Polypol - der Begriff der Kraft in der Wirtschaft, in Ott, Alfred Eugen (ed): *Preistheorie*, Köln, Berlin, Kiepenheuer & Witsch, 17-32.
 Originally issued in French: 1933d IDa; later in English translation: 1951c IDb.
 Translated from French to German by Alfred Eugen Ott. Reprinted in a second German book of selected works, 1968b IDc.
IDA:46, 897, 967 IDb:115, 917, 977 IDc:208, 924, 984
- 924 1968b Monopol - Polypol - der Begriff der Kraft in der Wirtschaft, in Barnikel, Hans-Heinrich (ed): *Wettbewerb und Monopol*, Darmstadt, Wissenschaftliche Buchgesellschaft, 35-56.
 Reprint of Frisch 1965b IDa, see the annotations.
IDA:187, 923, 982
- 925 1974b Az egyensúly és az egyensúlytalanság fogalmáról [On the notion of equilibrium and disequilibrium], in Frisch, Ragnar: *Kvantitatív és dinamikus közgazdaságtan*, Budapest, Közgazdasági és Jogi Könyvkiadó, 181-188.
 Translation by Kupa, Ildikó of Frisch 1936d IDa, see the annotation. See Frisch 1974f IDb.
IDA:65, 971 IDb:227
- 926 1974e Egy többszektoros modell összes keresletrugalmassági és keresztrugalmassági együtthatóinak számítási módszere [A complete scheme for computing all direct and cross demand elasticities in a model with many sectors], in Frisch, Ragnar: *Kvantitatív és dinamikus közgazdaságtan*, Budapest, Közgazdasági és Jogi Könyvkiadó, 269-295.
 Translation by Káposztás, Ferenc of Frisch 1959a IDa, see the annotations. See Frisch 1974f IDb.
IDA:147, 849, 921 IDb:227
- 927 1974i Monopólium - polipólium - az erő fogalma a közgazdaságtanban [Monopole - polypole - la notion de force dans l'économie], in Frisch, Ragnar: *Kvantitatív és dinamikus közgazdaságtan*, Budapest, Közgazdasági és Jogi Könyvkiadó, 85-101.
 Translation by Ágainé, Tüzes Klára of Frisch 1933d IDa, see the annotations. See Frisch 1974f IDb.
IDA:46, 897, 967 IDb:227
- 928 1995f A complete scheme for computing all direct and cross demand elasticities in a model with many sectors, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume I*, Aldershot UK, Brookfield US, Edward Elgar, 95-114.
 A reprint of Frisch 1959a IDa.
IDA:147, 849, 921
- 929 1995i The Dupuit taxation theorem, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*, Aldershot UK, Brookfield US, Edward Elgar, 347-352.
 A reprint of Frisch 1939a IDa, see the annotations.
IDA:78, 898
- 930 1995am On welfare theory and Pareto regions, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*, Aldershot UK, Brookfield US, Edward Elgar, 403-456.
 A reprint of Frisch 1959c IDa, see the annotations.
IDA:149, 922

II.3.4 Macroeconomics: Circular flows and national accounting

- 931 1935d *Et generelt monetært begreps- og symbolsystem [A general monetary concept- and symbol system]*, Oslo, mimeo DE-UO, 38 pp.
A part of Professor Frisch's lectures on monetary theories, spring term and autumn term 1935. Frisch presents a system of definition relations representing a new step in the development of the ecocirc system, refer to Bjerve 1986 IDa, section 4, "1935-systemet [The 1935 system]", and to Frisch 1948-12-22 IDb. See also Frisch 1943c IDc.
IDA:2014 IDb:457, 937 IDc:88, 934
- 932 1940b *Nasjonalregnskapet [The national accounts]*, in *Beretning om det 3. nordiske statistikermøte [Transactions of the 3rd Nordic meeting of statisticians] i Oslo den 28.og 29 juni 1939*, Oslo, Grøndahl & Sønns Boktrykkeri, 1940, 141-149.
The article is based on a lecture Frisch gave in the meeting, and made a part of work done by the Co-ordination Department under the comprehensive Plan for an Economic Structural Survey of Norway, see Frisch 1936e IDa with annotations. An extract of the article was published as 1995ø IDa (in *Troen på nøkken* 169-174).
IDA:66, 1137 IDb:276, 955
- 933 1942 *Noen innføringsmerknader om økosirk-systemet - Det økonomiske sirkulasjonssystem [Some introductory remarks on the ecocirc system - The economic circulation system]*, Oslo, mimeo DE-UO, 37 pp.
The paper gives a condensed presentation of the ecocirc system as then adopted, together with a specific form of graphical representation (the ecocirc graph). The paper was circulated locally in mimeographed form. A few copies are available at UB Oslo, DE-UO, not for lending. See Frisch 1943c IDa with annotations.
IDA:88, 934
- 934 1943c *Økosirk-systemet (Det økonomiske sirkulasjonssystem) [The ecocirc system (The system of economic circulation)]*, *Økonomisk Tidsskrift*, Vol 45, 106-121.
Also as reprint No 112 from DE-UO. Frisch worked on national accounting and the related problems of developing a system of macroeconomic concepts and bookkeeping equations - i.e. an ecocirc (economic circulation) system - through a number of stages over a period of twenty years. He made the very first known sketch as early as in 1928-1929. Most of his contributions on the subject were presented with the aid of bookkeeping equations in real as well as in financial variables, accounting tableaux and ecocirc graphs (his own invention). The present article gives a brief presentation. The finally developed system is presented more carefully in Frisch et al 1948-03-08 IDa. For a thorough exposition of Frisch's effort in this development, see Bjerve 1986 IDb. Other contributions: Frisch 1947p IDc, Bergan 1955-02-01 IDd, Frisch 1940b IDe (Nasjonalregnskapet), Bjerve 1944 IDf (reprinted in *Samfunnsøkonomiske Studier* 59, Statistics Norway, Oslo 1985). Some introductory remarks in Frisch 1942 IDg.
IDA:434, 936 IDb:2014 IDc:384, 935 IDd:1904 IDE:82, 932 IDf:1811 IDg:362, 933
- 935 1947p Ekskurs 17. *Økosirk-systemet [Excursus 17. The ecocirc system]*, in Frisch, Ragnar: *Notater til økonomisk teori. 4. utgave, første hefte [Notes on economic theory. fourth edition, first volume]*, Oslo, mimeo DE-UO, 216-243.
In all essentials concurrent with Frisch's article in *Økonomisk Tidsskrift*, 1943c IDa. See the annotations to 1943c for more references.
IDA:88, 934
- 936 1948-03-08 *A system of concepts describing the economic circulation and production process*, Oslo, memo DE-UO, 56 pp.
With Odd Aukrust and Petter Jakob Bjerve. A careful presentation of the ready-developed ecocirc system. A somewhat brief presentation is given in Frisch 1943c IDa (*Økonomisk Tidsskrift*). For other references, see the annotations to 1943c. For a thorough exposition of Frisch's effort in the development of the ecocirc system and the related work on national

accounting, see Bjerve 1986 IDb.

IDA:88, 934 IDb:2014

- 937 1948-12-22 *Work on national accounting done at the University Institute of Economics, Oslo*, Oslo, memo DE-UO, 4 pp.
The memo presents a survey of the development of the ecocirc system from the very beginning in 1932 to the final presentation in Frisch et al 1948-03-08 IDa, also giving full due to the associates who had co-operated in some way or another in the development. Towards the end of the survey he wrote: The Institute work on the accounting system and the system of concepts has all the time been inspired by the idea that this was only a stepping stone to a study of the *structural* relations (production relations, consumption relations etc) of the economy. He announced that from then on the work would be turned more specifically in that direction, giving particular attention to the repercussion aspect.
IDA:434, 936
- 938 1949-10-08 *Attempt at clarification of certain national income concepts*, Oslo, memo DE-UO, 14 pp.
Footnote 2 on p 1: "The notation here used conforms to the standards of the "Ecocirc-system"" It is referred to Frisch 1948-03-08 IDa.
IDA:434, 936
- 939 1949-10-16 *Axiomatic remarks on some national income concepts*, Oslo, memo DE-UO, 11 pp.
Copy of a letter to Richard Stone.
- 940 1950-09-12 *Økonomisk kryssløpsanalyse - Referat av professor Frisch' forelesninger i høstsemesteret 1950 [Economic input-output analysis - Notes of Professor Frisch's lectures in the autumn term of 1950]*, Oslo, memo DE-UO, 12 pp.
Lecture notes by Bjørn Thalberg.
- 941 1950-09-15 *Økonomisk kryssløpsanalyse - Referat av professor Frisch' forelesninger i høstsemesteret 1950 [Economic input-output analysis - Notes of Professor Frisch's lectures in the autumn term of 1950]*, Oslo, memo DE-UO, 20 pp.
Lecture notes by Alette Rømning and Bjørn Thalberg.
- 942 1950-09-18b *Økonomisk kryssløpsanalyse - Referat av professor Frisch' forelesninger i høstsemesteret 1950 [Economic input-output analysis - Notes of Professor Frisch's lectures in the autumn term of 1950]*, Oslo, memo DE-UO, 13 pp.
Lecture notes by Alette Rømning and Bjørn Thalberg.
- 943 1950-09-21 *Økonomisk kryssløpsanalyse - Referat av professor Frisch' forelesninger i høstsemesteret 1950 [Economic input-output analysis - Notes of Professor Frisch's lectures in the autumn term of 1950]*, Oslo, memo DE-UO, 10 pp.
Lecture notes by Alette Rømning and Bjørn Thalberg.
- 944 1950-09-26 *Økonomisk kryssløpsanalyse - Referat av professor Frisch' forelesninger i høstsemesteret 1950 [Economic input-output analysis - Notes of Professor Frisch's lectures in the autumn term of 1950]*, Oslo, memo DE-UO, 13 pp.
Lecture notes by Alette Rømning and Bjørn Thalberg. This memo contains a resumé of the preceding sections, a supplementary note written by Ragnar Frisch, a note written at Dribergen on Sept. 28 1950 after discussions with among others Professor Leontief, a review of notes of Frisch's lectures on input-output analysis, and finally a table of contents covering all stenciled lecture notes of Frisch's lectures on input-output analysis in the autumn term of 1950.
- 945 1953-02-10 *Hva er et nasjonalbudsjett? [What is a national budget?]*, Oslo, Report of a speech on the radio, 7 pp.
- 946 1953-08-27 *From national accounts to macro-economic decision models*, Oslo, memo DE-UO, 27 pp.
Note to the title: "A synopsis of ideas to be presented at the meeting of the International Association for Research in Income and Wealth, Rome, September 1953". Published in print (with a few minor changes) as Frisch 1955b IDa.
IDA:130, 949, 1200

- 947 1954-02-22 *Hvis det gjøres en oppfinnelse eller skjer en rasjonalisering i en bestemt sektor, vil derved sektorens relative andel av nasjonalproduktet øke eller minske? [If an invention or a rationalization is made in some sector, would then the sector's relative share of the national product increase or decrease?]*, Oslo, memo DE-UO, 6 pp.
Two more questions are put: Would the sector's absolute share increase or decrease? Would its total product all together increase or decrease?
- 948 1954-04-30 *Kryssløpsanalyse - Referat av Ragnar Frisch's forelesninger holdt i høstsemestret 1953 [Input-output analysis - Notes of Ragnar Frisch's lectures given in the autumn term of 1953]*, Oslo, memo DE-UO, 93 pp.
Lecture notes by stud. oecon. Nils Bakke and stud. oecon. Ole Bredal. Formula control and proofreading by stud. oecon. Hans Jacob Hylin. The notes read through and corrected by Ragnar Frisch. With a supplement by P. J. Bjerve.
- 949 1955b From national accounts to macro-economic decision models, in Gilbert, M. and R. Stone (eds): *Income and wealth - Series IV*, London, Bowes & Bowes Publishers Ltd., 1-26
A paper presented at the Third Conference of the International Association for Research in Income and Wealth, held at Castelgandolfo, near Rome, 1-6 September 1953. A memo by Ragnar Frisch 1953-08-27 IDa made manuscript for the article. It is headed as the article, but with the under-heading: "A synopsis of ideas to be presented at the meeting of the International Association for Research in Income and Wealth, Rome, September 1953". See also Frisch 1956-01-02 IDb.
IDa:583, 946, 1190 IDb:636, 1215
- 950 1955e Market price versus factor cost in national income statistics, *Sankhyá: The Indian Journal of Statistics*, Vol 15, 1-8.
Comments: Ezekiel 1956 IDa. Frisch's rejoinder 1956e IDb.
IDa:1910 IDb:140, 951
- 951 1956e A rejoinder, *Sankhyá: The Indian Journal of Statistics*, Vol 17, 246-246.
Frisch's rejoinder to Ezekiel 1956 IDa.
IDa:1910
- 952 1959-12-11 *Utkast til organisert samarbeid om et forbedret analytisk grunnlag for norsk nasjonalbudsjettering [A draft for an organized cooperation on an improved analytical basis for a Norwegian national budgeting]*, Oslo, memo DE-UO, 11 pp.
With Hans Heli.
- 953 1961-01-02 Forord og avsnitt III.d [Preface and section III.d], in Kreyberg, Hans Jacob: *Oversikt over Keynes-modellene [A survey of the Keynes models]*, Oslo, memo DE-UO, 1-4 and 17-20.
Frisch in a passage of the preface (translated): My co-operation came mainly to be co-ordinating. I have *inter alia* divided the exposition in four separate models, where I have stated clearly the number of the degrees of freedom in each model and have distinguished between "registered" variables and relations on the one side (which define the essential feature of the model) and "accessoric" variables and relations on the other side (which would change the model structure and possibly change the number of the degrees of freedom if they were added to the model). More essential points of co-ordination are presented on pp 2, 3 and 4.
- 954 1974j A nemzeti elszámolási rendszertől a makroökonómiai döntési modellekig [From national accounts to macro-economic decision models], in Frisch, Ragnar: *Kvantitatív és dinamikus közgazdaságtan*, Budapest, Közgazdasági és Jogi Könyvkiadó, 243-267.
Translation by Kupa, Ildikó of Frisch 1955b IDa, see the annotations. See Frisch 1974f IDb.
IDa:130, 949, 1200 IDb:227
- 955 1995ø Nasjonalregnskapet [The national accounts], in Frisch, Ragnar: *Troen på nøkken*, Oslo, Det Blå Bibliotek, UF, 169-174.

An extract of Frisch 1940b IDa. Except for some minor omissions the extract consists of pp 141-147 of 1940b.
IDa:82, 932

II.3.5 Dynamic economics

- 956 1928 Changing harmonics and other general types of components in empirical series, *Skandinavisk Aktuarietidskrift*, Vol 11, 220-236.
The second of three papers in English reporting results of Frisch's research on time series methods, see Frisch 1927a IDa (mimeo) and 1931e IDb. Refer also to Morgan 1990a IDc pp 83 and further.
Ida:326, 1009 IDb:28, 962 IDc:2034
- 957 1929d Statikk og dynamikk i den økonomiske teori [Statics and dynamics in economic theory], *Nationaløkonomisk Tidsskrift*, Vol 67, 321-379.
The treatise is an elaboration of a lecture delivered at Socialøkonomisk Samfund, Oslo, December 1928. It is assessed as a pioneering contribution in which Frisch develops dynamics as a new way of analysing economic phenomena, an alternative to statics. An English translation by Peter Thomas of the sections 1-3 is issued as Frisch 1992 IDa and reissued as Frisch 1995bk IDb (in Bjerkholt). Frisch's work on dynamic economics won through internationally through his Cassel-Festschrift thesis 1933i IDc and an article on equilibrium and disequilibrium 1936d IDd. A simpler version of the 1929d treatise was made for teaching purpose and issued as excursus 6 in *Notater til økonomisk teori [Notes on economic theory]*, see e.g. 1947w IDe. Frisch gave lectures on the topic at Yale University in 1930, from which unpublished lecture notes are available at UB Oslo (DE-UO, not for lending), see Frisch 1930a IDf. An extract from pp 321-323 and 326-327 of the original treatise was issued as Frisch 1995bl IDg. A reprint was issued from Universitetsforlaget, Oslo, in 1930.
Ida:246, 987 IDb:316, 998 IDc:50, 968 IDd:65, 971 IDe:391, 973 IDf:328, 958 IDg:317, 999
- 958 1930a *A dynamic approach to economic theory*, New Haven, mimeographed notes of lectures at Yale University, 246 pp.
A note on the front page: "The present summary is supposed to contain all the main points discussed in the lectures. Professor Frisch does not want to have this considered as a finished statement of his view. The summary may be subject to change and revision." The memo consists of three parts: I. General considerations on statics and dynamics. II. Dynamic formulation of some parts of economic theory. III. Statistical verification of the laws of dynamic economic theory. See Frisch 1929d IDa with annotations. A few copies of the present memo are available at UB Oslo (DE-UO); not for lending.
Ida:20, 957
- 959 1931b The interrelation between capital production and consumer-taking, *The Journal of Political Economy*, Vol 39, 646-654.
Criticism of statements from J. Maurice Clark and others about the relation in a postulated model between consumption per unit of time and the culmination of capital production. Clark replied 1931 IDa, Frisch gave a rejoinder 1932a IDb, Clark a further word 1932 IDc and Frisch a final word 1932b IDd. Frisch's article contributes to elucidating the "acceleration principle" and its role in explaining the trade cycle. In 1933i IDe Frisch expanded his viewpoints from his debate with Clark into a mathematically elaborated theory of trade cycles. A reprint of the present article is issued as Frisch 1995q IDf (in Bjerkholt). See also Frisch 1951-09-26 IDg. Chipman 1998 IDh gives a discussion of the Frisch-Clark debate on pp 88-90, considering it in association with earlier as well as later works by Frisch and others. Andvig deals with the same in his dissertation 1986 IDi pp 73-76.
Ida:1748 IDb:30, 963 IDc:1761 IDd:31, 964 IDe:50, 968 IDf:265, 989 IDg:551, 978 IDh:2091 IDi:2013
- 960 1931c Johan Åkerman: Om det ekonomiska livets rytmik [Johan Åkerman: On the rhythm of economic life], *Statsvetenskaplig Tidsskrift*, Vol 34, 281-300.
Review of Johan Åkerman's doctoral dissertation based on remarks by Frisch in the capacity of faculty opponent.

- 961 1931d Konjunkturbevegelsen som statistisk og som teoretisk problem [The business cycle as a statistical and a theoretical problem], in *Förhandlingar vid Nordiska Nationalekonomiska Mötet i Stockholm 15-17 juni 1931*, Stockholm, Ivar Hæggströms Boktryckeri och Bokförlag AB, 127-147.
Frisch presents for the first time the basic lines of his ideas of business cycle research. The discussion which followed is reported on pp 147-168. Appendix IIIa, pp 224-227, gives J. Åkerman's summary in Swedish of Frisch's lecture, and Appendix IIIb, pp 228-234, gives some excerpts of the lecture.
- 962 1931e A method of decomposing an empirical series into its cyclical and progressive components, *Journal of the American Statistical Association* - March Supplement: Papers and proceedings of the 92nd Annual Meeting held at Cleveland, Ohio, Vol 26, 73-78.
The third of three papers in English reporting results of Frisch's research on time-series methods. The first and second ones are 1927a IDa (mimeo) and 1928 IDb. In her survey of the development of econometrics Mary S. Morgan gives a description and an assessment of Frisch's work on time series in Morgan 1990a IDc pp 83 and further. Also Jens Chr. Andvig surveys Frisch's time series studies, see Andvig 1986 IDd pp 67-71. The paper is reissued as Frisch 1995w IDE (in Bjerkholt).
IDA:326, 1009 IDb:16, 956, 1011 IDc:2034 IDd:2013 IDE:271, 1125
- 963 1932a Capital production and consumer-taking - A rejoinder, *Journal of Political Economy*, Vol 40, 253-255.
See Frisch 1931c IDa and Clark 1931 IDb.
IDA:25, 959 IDb:1748
- 964 1932b Capital production and consumer-taking: A final word, *Journal of Political Economy*, Vol 40, 694-694.
See Frisch 1931c IDa, Clark 1931 IDb, Frisch 1932a IDc and Clark 1932 IDd.
IDA:25, 959 IDb:1748 IDc:30, 963 IDd:1761
- 965 1932e Konjunktturene [The business cycles], in Keilhau, Wilhelm, Ingvar Wedervang, and Ragnar Frisch: *Verdensøkonomien i etterkrigstiden*, Oslo, Universitetets radioforedrag Serie B Nr. 6 - H. Aschehoug & co (W. Nygaard), 79-139.
See 1932m IDa (*Verdensøkonomien ...*). A slightly revised reprint of the present article is issued as the main part of Frisch 1947ae IDb (*Noen trekk av konjunkturlæren ...*), see the annotations.
IDA:42, 966 IDb:95, 830, 974
- 966 1932m *Verdensøkonomien i etterkrigstiden [The world economy in the post-war time]*, Oslo, Universitetets radioforedrag Serie B Nr. 6, H. Aschehoug & co (W. Nygaard), 140 pp.
With Wilhelm Keilhau and Ingvar Wedervang. See 1932e IDa.
IDA:34, 965
- 967 1933d Monopole - Polypole - La notion de force dans l'économie, *Tillægshäfte til Nationaløkonomisk Tidsskrift*, Vol 71, 241-259.
Tillægshæftet [The supplement] is issued as Festschrift at the eightieth anniversary of Harald Westergaard. Reissued in English as 1951c IDa and 1995y IDb (Bjerkholt), and in German as 1965b IDc and 1968b IDd. An assessment of Frisch's work is given by Keppler, J. 1994: *Monopolistic competition theory*, Baltimore and London, The Johns Hopkins University Press, pp 92-93. It is also assessed by Arrow 1960b IDE, where this work and Frisch 1949b IDf (Prolegomena to a pressure analysis ...) are regarded as important contributions on economic dynamics.
IDA:115, 917, 977 IDb:273, 990 IDc:187, 923, 982 IDd:208, 924, 984 IDE:1923 IDf:104, 975
- 968 1933i Propagation problems and impulse problems in dynamic economics, in *Economic essays in honour of Gustav Cassel*, London, George Allen & Unwin Ltd., 171-205.
A macroeconomic trade cycle model, written for the Gustav Cassel Festschrift after having been presented in a lecture to the Econometric Society autumn meeting 1933, see

Econometrica Vol 2 (189-192). Also as Publikasjon nr 3 from DE-UO 1933j IDa. Republished 1966i IDb, 1995az IDc and 1995aæ IDd. Selected parts 1995ay IDE. Presented and discussed in Blatt 1980 IDf, Andvig 1981b IDg and 1986 IDh (Ch. 4, 85-114), Morgan 1990a IDi, and Chipman 1998 IDj (90-95). Parts of it are analyzed and discussed in depth (with parts of Frisch's autonomy memorandum 1938-07-17) in Boumans 1995 IDk. A considerably shortened Norwegian translation (by Andvig), in which mathematical discussions are omitted, 1995be IDl. See also Frisch 1951-09-26 IDm. Reconsidered (and severely criticized) in Zambelli 1991 IDn. Sketched and shortly discussed in Bodkin, R. G., L. L. Klein, and K. Marwah 1991: *A history of macroeconomic model-building* (12-14), Edward Elgar, Aldershot. Discussed in Mullineux 1990 IDo 19-29, see also 12-19. Reconsiderations by Thalberg 1990 IDp and 1997 IDq.

IDA:51, 969 IDb:200, 983 IDc:303, 995 IDd:304, 996 IDE:302, 994 IDf:1999 IDg:2003 IDh:2013 IDi:2034 IDj:2091 IDk:2061 IDl:310, 997 IDm:551, 978 IDn:2039 IDo:2036 IDp:2037 IDq:2087

- 969 1933j *Propagation problems and impulse problems in dynamic economics*, Oslo, DE-UO, Publikasjon nr 3, 35 pp.
The same as 1933i IDa, see the annotations.
IDA:50, 968
- 970 1934b *Makrodynamikk [Macro-dynamics]*, Oslo, ssss-trykk, mimeo DE-UO, 111 pp.
Lectures given 1933 II and 1934 I. Refer to Frisch 1928 IDa, 1931e IDb and 1950-01-24 IDc.
IDA:16, 956, 1011 IDb:28, 962 IDc:494, 1058
- 971 1936d On the notion of equilibrium and disequilibrium, *The Review of Economic Studies*, Vol 3, 100-105.
See the annotations to Frisch 1929d IDa (Statikk og dynamikk ...). The article is reissued as memo from DE-UO, Frisch 1950-02-04 IDb,
IDA:20, 957 IDb:497, 976
- 972 1937c An ideal programme for macrodynamic studies, *Econometrica*, Vol 5, 365-366.
The ideal programme was developed in a colloquium in the Oxford meeting of the Econometric Society 1936. The minutes of the meeting by E. H. Phelps Brown.
- 973 1947w Ekskurs 6. Statikk og dynamikk i økonomikken [Excursus 6. Statics and dynamics in economics], in Frisch, Ragnar: *Notater til økonomisk teori, 4. utgave, første hefte [Notes on economic theory, fourth edition, first volume]*, Oslo, mimeo DE-UO, 63-76.
This is a simpler version of the treatise 1929d IDa (Statikk og dynamikk...) made for teaching purpose, see the annotations. A footnote on p 63 in the excursus reads (translated): "The main view for the distinction between statics and dynamics held in this excursus was formulated in an article "Statikk og dynamikk i den økonomiske teori [Statics and dynamics in economic theory]", Nationaløkonomisk Tidsskrift, Copenhagen 1929, and in some earlier lectures at Oslo. Some details of the terminology were slightly changed later. In newer literature, esp. within econometrics and trade cycle theory, a conceptual system and terminology is used which in all essentials accords with what is developed here (see e.g. the book by Haberler on trade cycle theory, and the one by Zeuthen: "Økonomisk Teori og Metode [Economic theory and method]").
IDA:20, 957
- 974 1947ae *Noen trekk av konjunkturlæren (Med et tillegg om levestandard og prisindeks) [Some elements of the business cycle theory (With a supplement on standard of living and price index)]*, Oslo, H. Aschehoug & co (W. Nygaard), 107 pp.
The bulk of the book (all but the supplement) is a slightly revised reprint of 1932e IDa. The first part gives a purely descriptive exposition of trade cycles. Later chapters deal with several factors which might contribute towards explaining trade cycles. Chapter 7 (pp 47-57) surveys briefly explanations put forward by older scholars such as Malthus, Ricardo, John Stuart Mill, Jean Baptiste Say, Karl Marx, Tugan-Baranovskij and others, and also theories by newer theoreticians like Knut Wicksell and John M. Keynes. The book is reviewed by *Farmand*. Edit. 1947-08-23 IDb.

IDa:34, 965 IDb:1831

- 975 1949b Prolegomena to a pressure-analysis of economic phenomena, *Metroeconomica*, Vol 1, 135-160.
Also issued as reprint No 113 from DE-UO. An excerpt from the article is published as Frisch 1995aw IDa (in Hendry and Morgan). Reproduced (in Bjerkholt) as Frisch 1995ax IDb. Section 2 is reproduced (with minor modifications) as Frisch 1961-02-01 IDc. The article is assessed by Arrow 1960b IDd.
IDa:300, 992 IDb:301, 993 IDc:757, 979 IDd:1923
- 976 1950-02-04 *On the notion of equilibrium and disequilibrium*, Oslo, memo DE-UO, 7 pp.
Reprint of Frisch 1936d IDa.
IDa:65, 971
- 977 1951c Monopoly - Polypoly - The concept of force in the economy, *International Economic Papers*, No 1, 23-36.
Originally issued in French: 1933d IDa, see the annotations. Translated into English by W. Beckerman. Also issued in German: 1965b IDb and 1968b IDc. A reprint of the English version is issued as Frisch 1995y IDd (in Bjerkholt).
IDa:46, 897, 967 IDb:187, 923, 982 IDc:208, 924, 984 IDd:273, 990
- 978 1951-09-26 *Investment and consumption as factors in economic cycles*, Oslo, memo DE-UO, 6 pp.
In this paper, which according to a note on the front page was written in 1934, Frisch deals with two seemingly contradicting observations. One was made by Wesley C. Mitchell and J. M. Clark separately, indicating that capital production moves approximately in synchrony with the growth rate of consumption. J. Tinbergen maintained, however, that he had found a strong connection between capital production and the size of consumption, but either no influence at all, or even a negative rather than a positive influence from the consumption growth rate. Frisch believed that the explanation to this apparent incompatibility must be that Mitchell and Clark had considered the relation between *capital-starting* and consumption, while Tinbergen had studied the relation between the *carry-on-activity* (of capital production) and consumption. Frisch discusses this hypothesis within his propagation-impulse model and seems to arrive at a confirmative conclusion. Refer to Frisch 1931b IDa and 1933i IDb.
IDa:25, 959 IDb:50, 968
- 979 1961-02-01 *Prolegomena to a pressure-analysis of economic phenomena*, Oslo, memo DE-UO, 4 pp.
Reprint of section 2 of a paper in *Metroeconomica*, Frisch 1949b IDa, (with some minor modifications in the form of presentation). The *Metroeconomica* article is reprinted and issued as Frisch 1995ax IDb (in Bjerkholt). An excerpt of the article is issued as Frisch 1995aw IDc (in Hendry and Morgan).
IDa:104, 975 IDb:301, 993 IDc:300, 992
- 980 1962-11-28a *Dynamic utility*, Oslo, memo DE-UO, 8 pp.
An analysis done as a reaction to a lecture by Sir Roy Harrod at the University of Oslo 27 November 1962. Came first in print as Frisch 1964a IDa, see the annotations.
IDa:179, 851, 981
- 981 1964a *Dynamic utility*, *Econometrica*, Vol 32, 418-424.
An analysis written in reaction to a lecture by Sir Roy Harrod at the University of Oslo 27 November 1962. Originally issued as memo from DE-UO, Frisch 1962-11-28a IDa. A reprint published (in Bjerkholt) as Frisch 1995j IDb. Also issued as reprint No 21 from DE-UO.
IDa:777, 850, 980 IDb:258, 861, 988
- 982 1965b Monopol - Polypol - der Begriff der Kraft in der Wirtschaft, in Ott, Alfred Eugen (ed): *Preistheorie*, Köln, Berlin, Kiepenheuer & Witsch, 17-32.
Originally issued in French: 1933d IDa; later in English translation: 1951c IDb.
Translated from French to German by Alfred Eugen Ott. Reprinted in a second German book of selected works, 1968b IDc.
IDa:46, 897, 967 IDb:115, 917, 977 IDc:208, 924, 984

- 983 1966i Propagation problems and impulse problems in dynamic economics, in Gordon, R. A., and L. R. Klein (eds): *Readings in business cycles*, London, George Allen & Unwin Ltd., 155-185.
Reprint of Frisch 1933i IDa, see the annotations.
IDa:50, 968
- 984 1968b Monopol - Polypol - der Begriff der Kraft in der Wirtschaft, in Barnikel, Hans-Heinrich (ed): *Wettbewerb und Monopol*, Darmstadt, Wissenschaftliche Buchgesellschaft, 35-56.
Reprint of Frisch 1965b IDa, see the annotations.
IDa:187, 923, 982
- 985 1974i A terjedés és az impulzus kérdései a dinamikus közgazdaságtanban [Propagation problems and impulse problems in dynamic economics], in Frisch, Ragnar: *Kvantitatív és dinamikus közgazdaságtan*, Budapest, Közgazdasági és Könyvkiadó, 103-136.
Translation by Ágainé, Tüzes Klára of Frisch 1933g IDa, see the annotations. See Frisch 1974f IDb.
IDa:50, 968 IDb:227
- 986 1990 The characteristic solutions of a mixed difference and differential equation occurring in economic dynamics, in Osiatynski, Jerzy (ed): *Collected works of Michal Calecki. Volume 1. Capitalism: Business cycles and full employment*, Oxford; New York; Toronto and Melbourne, Oxford University Press, Clarendon Press, 447-460.
With Harald Holme. A reprint of Frisch 1935b IDa.
IDa:59, 1387
- 987 1992 Statics and dynamics in economic theory, *Structural Change and Economic Dynamics*, Vol 3, 391-401.
An English translation by Peter Thomas of the sections 1-3 of Frisch 1929d IDa. A reprint in Frisch 1995bk IDb (in Bjerkholt). An introduction by Andvig 1992 IDc in the same journal issue, pp 385-389.
IDa:20, 957 IDb:316, 998 IDc:2040
- 988 1995j Dynamic utility, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*. Aldershot UK, Brookfield US, Edward Elgar, 471-477.
A reprint of Frisch 1964a IDa, see the annotation.
IDa:179, 851, 981
- 989 1995q The interrelation between capital production and consumer-taking, in Bjerkholt, O. (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume I*, Aldershot UK, Brookfield US, Edward Elgar, 302-310.
A reprint of Frisch 1931c IDa, see the annotations.
IDa:25, 959
- 990 1995y Monopoly - Polypoly - The concept of force in the economy, in Bjerkholt, O. (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume I*, Aldershot UK, Brookfield US, Edward Elgar, 346-359.
A reprint of Frisch 1951c IDa, see the annotations.
IDa:115, 917, 977
- 991 1995al On the notion of equilibrium and disequilibrium, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume I*, Aldershot UK, Brookfield US, Edward Elgar, 454-459.
A reprint of Frisch 1936d IDa. See the annotations to 1929d IDb (Statikk og dynamikk ...).
IDa:65, 971 IDb:20, 957
- 992 1995aw Prolegomena to a pressure-analysis of economic phenomena (1949), in Hendry, David F. and Morgan, Mary S. (eds): *The foundations of econometric analysis*, Cambridge England, New York, Melbourne, Cambridge University Press, 355-358.

- An excerpt from Frisch 1949b IDa.
IDA:104, 975
- 993 1995ax Prolegomena to a pressure-analysis of economic phenomena, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*, Aldershot UK, Brookfield US, Edward Elgar, 377-402.
A reprint of Frisch 1949b IDa, see the annotations.
IDA:104, 975
- 994 1995ay Propagation problems and impulse problems in dynamic economics (1933), in Hendry, David F. and Morgan, Mary S. (eds): *The foundations of econometric analysis*, Cambridge England, New York, Melbourne, Cambridge University Press, 333-346.
Extracts from Frisch 1933i IDa (the Cassel Festschrift article), see the annotations.
IDA:50, 968
- 995 1995az Propagation problems and impulse problems in dynamic economics, in Bjerkholt, O. (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume I*, Aldershot UK, Brookfield US, Edward Elgar, 311-345.
A reprint of Frisch 1933g IDa, see the annotations.
IDA:50, 968
- 996 1995aæ Propagation problems and impulse problems in dynamic economics, in Kydland, Finn E. (ed): *Business Cycle Theory*, Aldershot, UK - Brookfield, US, Edward Elgar Publ. Ltd - Edward Elgar Publ. Co., 3-37.
A reprint of Frisch 1933i IDa, see the annotations.
IDA:50, 968
- 997 1995be Rytmer og impulser i dynamisk økonomikk [Rhythms and impulses in dynamic economics], in Frisch, Ragnar: *Troen på nøkken*, Oslo, Det Blå Bibliotek, UF, 155-166.
An extract from the treatise "Propagation problems ..." 1933i IDa, see the annotations.
The extract, translated into Norwegian by Jens Chr. Andvig, is a considerably shortened version of the original treatise. A number of passages with substantial use of mathematics, diagrams etc are omitted, and so are all mathematically more demanding discussions.
IDA:50, 968
- 998 1995bk Statics and dynamics in economic theory, in Bjerkholt, O. (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume I*, Aldershot UK, Brookfield US, Edward Elgar, 291-301.
A reprint of Frisch 1992 IDa, which was an English translation by Peter Thomas of sections 1-3 from the original Norwegian article Frisch 1929d IDb (see the annotations).
IDA:246, 987 IDb:20, 957
- 999 1995bl Statikk og dynamikk [Statics and dynamics], in Frisch, Ragnar: *Troen på nøkken*, Oslo, Det Blå Bibliotek, UF, 151-154.
An extract from pp 312-323 and 326-327 of the treatise 1929d IDa, see the annotations.
IDA:20, 957

II.3.6 Statistics and econometrics

- 1000 1924a Solution d'un problème du calcul des probabilités, *Skandinavisk Aktuarietidskrift*, Vol 7, 153-174.
- 1001 1924b Sur un problème du calcul des probabilités, *Comptes rendus des séances de l'Académie des Sciences*, Séance du 17 novembre 1924, Paris, 1031-1033.
- 1002 1925a En ny metode i sandsynlighetsregningen [A new method in probability calculus], *Norsk Matematisk Tidsskrift*, Vol 7, 50-56.
Review of Millot, S. 1925: *Théorie nouvelle de la probabilité des causes*, Paris, Gauthier-Villars, 35 pp.
- 1003 1925b Recurrence formulae for the moments of the point binomial, *Biometrika*, Vol 17, 165-171.
- 1004 1925c Sur les semi-invariants de Thiele, *Comptes rendus des séances de l'Académie des Sciences*, Séance du 15 juillet 1925, Paris, Tome 181, 274-276.
- 1005 1926a Impossibilité de resserrer l'inégalité de Markov dans le cas général, *Den sjette skandinaviske matematikerkongres i København*, 31 aug. - 4 sept. 1925, Copenhagen, Det Hoffensbergske Etablissement, 203-206.
- 1006 1926f Semi-invariants de Thiele et moments d'ordre supérieur, *Den sjette skandinaviske matematikerkongress i København*, 31 aug.- 4 sept. 1925, Copenhagen, Det Hoffensbergske Etablissement, 365-374.
- 1007 1926g *Sur les semi-invariants et moments employés dans l'étude des distributions statistiques*, Skrifter utgitt av Det Norske Videnskaps-Akademi i Oslo, II. Historisk-Filosofisk Klasse, No 3, 87 pp.
Ragnar Frisch's doctoral thesis. Presented at the annual meeting in the Norwegian Scientific Academy 3 May 1926 by Professor O. Jæger. The defence was held on 13 October 1926; the trial lecture, prescribed topic (Frisch 1926i IDa), on 7 October 1926.
IDA:325, 865
- 1008 1926h Sur un problème d'économie pure, *Norsk Matematisk Forenings Skrifter*, Oslo, Series 1 No 16, 1-40.
In this article, which is Frisch's first work on economics and his first work in his own quantification programme, he formulates axioms, of "the first" and of "the second kind", of the consumer's choice, which imply the existence of an ordinal resp. a cardinal utility function. Then he uses the cardinal approach in an empirical study for determining the marginal utility of money for several consumer groups. Reissued as Frisch 1954-05-03 IDa and 1957d IDb. An English translation is published (in Chipman et al) as Frisch 1971d IDc and republished (in Bjerkholt) as Frisch 1995aj IDd. See also *New methods...* 1932h IDE. A line from these early works of Frisch's extends forth to his article "A complete scheme ..", 1959a IDf, see the annotations.
IDA:599, 843, 1090 IDb:144, 845, 1096 IDc:218, 852, 1115 IDd:287, 864, 1129 IDE:37, 815, 1020 IDf:147, 849, 921
- 1009 1927a *The analysis of statistical time series*, New York, mimeo, 121 pp.
The first of three papers in English reporting results of Frisch's research on time-series methods. Circulated privately by the help of W. C. Mitchell, see Morgan 1990a IDa p 84. The other two papers are 1928 IDb and 1931e IDc.
IDA:2034 IDb:16, 956, 1011 IDc:28, 962
- 1010 1927c Sur le calcul numérique des moments ordinaires et des moments composés d'une distribution statistique, *Skandinavisk Aktuarietidskrift*, Vol 10, 81-91.

- 1011 1928 Changing harmonics and other general types of components in empirical series, *Skandinavisk Aktuarietidskrift*, Vol 11, 220-236.
The second of three papers in English reporting results of Frisch's research on time series methods, see Frisch 1927a IDa (mimeo) and 1931e IDb. Refer also to Morgan 1990a IDc pp 83 and further.
Ida:326, 1009 IDb:28, 962 IDc:2034
- 1012 1929a Correlation and scatter in statistical variables, *Nordic Statistical Journal*, Vol 1, 36-102.
Ragnar Frisch's first important study in the field of econometric methodology. Later important works in the same field are 1933g IDa, 1934f IDb and the UN memorandum 1938-07-17 IDc; see the annotations. The present study was published simultaneously with Frisch 1929b IDd and republished as Frisch 1995g IDE (in Bjerkholt). Also reproduced as memo from DE-UO Frisch 1951-05-08 IDf. See the annotations to Frisch 1948d IDg for more references.
Ida:49, 1024 IDb:58, 1026 IDc:355, 1034 IDd:18, 1013 IDE:255, 1123 IDf:542, 1074 IDg:102, 1044
- 1013 1929b Correlation and scatter in statistical variables, *Nordisk Statistisk Tidskrift*, Vol 8, 36-102.
Also as Frisch 1929a IDa, see the annotation. Reproduced as memo from DE-UO Frisch 1951-05-08 IDb.
Ida:17, 1012 IDb:542, 1074
- 1014 1929e Sur un formule générale de moyenne, *Comptes rendus des séances de l'Académie des Sciences*, Séance du 22 avril, Paris, Tome 188, p 1081 (3 pp).
- 1015 1931d Konjunkturbevegelsen som statistisk og som teoretisk problem [The business cycle as a statistical and a theoretical problem], in *Förhandlingar vid Nordiska Nationalekonomiska Mötet i Stockholm 15-17 juni 1931*, Stockholm, Ivar Hægströms Boktryckeri och Bokförlag AB, 127-147.
Frisch presents for the first time the basic lines of his ideas of business cycle research. The discussion which followed is reported on pp 147-168. Appendix IIIa, pp 224-227, gives J. Åkerman's summary in Swedish of Frisch's lecture, and Appendix IIIb, pp 228-234, gives some excerpts of the lecture.
- 1016 1931f *The optimum regression*, Minneapolis, mimeo University of Minnesota, 11 pp.
Frisch presents and discusses a principle for selecting (as the "best") one particular of the n elementary regressions between n statistical variables, the regressions being determined by minimizing the sum-squares in each of the n directions. The principle is "an immediate outgrowth of the theory of linear regressions" developed in Frisch 1929a IDa. See the annotations to Frisch 1948d IDb for more references.
Ida:17, 1012 IDb:102, 1044
- 1017 1931g Statistical correlation and the theory of cluster types, *Journal of the American Statistical Association*, vol 26, 375-392.
With Bruce D. Mudgett. A correction in Frisch 1932c IDa. The article is reissued as Frisch 1995bn IDb (in Bjerkholt). See the annotations to Frisch 1948d IDc for more references.
Ida:32, 1018 IDb:319, 1134 IDc:102, 1044
- 1018 1932c A correction, *Journal of the American Statistical Association*, Vol 27, 187-187.
With Bruce D. Mudgett. A correction to 1931g IDa.
Ida:29, 1017
- 1019 1932f Méthodes nouvelles pour mesurer l'utilité marginale, *Revue d'Économie Politique*, Vol 46, 1-28.
With Jacques Moret. The article consists of two parts. Part II (14-28) is Frisch's presentation at the Econometric Society meeting, Lausanne 1931, while part I (1-14) is Jacques Moret's introduction to Frisch's work. See also Frisch 1932g IDa, (*New methods...*).
Ida:37, 815, 1020

- 1020 1932h *New methods of measuring marginal utility*, Tübingen, Verlag von J. C. B. Mohr (Paul Siebeck), 142 pp.
Dedicated: "To Irvin Fisher - the pioneer of utility measurement". Reissued as 1978 IDa. Italian translation 1937g IDb. Discussed *inter alia* in Bilimovic 1933 IDc, Burk 1936 IDd and Bergson 1966 IDE (pp 93-122). Rewied by Schultz 1933 IDf and Bowley 1932 IDg. Considerable criticism has been levelled against the idea of measurable utility and assumptions of want-independence. A thorough and critical discussion, based on a purely ordinalistic point of view, is found in Samuelson, Paul Anthony 1947: *Foundations of economic analysis*, Harvard University Press, Cambridge. The matter is also mentioned by Arrow 1960b IDh (p 177), which caused Samuelson to give a new thorough discussion of it in his obituary article 1974 IDi. Critical discussions directed specifically towards Frisch's *New methods...* are given by Allen 1933 IDj, Fagan 1938 IDk, and Vinci 1933 IDl. See also Chipman 1998 IDm pp 60-67 for an elucidation of basic points of the measurable utility controversy.
IDA:242, 856, 1118 IDb:71, 822, 1031 IDc:1767 IDd:1786 IDE:1958 IDf:1768 IDg:1760 IDh:1923 IDi:1984 IDj:1766 IDk:1797 IDl:1770 IDm:2091
- 1021 1932i On the use of difference equations in the study of frequency distributions, *Metron*, Vol 10 No 3, 35-59.
- 1022 1933c Editorial, *Econometrica*, Vol 1, 1-4.
The first editorial in *Econometrica*. Reproduced as Frisch 1994a IDa.
IDA:247, 1121
- 1023 1933f Partial time regressions as compared with individual trends, *Econometrica*, Vol 1, 387-401.
With Frederick V. Waugh. Olav Reiersøl generalized the main theorem of this article - called the Frisch-Waugh theorem - and applied the generalized theorem to facilitate some computations in confluence analysis, see Reiersøl 1945b IDa and Frisch 1934f IDb. The F-W theorem was later applied by Lovel, Michael C. 1963: Seasonal adjustment of economic time series and multiple regression analysis, *Journal of the American Statistical Association*, Vol 58, 993-1010. It is presented in Davidson, Russel and James G. MacKinnon 1993: *Estimation and Inference in Econometrics*, New York, Oxford University Press, pp 19-24, and in Chipman 1998 IDc pp 84-86. It has been further developed and generalized by Fiebig et al 1996 IDd (see the annotations). The Frisch-Waugh article is reissued as Frisch and Waug 1970d IDE (in Hooper and Nerlove), 1984 IDf and 1995aq IDg (in Bjerkholt).
IDA:1815 IDb:58, 1026 IDc:2091 IDd:2083 IDE:213, 1114 IDf:244, 1120 IDg:294, 1130
- 1024 1933g Pitfalls in the statistical construction of demand and supply curves, in *Veröffentlichungen der Frankfurter Gesellschaft für Konjunkturforschung, Neue Folge Heft 5*, Leipzig, Hans Buske Verlag, 1-39.
During the late 1920s and the early 1930s considerable progress was made in methods of estimating demand and supply curves. Of great importance was Working's article 1927 IDa, see the annotations. Also Leontief made an attempt in his article 1929 IDb. This article provoked Frisch into writing the present monograph. Here he first provides a cogent criticism of a method suggested by Pigou 1930 IDc (see Morgan 1990a IDd, p 183). Next he discusses the identification problem, refering favourably to Working 1927. Finally he gives (this was his primary concern) a severe criticism of Leontief 1929, which led to an acrimonious debate with Leontief. Leontief's response 1934b IDE, Frisch's reply 1934c IDf (see the annotations) and Leontief's final word 1934a IDg. See also Marschak 1934 IDh. Frisch's monograph is reissued as Frisch 1995ar IDi (in Bjerkholt). Accounts of the "Pitfalls debate" are given in Morgan 1990 pp 183-187, in Hendry and Morgan (eds) 1995 IDj pp 257-270, and in Chipman 1998 IDk pp 78-84. In addition Chipman gives a glimpse of later influences from Frisch's monograph. See also Qin 1989 IDl.
IDA:1744 IDb:1746 IDc:1747 IDd:2034 IDE:1774 IDf:55, 1025 IDg:1773 IDh:1775 IDi:295, 1131 IDj:2064 IDk:2091 IDl:2031
- 1025 1934c More pitfalls in demand and supply curve analysis, *The Quarterly Journal of Economics*, Vol 48, 749-755.
See the annotations to Frisch 1933g IDa. Selected parts of the several contributions in the "Pitfalls debate" are reprinted in Hendry and Morgan (eds) 1995 IDb pp 257-270. A

reprint of the present contribution: Frisch 1994b IDc.
Ida:49, 1024 IDb:2064 IDc:248, 857

- 1026 1934f *Statistical confluence analysis by means of complete regression systems*, Oslo, DE-UO, Publikasjon nr 5, 192 pp.
 Frisch's work on confluence analysis consists largely of two publications: Frisch 1929a IDa and the present one. A central theorem, previously proved by Gini, C. 1921: "Sull' interpolazione di una retta quando i valori della variabile indipendente sono affetti da errori accidentali", *Metron*, Vol 1, 63-82, was stated and proved by Frisch (p 60) in the two-variable case, generalized by Koopmans 1937 IDb, Reiersøl 1941 IDc and Willassen 1987 IDd. Malinvaud 1966 IDE claimed (p 48) that Reiersøl had used a very indirect method, while a more natural proof was given (in French) by Dhondt 1960 IDf, who also generalized Frisch's theorem. Reprint of pp 5-8 of Frisch's treatise is issued as Frisch 1995bm IDg. Related publications: Reiersøl 1940 IDh, 1945a IDi and 1945b IDj, and Teghem 1959 IDk. A re-analysis of the confluence analysis is made by Hendry and Morgan 1989 IDl, see the annotations. Refer also to Aldrich 1989 IDm (on autonomy), Qin 1989 IDn (on identification theory), and Haavelmo 1938 IDo. A review of Frisch 1934f: McIntyre 1936 IDp. More references in the annotations to Frisch 1948d IDq. See also Geraci 1987 IDr.
Ida:17, 1012 IDb:1793 IDc:1808 IDd:2019 IDE:1959 IDf:1924 IDg:318, 1133 IDh:1805 IDi:1814 IDj:1815 IDk:1919 IDl:2028 IDm:2023 IDn:2031 IDo:1798 IDp:1787 IDq:102, 1044 IDr:2016
- 1027 1934g *Teknikk ved beregning av produktmomenter og korrelasjonskoeffisienter [Technique in calculating moments and correlation coefficients]*, Oslo, DE-UO, Memorandum No 1, 12 pp.
 With Kåre Norderud.
- 1028 1935c *Elementer av determinantberegningen [Elements of evaluating determinants]*, Oslo, mimeo DE-UO, 14 pp.
 Part of Professor Frisch's lectures on probability distributions and regression theory during the spring term of 1933.
- 1029 1936-06-27 *Betenkning angående efterspørselen efter øl i Norge og angående de virkninger som kan påregnes ved en nedsettelse av ølavgiften og av den pris bryggeriene får [An opinion on the demand for beer in Norway and on the effects that are to be expected from a reduction of the excise duty on beer and of the price the breweries can take]*, Oslo, mimeo DE-UO, 29 pp.
 An econometric analysis carried out for Den Norske Bryggeriforening [The Union of Breweries in Norway]. A few copies are available at DE-UO. Not for lending.
- 1030 1936-10-08 Memorandum on Mr. Mendershausen's argument in regard to the skewness of the regression line in seasonals in the building industry, Oslo, mimeo DE-UO, 4 pp.
 Discussed September 29 1936 at the Econometric Society Meeting at Oxford. The memorandum was never distributed. A few copies are available at DE-UO.
- 1031 1937g Nuovi metodi di misura del l'utilità marginale, in Guisepppe Bottai e Celestino Arena (eds): *Economia pura della Nuova Collana di Economisti*, Torino, Unione Tipografico-Editrice Torinese, 385-512.
 Translation of 1932h IDa.
Ida:37, 815, 1020
- 1032 1937i A summary of the Neyman-Pearson theory of testing hypotheses, *Econometrica*, Vol 5, 369-371.
 At the sixth European meeting of the Econometric Society, held at Oxford, England, 25 - 29 September 1936, Dr. Jerzy Neyman gave a "Survey of recent work on correlation and covariation". In the course of the presentation he developed "the Neyman-Pearson theory of testing hypotheses", of which the summary had been prepared by Frisch. The minutes of the meeting written by E. H. Phelps Brown.
- 1033 1938b *Efterspørselen efter melk i Norge [The demand for milk in Norway]*, *Statsøkonomisk Tidsskrift*, Vol 52, 1-62.
 With Trygve Haavelmo. The work made a partial result (from the Co-ordination

- Department) of the comprehensive Plan for an economic structural survey of Norway, see Frisch (et al) 1936e IDa.
IDa:66, 1137
- 1034 1938-07-17 Statistical versus theoretical relations in economic macrodynamics, Oslo, mimeo DE-UO, 16 pp.
 A memorandum prepared for the Business Cycle Conference at Cambridge, England, 18-20 July 1938, to discuss Tinbergen's work for the League of Nations (two volumes published in 1939). Although Frisch praises Tinbergen for having presented a work "of paramount importance", a main point of his memorandum is a severe and cogent criticism of Tinbergens conclusions. "'coflux" relations may have provided observations which do not reveal the structure relations one is actually trying to estimate." He introduces the *autonomy concept* and discusses passive curve-fitting versus numerical determination of theoretical relations. The first issue: 1948-11-06b IDa, the second: 1954-09-10 IDb. In print: 1995bo IDc (in Bjerkholt) and 1995b IDd (in Hendry and Morgan). For assessments, see Arrow 1960b IDe and Qin 1989 IDf. Frisch resumed the discussion of the identification problem in 1948d IDg, see the annotations for more references. Refer also to Aldrich 1989 IDh (on the autonomy concept). Parts of the autonomy memorandum was analyzed and discussed in depth (with parts of Frisch 1933i IDi) in Boumans 1995 IDj.
IDa:449, 1049 IDb:609, 1091 IDc:320, 1135 IDd:250, 1122 IDe:1923 IDf:2031 IDg:102, 1044 IDh:2023 IDi:50, 968 IDj:2061
- 1035 1939d A note on errors in time series, *The Quarterly Journal of Economics*, Vol 53, 639-640.
 Correction of a misunderstanding in Tintner, G. 1939: A note on economic aspects of the theory of errors in time series, *The Quarterly Journal of Economics*, Vol 53, 141-149.
- 1036 1940-02-04 *Responsum ang. den sannsynlige virkning på smør og margarinomsetningen av visse reguleringsforanstaltninger [Response regarding the probable effect on the sales of butter and margarine from certain trade restrictions]*, Oslo, mimeo DE-UO, 5 pp.
 A small econometric analysis carried out for Margarinfabrikkens Landsforening [The Union of Margarine Producers in Norway]. A few copies are available at DE-UO. Not for lending.
- 1037 1945b En statistisk analyse av bakeprøver [A statistical analysis of bakery samples], in *Kristiania Brødfabrikk A/S og A/S Rosenborgkomplekset gjennom 25 år, A jubilee publication*, Oslo, Beretning om selskapenes anlegg, organisasjon og drift, 172-181.
 Also as Frisch 1948-05-05 IDa and 1954c IDb (Publikasjon nr 19 from DE-UO).
IDa:440, 1046 IDb:127, 1089
- 1038 1946j The responsibility of the econometrician, *Econometrica*, Vol 14, 1-4.
 Frisch's work as Editor-in-Chief in *Econometrica* became considerably more difficult after the German attack on Norway in April 1940 and completely impossible from the moment the United States entered the war in December 1941. Frisch was arrested in October 1943, when the Nazi government closed the University of Oslo, and he sat imprisoned for about one year. Oskar Lange was appointed Acting Editor in 1942 and edited the journal until Frisch could resume his duties. The present article marked his return to the Editor's chair in January 1946. A reprint of the article is published (in Bjerkholt) as Frisch 1995bc IDa.
IDa:309, 1132
- 1039 1947e Appendiks 5. Harving og knippekart-tegning [Appendix 5. Harrowing and bunch-map drawing], in Frisch, Ragnar: *Notater til økonomisk teori. 4. utgave, annet hefte [Notes on economic theory. Fourth edition, second volume]*, Oslo, mimeo DE-UO, 403-414.
- 1040 1947h Appendiks 8. Litt konfluensanalyse [Appendix 8. A note on confluence analysis], in Frisch, Ragnar: *Notater til økonomisk teori, 4. utgave, annet hefte [Notes on economic theory, fourth edition, second volume]*, Oslo, mimeo DE-UO, 473-495.
 Made for teaching purpose. For complete presentations, see Frisch 1934f IDa and Reiersøl's doctoral thesis, Reiersøl 1945a IDb.

IDa:58, 1026 IDb:1814

- 1041 1947-05-28 *Seleksjonens grunnformel [The basic formula of selection]*, Oslo, memo DE-UO, 1 p.
- 1042 1947-08-20 *Om den statistiske bestemmelse av krysssetterspørslene i en gruppe av behovssammenhengende goder [On the statistical determination of the cross-demands in a group of want-connected goods]*, Oslo, memo DE-UO, 3 pp.
- 1043 1947-11-24 *The Neyman-Pearson theory of testing hypothesis*, Oslo, memo DE-UO, 3 pp.
- 1044 1948d Repercussion studies at Oslo, *The American Economic Review*, Vol 38 I, 367-372.
Frisch puts forward basic ideas from the ongoing work at DE-UO, the main feature of which being the analysis and numerical determination of high-autonomous structural relations. Thus ten years after his critique of Tinbergen (1938-07-17 IDa, see the annotations) Frisch considers again the problems of determining numerically a structural equation with a high degree of autonomy. There goes a line from his first work on econometrical methodology, the Correlation and scatter article (1929a IDb), to the present one, the main works along this road being 1931f IDc, 1931g IDd, 1933f IDE, 1933g IDf, 1934f IDg and 1938-07-17. The present article is also issued as memo from DE-UO, Frisch 1949-04-20 IDh, and reproduced as Frisch 1995bb IDi (in Bjerkholt).
IDa:355, 1034 IDb:17, 1012 IDc:331, 1016 IDd:29, 1017 IDE:48, 1023 IDf:49, 1024 IDg:58, 1026 IDh:469, 1056, 1154 IDi:308, 1381
- 1045 1948-02-24 *Konjunkturbølgenes utsagnskraft når materialet er hentet fra forskjellige distrikter, og distriktenes representasjon i materialet skifter tilfeldig [The significance of the business cycles when the data are taken from different districts and the representation of the districts shifts randomly]*, Oslo, memo DE-UO, 5 pp.
It is referred to a discussion with Professor Eli Heckscher.
- 1046 1948-05-05 *En statistisk analyse av bakeprøver [A statistical analysis of bakery samples]*, Oslo, memo DE-UO, 9 pp.
Originally published as Frisch 1945b IDa. Also as Publikasjon nr 19 from DE-UO, 1954c IDb. A note on the front page of the present memo (translated here): "The present article is reproduced from the jubilee publication "Kristiania Brødfabrik A/S og A/S Rosenborgkomplekset gjennom 25 år", Oslo 1945. Since the original article is available only in the jubilee publication, which was printed in a limited number of copies, one has found it convenient to reproduce it in the series of memos from DE-UO."
IDa:89, 1037 IDb:127, 1089
- 1047 1948-05-23 *The cleavings of a univariate measurement into two factors*, Oslo, memo DE-UO, 7 pp.
With Erling Sverdrup.
- 1048 1948-11-06a *Autonomy of economic relations*, Oslo, memo DE-UO, 60 pp.
With T. Haavelmo, T. C. Koopmans and J. Tinbergen. An introductory remark: "For any economic relations introduced into our analysis we may ask: How *autonomous* is it? This question is extremely important. In one sense it is the most basic question one may raise in all sorts of econometric work. The institute has found it expedient to reproduce in the form of a stencil-memo some contributions that have been made towards a discussion of this question, ..." The reproduced works are: Frisch 1948-11-06b IDa, Tinbergen 1948-11-06 IDb, Haavelmo 1948-11-06 IDc, Frisch 1948-11-06c IDd and Koopmans 1948-11-06 IDE. A thorough discussion of the autonomy concept and the network of concepts surrounding it is given in Aldrich 1989 IDf.
IDa:449, 1049 IDb:1849 IDc:1847 IDd:450, 1050 IDE:1848 IDf:2023
- 1049 1948-11-06b League of Nations. Statistical versus theoretical relations in economic macrodynamics, in Ragnar Frisch et al: *Autonomy of economic relations*, Oslo, memo DE-UO, 2-19.
This is the first publication of Frisch's memorandum for the Business Cycle Conference at

- Cambridge, England, 18-20 July 1938, to discuss J. Tinbergen's works of 1938, see Frisch 1938-07-17 IDa. More references in the annotations to 1938-07-17 IDa. See also 1948d IDb.
IDA:355, 1034 IDb:102, 1044
- 1050 1948-11-06c Parts of Professor Frisch's article "Repercussion studies at Oslo", in Ragnar Frisch et al: *Autonomy of economic relations*, Oslo, memo DE-UO, 38-42.
 Parts of Frisch 1948d IDa. One of the main contributions to the autonomy debate, see Frisch 1948-11-06b IDb.
IDA:102, 1044 IDb:449, 1049
- 1051 1948-11-20 *Den multinomiale fordelingslov [The multinomial law of distribution]*, Oslo, memo DE-UO, 15 pp.
- 1052 1948-11-21 *Noen prinsipielle og terminologiske merknader til den matematiske statistikk [Some fundamental and terminological remarks about mathematical statistics]*, Oslo, memo DE-UO, 3 pp.
 Response to Frisch's remarks: Per Ottestad, 1948-12-11 IDa.
IDA:1850
- 1053 1948-11-22 *On the distribution of a sum of squares over a linear subspace*, Oslo, memo DE-UO, 7 pp.
- 1054 1948-11-23 *Statistiske fordelingslover for en variabel [Statistical single-variable laws of distribution]*, Oslo, memo DE-UO, 62 pp.
- 1055 1948-12-13 *En standard-disposisjon for den økonometriske oppgave [A standard outline for the econometric paper]*, Oslo, memo DE-UO, 7 pp.
- 1056 1949-04-20 *Repercussion studies at Oslo*, Oslo, memo DE-UO, 7 pp.
 Original issue: Frisch 1948d IDa, see the annotations.
IDA:102, 1044
- 1057 1950d On the distribution of a sum of squares over a linear subspace, *Zeitschrift für Ökonometrie*, Vol 1, 105-110.
- 1058 1950-01-24 *Nøklefunksjonsmetoden for dekomponering av tidsrekker [The key function method for decomposing time series]*, Oslo, memo DE-UO, 4 pp.
 A brief summary of the key function method for decomposing time series. A more complete treatment is given in the articles Frisch 1928 IDa, 1931e IDb and 1934b IDc.
IDA:16, 956, 1011 IDb:28, 962 IDc:337, 970
- 1059 1950-02-07 *Sumfunksjonen og fraktilfunksjonen [The cumulative function and the percentile function]*, Oslo, memo DE-UO, 10 pp.
- 1060 1950-02-19 *Stabilitetsbedømmelse ved hjelp av Poissons fordeling [Assessment of stability by means of the Poisson distribution]*, Oslo, memo DE-UO, 4 pp.
- 1061 1950-03-11 *Fordelingen av største og minste kjennemerkeverdi ved gjentatte observasjoner [The distribution of highest and lowest observation in case of repeted samples]*, Oslo, memo DE-UO, 16 pp.
- 1062 1950-03-29 *Notater til teoretisk statistikk. Ekskurs 103. Tchebycheffs ulikhet [Notes on theoretical statistics. Excursus 103. Chebyshev's inequality]*, Oslo, memo DE-UO, 11 pp.
- 1063 1950-03-30 *Notater til teoretisk statistikk. Ekskurs 106. Nærmere om den binomiale fordeling [Notes on theoretical statistics. Excursus 106. Further about the binomial distribution]*, Oslo, memo DE-UO, 10 pp.
- 1064 1950-04-09 *Notater til teoretisk statistikk. Ekskurs 107. Terminologi og grunnbegreper i estimeringsteorien [Notes on theoretical statistics. Excursus 107. Terminology and basic concepts in the theory of estimation]*, Oslo, memo DE-UO, 10 pp.

- 1065 1950-04-28 *Notater til teoretisk statistikk. Ekskurs 202. Er det stokastisk sett noe oppnådd ved å få flere opplysninger? Og hva er det i tilfelle som oppnås? [Notes on theoretical statistics. Excursus 202. Is it from a stochastic point of view something achieved by getting more information? And if so, what is achieved?]*, Oslo, memo DE-UO, 8 pp.
- 1066 1950-05-09 *Notater til teoretisk statistikk. Ekskurs 204. Lineære regresjoner [Notes on theoretical statistics. Excursus 204. Linear regressions]*, Oslo, memo DE-UO, 15 pp.
- 1067 1950-05-22 *Markoffs teorem om hvorledes de elementære regresjoner kan begrunnes estimeringsmessig [Markoff's theorem on how the elementary regressions can be substantiated]*, Oslo, memo DE-UO, 14 pp.
The present memo was replaced by Frisch 1951-02-06 IDa.
IDa:530, 1071
- 1068 1950-08-08 *Variansanalyse for data som danner et fullstendig kryssløp [Analysis of variance for data which form a complete data matrix]*, Oslo, memo DE-UO, 51 pp.
- 1069 1950-09-13 *Disposisjon til "Innføring i teoretisk statistikk del 1: Elementer av den matematiske statistikk" [An outline of "An introduction to theoretical statistics part I: Elements of mathematical statistics"]*, Oslo, memo DE-UO, 9 pp.
- 1070 1950-09-16b *De statistiske grunnbegreper [The basic statistical concepts]*, Oslo, memo DE-UO, 22 pp.
- 1071 1951-02-06 *Markoffs teorem om hvorledes en elementær empirisk regresjon kan begrunnes estimeringsmessig [Markov's theorem on how an elementary empirical regression can be substantiated]*, Oslo, memo DE-UO, 19 pp.
A note on p 1 (translated): "The present memo constitutes paragraph 74 of "Elements of the mathematical statistics". It replaces memorandum of 1950-05-22." See Frisch 1950-05-22 IDa. The present paragraph enters into chapter 7, "Regression analysis", which will consist of the paragraphs: 71. Empirical regressions, 72. Stochastic regressions, 73. The normal regression, 74. Markov's theorem on how an elementary empirical regression can be substantiated.
IDa:514, 1067
- 1072 1951-02-08 *Tetthet og masse ved en statistisk fordeling [Density and mass of a probability distribution]*, Oslo, memo DE-UO, 25 pp.
A note on the front page (translated): Paragraph 21 of "Elements of mathematical statistics".
- 1073 1951-02-21 *Generelt om avledete fordelingslover [On derived probability distributions]*, Oslo, memo DE-UO, 75 pp.
Note on page 1 (translated): Paragraph 25 of "Elements of the mathematical statistics".
- 1074 1951-05-08 *Correlation and scatter in statistical variables*, Oslo, memo DE-UO, 62 pp.
A reprint of Frisch 1929b IDa.
IDa:18, 1013
- 1075 1951-06-09 *Hypoteseprøving på grunnlag av antallet av forskjellige iakttagelser [Hypothesis testing on the basis of the number of different observations]*, Oslo, memo DE-UO, 133 pp.
Refer to Frisch 1952-04-25 IDa.
IDa:560, 1083
- 1076 1951-06-25 *Regresjonsbestemmelse kontra gruppeberegningensbestemmelse av Engel-elasticiteten [Determination of the Engel elasticity by regression versus by group calculation]*, Oslo, memo DE-UO, 3 pp.
- 1077 1951-09-10 *Estimeringsteori - Avsnitt 51-55 av "Elementer av den matematiske statistikk" [Theory of estimation - Paragraphs 51-55 of "Elements of mathematical statistics"]*, Oslo, memo DE-UO, 91 pp.
Lectures by Ragnar Frisch. Elaborated notes by Leif Johansen.

- 1078 1951-09-30 *Fordeling av stikkprøver over strata når formålet er størst mulig sikkerhet i prediksjonen av en totalhyppighet [Distribution of random samples over strata when the objective is maximum reliability in the prediction of a total frequency]*, Oslo, memo DE-UO, 4 pp.
- 1079 1951-10-01 *Spesielle fordelingslover. Hefte I - Avsnitt 26, 27 og 31 - 34 av "Elementer av den matematiske statistikk" [Several probability distributions. Volume I - The paragraphs 26, 27 and 31 - 34 of "Elements of mathematical statistics"]*, Oslo, memo DE-UO, 92 pp.
- 1080 1952-02-15 *Konferanse om statistikkpensumet for de sosialøkonomiske studenter [Conference on the syllabus in statistics for students in economics]*, Oslo, memo DE-UO, 3 pp.
Participants: Ragnar Frisch, Trygve Haavelmo, Leif Johansen and Tore Thonstad.
- 1081 1952-02-22 *Spesielle fordelingslover. Hefte II - Kap. 4 av "Elementer av den matematiske statistikk" [Several probability distributions. Volume II - Chapter 4 of "Elements of mathematical statistics"]*, Oslo, memo DE-UO, 186 pp.
Assisted by Leif Johansen.
- 1082 1952-03-11 *Konferanse om statistikkpensumet for de sosialøkonomiske studenter [Conference on the syllabus in statistics for students of economics]*, Oslo, memo DE-UO, 2 pp.
Participants: Ragnar Frisch, Trygve Haavelmo and Alette Hanssen-Bauer.
- 1083 1952-04-25 *The occurrence test*, Oslo, memo DE-UO, 52 pp.
Refer to Frisch 1951-06-09 IDa, 1952-05-02 IDb and Johansen 1952-02-09 IDc.
IDa:545, 1075 IDb:561, 1084 IDc:1895
- 1084 1952-05-02 *Beleggtallsberegning [Calculation of occurrence numbers]*, Oslo, memo DE-UO, 16 pp.
Refer to Frisch 1952-04-25 IDa.
IDa:560, 1083
- 1085 1952-08-09 *Hypoteseprøvingsteori - Kap. 6 av "Elementer av den matematiske statistikk" [Theory of hypothesis testing - Chapt. 6 of "Elements of mathematical statistics"]*, Oslo, memo DE-UO, 100 pp.
Lectures by Ragnar Frisch. Elaborated notes by Leif Johansen.
- 1086 1952-10-24 *Innholdsfortegnelse for "Innføring i teoretisk statistikk del I: Elementer av den matematiske statistikk" [List of contents for "Introduction to theoretical statistics part I: Elements of mathematical statistics"]*, Oslo, memo DE-UO, 9 pp.
- 1087 1952-11-18 *Forslag til norsk matematisk-statistisk nomenklatur [Proposal to a Norwegian mathematical-statistical nomenclature]*, Oslo, memo DE-UO, 11 pp.
Norwegian Statistical Association appointed in October 1950 a committee consisting of Svein Brenna, Ragnar Frisch, Olav Reiersøl and Erling Sverdrup, to put forward a proposal of "words and expressions from theoretical statistics which ought to be translated into the Nordic languages in the first round". The committee's proposal is put forward in the present memo.
- 1088 1953-04-18 *Regresjonsteori. Pkt. 71a og 74a-h av "Elementer av den matematiske statistikk". [Regression theory. Section 71a and 74a-h of "Elements of mathematical statistics"]*, Oslo, memo DE-UO, 34 pp.
- 1089 1954c *En statistisk analyse av bakeprøver [A statistical analysis of bakery samples]*, Publikasjon No 19, Oslo, DE-UO, 12 pp.
Originally 1945b IDa. Also 1948-05-05 IDb.
IDa:89, 1037 IDb:440, 1046
- 1090 1954-05-03 *Sur un problème d'économie pure*, Oslo, memo DE-UO, 35 pp.

Note: Extrait de Norsk Matematisk Forenings Skrifter . Serie 1. Nr 16. See Frisch 1926h IDa, with annotations.

IDA:12, 811, 1008

- 1091 1954-09-10 *Statistical versus theoretical relations in economic macrodynamics*, Oslo, memo DE-UO, 16 pp.
The second issue of Frisch's memorandum 1938-07-17 IDa to the Business Cycle Conference at Cambridge, England, 18-20 July 1938. The first issue: 1948-11-06b IDb. Later issues in print: 1995bo IDc (in Bjerkholt) and 1995b IDd (in Hendry and Morgan). Tinbergen's reply: Tinbergen 1948-11-06 IDe and 1995 IDf (in Hendry and Morgan). See the annotations to Frisch 1938-07-17.
IDA:355, 1034 IDb:449, 1049 IDc:320, 1135 IDd:250, 1122 IDE:1849 IDf:2075
- 1092 1954-10-12 *En generalisering av begrepet elementær regresjon [A generalization of the concept elementary regression]*, Oslo, memo DE-UO, 5 pp.
- 1093 1956-02-19 *Polytomisk og dikotomisk intervjuing for å bestemme vektene i en preferanseindeks eller viktigheten av de enkelte formålsbeskrankninger ved lineær programmering [Polytomic and dichotomic interviewing in order to decide the weights in a preference index or the importance of the individual preference constraints in linear programming]*, Oslo, memo DE-UO, 29 pp.
Assisted by Per Meinich.
- 1094 1956-03-05 *Preferansefunksjonens koeffisienter bestemt på grunnlag av svarene på dikotomiske spørsmål [The coefficients of the preference function decided from the answers to dichotomic questions]*, Oslo, memo DE-UO, 7 pp.
- 1095 1956-11-15b *Kvadratisk preferansefunksjon bestemt ved intervjudata og anvendt for konveks programmering [Quadratic preference function decided from interview data and applied in convex programming]*, Oslo, memo DE-UO, 74 pp.
- 1096 1957d *Sur un problème d'économie pure, Metroeconomica*, Vol 9, 79-111.
A reissue of 1926h IDa, see the annotations. An English translation: 1971d IDb.
IDA:12, 811, 1008 IDb:218, 852, 1115
- 1097 1957-02-14 *Numerical determination of a quadratic preference function for use in macroeconomic programming*, Oslo, memo DE-UO, 37 pp.
This is the original issue. The first printed issue 1961i IDa. Reprints: 1963f IDb and 1995ac IDc. Also issued as reprint No 11 from DE-UO. See the annotations to 1961i.
IDA:163, 1105, 1298 IDb:178, 1106, 1316 IDc:280, 1127, 1372
- 1098 1958-03-12 *Den symmetrisk stabiliserte regresjon [The symmetrically stabilized regression]*, Oslo, memo DE-UO, 5 pp.
"The symmetrically stabilized regression", defined in the present memorandum, is discussed in the three-variable case. A generalization to the four-variable case is done by Amundsen 1958-08-01 IDa.
IDA:1918
- 1099 1958-08-15 *Tregghetsmetoden til beregning av endringer i en matriks av observasjoner med foreskrevne marginale totaler og andre betingelser [The method of inertia for computing changes in a sample matrix with prescribed marginal totals and other specific conditions]*, Oslo, memo DE-UO, 13 pp.
Refer to Frisch 1958-08-23 IDa, 1958-09-17 IDb and 1958-09-25 IDc.
IDA:682, 1100 IDb:684, 1101 IDc:685, 1102
- 1100 1958-08-23 *Tregghetsmetoden ved observasjonsmatrikser når et vilkårlig antall av elementer eller relasjoner er foreskrevne [The method of inertia in sample matrices when an arbitrary number of elements or relations are prescribed]*, Oslo, memo DE-UO, 43 pp.
Refer to Frisch 1958-08-15 IDa, 1958-09-17 IDb and 1958-09-25 IDc.
IDA:680, 1099 IDb:684, 1101 IDc:685, 1102
- 1101 1958-09-17 *Tregghetsmetoden anvendt på de relative avvik i en observasjonsmatriks [The method of inertia applied on the relative deviations in a sample matrix]*, Oslo,

- memo DE-UO, 32 pp.
Refer to Frisch 1958-08-15 IDa, 1958-08-23 IDb and 1958-09-25 IDc.
IDA:680, 1099 IDb:682, 1100 IDc:685, 1102
- 1102 1958-09-25 *Et numerisk eksempel på anvendelse av treghetsmetoden for estimering av finansmatriksen [A numerical example of applying the method of inertia on estimating the financial matrix]*, Oslo, memo DE-UO, 16 pp.
Refer to Frisch 1958-08-15 IDa, 1958-08-23 IDb, 1958-09-17 IDc and 1958-09-25 IDd.
IDA:680, 1099 IDb:682, 1100 IDc:684, 1101 IDd:685, 1102
- 1103 1959-06-25 *Practical rules for interview determination of one-sided and two-sided preference coefficients in macroeconomic decision problems*, Oslo, memo DE-UO, 16 pp.
- 1104 1959-12-18 *The smoothing of an interpreference table*, Oslo, memo DE-UO, 10 pp.
Reproduced in print, first as Frisch 1967d IDa; reissued as Frisch 1995bh IDb.
IDA:207, 1496 IDb:313, 1504
- 1105 1961i Numerical determination of a quadratic preference function for use in macroeconomic programming, *Giornale Degli Economisti e Annali di Economica*, Vol 20, 3-43.
The first printed issue. Reissued in print 1963f IDa and 1995ac IDb. The very first issue is the memo from DE-UO of 1957-02-14 IDc. Also as reprint No 11 from DE-UO. The subject is treated in a number of other works by Frisch. See also Johansen 1974b IDd.
IDA:178, 1106, 1316 IDb:280, 1127, 1372 IDc:658, 1097, 1226 IDd:1982
- 1106 1963f Numerical determination of a quadratic preference function for use in macroeconomic programming, in *Studies in honour of Gustavo del Vecchio*, Padova, Cedam, 311-351.
A reprint of Frisch 1961i IDa, see the annotations for other references.
IDA:163, 1105, 1298
- 1107 1964b Economic planning and the role of econometrics, *Statsøkonomisk Tidsskrift*, Vol 78, 1-7.
A reprint issued as Frisch 1965g IDa.
IDA:190, 1110, 1337
- 1108 1964-03-29a *An interviewing technique for determining linear (and constant) preference coefficients*, Pennsylvania USA, memo from GSPIA, UN of Pittsburgh, 14 pp.
GSPIA stands for Graduate School of Public and International Affairs.
- 1109 1964-06-17 *Utdrag av forelesninger i teoretisk statistikk. Fra kompendier av Ragnar Frisch og Trygve Haavelmo [Extract of lectures in theoretical statistics. From memoranda by Ragnar Frisch and Trygve Haavelmo]*, Oslo, Universitetsforlaget, 81 pp.
- 1110 1965g Selection and implementation - The econometrics of the future, in *Semaine d'Étude sur le Role de l'analyse econométrique dans la formulation de plans de developpement*, Pontificiae Academiae Scientiarvm Scripta Varia - 28, Rome, 1197-1204.
A speech delivered as an introduction to a paper presented October 10 1963 in a study week organized in the Vatican by the Pontifical Academy of Science. Frisch's complete contribution to the conference, included various mimeographed documents which he distributed among the participants, was not included in the proceedings. A footnote on p 1204 might indicate that he intended to publish his contribution elsewhere. In the discussion after Frisch's oral presentation the following workshop members participated: M. Allais, R. Dorfman, T. C. Koopmans, P. C. Mahalanobis, F. Fisher, H. Wold, W. Leontief and H. Theil. Their contributions to the discussion are reported on pp 1205-1232. The present publication is a reprint of Frisch 1964b IDa.
IDA:180, 1107, 1325
- 1111 1970a Econometrics in the midst of analytical and social turmoils, in Dalenius, T., G. Karlsson, and S. Malmquist (eds): *Scientists at work. Festschrift in honour of Herman Wold*, Stockholm, Almqvist & Wiksell, 249-259.
Also as reprint No 71 from DE-UO.

- 1112 1970b Econometrics in the world of today, in Eltis, W. A., M. Fg. Scott, and J. N. Wolfe (eds): *Induction, growth and trade - Essays in honour of Sir Roy Harrod*, Oxford, Clarendon Press, 152-166.
Also as reprint No 73 from DE-UO.
- 1113 1970c From utopian theory to practical applications: The case of econometrics, *Réimpression de Les Prix Nobel en 1969*, 213-243.
Ragnar Frisch's Nobel Prize Award lecture, June 17, 1970. The lecture and the biographical note 1970e IDa are issued together as reprint No 70 from DE-UO. The lecture is republished as Frisch 1976d IDb (in Long), 1981 IDc (in a special issue of *American Economic Review*) and 1995m IDd (in Bjerkholt).
IDA:214 IDb:237, 1117 IDc:243, 1119 IDd:261, 1124
- 1114 1970d Partial time regressions as compared with individual trends, in Hooper, J. W. and Nerlove, M. (eds): *Selected readings in econometrics from Econometrica*, Cambridge Massachusetts and London, M. I. T. Press, 17-31.
With Frederick V. Waugh. A reprint of Frisch 1933f IDa.
IDA:48, 1023
- 1115 1971d On a problem in pure economics, in Chipman, John S., Leonid Hurwicz, Marcel K. Richter and Hugo F. Sonnenschein (eds): *Preferences, utility, and demand - A Minnesota symposium*, New York, Chicago, San Francisco, Atlanta, Harcourt Brace Jovanovich, Inc., 386-423.
The article is translated by John S. Chipman from the original French issue Frisch 1926h IDa, see the annotations. Reprinted as Frisch 1995aj IDb (in Bjerkholt).
IDA:12, 811, 1008 IDb:287, 864, 1129
- 1116 1974c Az elméleti közgazdaságtan egyik problémájáról [Sur un problème d'économie pure], Frisch, Ragnar: *Kvantitatív és dinamikus közgazdaságtan*, Budapest, Közgazdasági és Jogi Könyvkiadó, 35-72.
Translation by Szegedy, Miklós of Frisch 1926h IDa, see the annotations. See Frisch 1974f IDb.
IDA:12, 811, 1008 IDb:227
- 1117 1976d From utopian theory to practical applications: The case of econometrics, in Long, Frank (ed): *Economic planning studies. A collection of essays by Ragnar Frisch, International studies in economics and econometrics Vol 8*, Dordrecht-Holland, Boston-U.S.A., D. Reidel Publishing Company, 1-39.
A reprint of Frisch 1970c IDa (the Nobel Prize Award lecture), see the annotations for further references.
IDA:212, 1113
- 1118 1978 *New methods of measuring marginal utility*, Philadelphia, Penn., Porcupine Press, 142 pp.
A facsimile edition of 1932h IDa.
IDA:37, 815, 1020
- 1119 1981 From utopian theory to practical applications: The case of econometrics, *The American Economic Review*, Vol 71, 1-16.
A reprint of Frisch 1970c IDa, see the annotations for other references.
IDA:212, 1113
- 1120 1984 Partial time regressions as compared with individual trends, in Houck, James P. and Abel, Martin E. (eds): *Waugh, Frederick V.: Selected writings on agricultural policy and economic analysis*, Minneapolis, University of Minnesota Press, 409-423.
With Frederick V. Waugh. A reprint of Frisch 1933f IDa.
IDA:48, 1023
- 1121 1994a Editorial, in Poirier, Dale J. (ed): *The methodology of econometrics*, Aldershot, Edward Elgar Publishing Limited, 3-6.
A reprint of Frisch 1933c IDa, the first editorial in *Econometrica*.
IDA:45, 1022

- 1122 1995b Autonomy of economic relations (1938). Statistical versus theoretical relations in economic macrodynamics, in Hendry, David F. and Morgan, Mary S. (eds): *The foundations of econometric analysis*, Cambridge England, New York, Melbourne, Cambridge University Press, 407-419.
Printed issue of Frisch 1954-09-10 IDa, which was the second issue of Frisch's *League of Nations memorandum* 1938-07-17 IDb to the Business Cycle Conference at Cambridge, England, July 18th-20th, 1938. The memorandum was first published as part of a memo from DE-UO, 1948-11-06b IDc, with Prof. Tinbergen's reply. Also issued in print as Frisch 1995bo IDd (in Bjerkholt). See the annotations to 1938-07-17.
IDa:609, 1091 IDb:355, 1034 IDc:449, 1049 IDd:320, 1135
- 1123 1995g Correlation and scatter in statistical variables, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume I*, Aldershot UK, Brookfield US, Edward Elgar, 117-183.
A reprint of Frisch 1929b IDa.
IDa:18, 1013
- 1124 1995m From utopian theory to practical applications: The case of econometrics, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*, Aldershot UK, Brookfield US, Edward Elgar, 501-531.
A reprint of Frisch 1970c IDa, his Nobel Prize Award lecture, see the annotations for more references.
IDa:212, 1113
- 1125 1995w A method of decomposing an empirical series into its cyclical and progressive components, in Bjerkholt, O. (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume I*, Aldershot UK, Brookfield US, Edward Elgar, 184-189.
A reprint of Frisch 1931f IDa, see the annotations.
IDa:28, 962
- 1126 1995z More pitfalls in demand and supply curve analysis, in Hendry, David F. and Morgan, Mary S. (eds): *The foundations of econometric analysis*, Cambridge England, New York, Melbourne, Cambridge University Press, 263-265.
An extract from Frisch's reply to W. W. Leontief in the "pitfalls debate", Frisch 1934c IDa, see the annotations. Extracts from Leontief's first response to Frisch's criticism and from Leontief's "final word", Leontief 1934b IDb and 1934a IDc respectively, are also printed in Hendry and Morgan: Leontief 1995b IDd pp 259-263 and 1995a IDe pp 265-267.
IDa:55, 1025 IDb:1774 IDc:1773 IDd:2068 IDe:2067
- 1127 1995ac Numerical determination of a quadratic preference function for use in macroeconomic programming, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*, Aldershot UK, Brookfield US, Edward Elgar, 35-75.
A reprint of Frisch 1961i IDa, see the annotations for other references.
IDa:163, 1105, 1298
- 1128 1995ag Om å skrive økonometrisk oppgave [On writing an econometric paper], in Frisch, Ragnar: *Troen på nøkken*, Oslo, Det Blå Bibliotek, UF, 252-260.
A reprint of Appendix 10 in *Notater til økonomisk teori. 4. utgave, annet hefte [Notes on economic theory. Fourth edition, second volume]*, Frisch 1947af IDa.
IDa:398
- 1129 1995aj On a problem in pure economics, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch - Volume I*, Aldershot UK, Brookfield US, Edward Elgar, 3-40.
A reprint of Frisch 1971d IDa (in Chipman et al), which is an English translation by John S. Chipman from the original French issue Frisch 1926h IDb, see the annotations.
IDa:218, 852, 1115 IDb:12, 811, 1008
- 1130 1995aq Partial time regressions as compared with individual trends, in Bjerkholt, O. (ed): *Foundations of modern econometrics. The selected essays of Ragnar*

- Frisch. Volume I*, Aldershot UK, Brookfield US, Edward Elgar, 241-255.
With Frederick V. Waugh. A reprint of Frisch 1933e IDa. See the annotation.
IDa:48, 1023
- 1131 1995ar Pitfalls in the statistical construction of demand and supply curves, in Bjerkholt, O. (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume I*, Aldershot UK, Brookfield US, Edward Elgar, 208-240.
A reprint of Frisch 1933f IDa, see the annotations. The title of the article is (most likely unintentionally) omitted in the reprint.
IDa:49, 1024
- 1132 1995bc The responsibility of the econometrician, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*, Aldershot UK, Brookfield US, Edward Elgar, 496-499.
A reprint of Frisch 1946j IDa, his first editorial in *Econometrica* after the second world war, see the annotations.
IDa:91, 1038
- 1133 1995bm Statistical confluence analysis by means of complete regression systems (1934), in Hendry, David F. and Morgan, Mary S. (eds): *The foundations of econometric analysis*, Cambridge England, New York, Melbourne, Cambridge University Press, 271-273.
An extract from Frisch 1934f IDa (Publication No 5 from DE-UO) pp 5-8 (only the introduction).
IDa:58, 1026
- 1134 1995bn Statistical correlation and the theory of cluster types, in Bjerkholt, O. (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume I*, Aldershot UK, Brookfield US, Edward Elgar, 190-207.
With Bruce D. Mudgett. A reprint of Frisch 1931h IDa.
IDa:29, 1017
- 1135 1995bo Statistical versus theoretical relations in economic macrodynamics, in Bjerkholt, O. (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume I*, Aldershot UK, Brookfield US, Edward Elgar, 272-287.
A reprint of Frisch 1954-09-10 IDa, which was the second issue of Frisch's autonomy memorandum 1938-07-17 IDb, see the annotations to both.
IDa:609, 1091 IDb:355, 1034

II.3.7 Macroeconomic planning

- 1136 1934a Circulation planning: Proposal for a national organisation of a commodity and service exchange, *Econometrica*, Vol 2, 258-336 and 422-435.
 This "one of Frisch's most striking contributions was born out of the experiences of the Great Depression" (Chipman 1998 IDa p 95). Frisch attributes the great depressions to an organizational defect, which would create situations where groups "are forced to undermine each other's position." They would be squeezed into a "meaningless vicious circle...", Frisch p 259. He succeeded in giving a disaggregated explanation of the mechanism of great depressions. In the bulk of the article he works out his proposal for a policy to revive the economy from a deep depression. Johansen 1969 IDb gives (pp 308-309) an informative discussion of Frisch's article. The same is done by Chipman 1998 (pp 95-97). Later Frisch extended ideas from Circulation planning to the problem of improving the balance of the international economy, cf. Frisch 1947ai IDc, 1948c IDd and particularly 1963d IDE. Pp 422-435 of the present article is a mathematical appendix. A reprint of pp 258-336 is published as Frisch 1995e IDf (in Bjerkholt). See also Frisch 1935-01-26 IDg and 19331 IDh.
Ida:2091 IDb:1969 IDc:96, 1139 IDd:101, 1143 IDE:176, 1315 IDf:253, 1368 IDg:348 IDh:53
- 1137 1936e *Plan til en Økonomisk strukturoversikt for Norge [Plan for an Economic Structural Survey of Norway]*, Oslo, Fabritius & Sønners boktrykkeri, 33 pp.
 With Wilhelm Keilhau and Ingvar Wedervang. The publication was a research proposal written in response to a suggestion from the foundation Norsk Varekrigsforsikrings Fond, which considered it a task of utmost importance to provide a survey of the production possibilities and the internal connections in the national economy. The work was to be organized in three industrial departments - two of them directed by Keilhau and Wedervang - and a fourth department for coordination purposes directed by Frisch. This department was to do research in the sectors of banking, other financial institutions and insurance, including a systematic coordination work in the form of national accounts. (The national accounts are discussed on p 29 et seq.) Finally it would do consumption and market analyses. Preliminary work started in 1937 and the project was envisaged to be brought to completion during the next three years. For a number of reasons only parts of the plan were accomplished, see Frisch 1939-10-22 IDa, 1940b IDb and 1941a IDc, and Johnsen 1942 IDd.
Ida:357 IDb:82, 932 IDc:84 IDd:1810
- 1138 1947ah On the need for an inter-economic budget (a multilateral balance sheet), with particular reference to its use as a tool of analysis in the work of the International Trade Organization (the ITO), Memorandum prepared as annexure to *The report of the Norwegian Delegation to the ITO Conference in Geneva, April-Mai 1947*, Oslo, 159-177.
 Mimeographed. Not distributed as an ordinary memo from DE-UO. Refer to Frisch 1947-01-21 IDa, 1947-01-23 IDb, 1947-01-27 IDc and 1947-03-22 IDd. A copy of 1947ah is available at UB Oslo (DE-UO); not for lending.
Ida:402, 1140 IDb:403, 1141 IDc:404, 1142 IDd:406
- 1139 1947ai On the need for forecasting a multilateral balance of payments, *The American Economic Review*, Vol 37-I, 535-551.
 Critical comments by Polak 1948 IDa, and Meier 1948 IDb. Hinshaw 1948 IDc gives an exposition of Frisch's contribution. Also comments by Chipman 1998 IDd pp 97 and further. Frisch's article is reprinted (in Bjerkholt) as Frisch 1995ak IDE and (considerably shortened) as 1959b IDf. In Bodkin, Ronald G., Lawrence R. Klein and Kanta Marwah 1991: *A history of macroeconomic model-building*, Edward Elgar, Aldershot, the present paper of Frisch is sketched on pp 14-15 (in a chapter by Bert G. Hickman), being considered among antecedents to the so-called Project LINK.
Ida:1835 IDb:1834 IDc:1833 IDd:2091 IDE:288, 1375 IDf:148, 1243

- 1140 1947-01-21 *Proposal for an inter-economic budget analysis as part of the employment study of the Economic and Employment Commission, United Nations, Economic and Employment Commission, UN Document E/CN.1/18, 2 pp.*
An introductory note: "Submitted by the member from Norway as an additional Item for the Agenda of the First Session of the Economic and Employment Commission, Document E/CN.1/1". See Frisch 1947-01-23 IDa, 1947-01-27 IDb, 1947ah IDc and 1947-03-22 IDd. A copy of the document is available at UB Oslo (DE-UO); not for lending.
IDA:403, 1141 IDb:404, 1142 IDc:400, 1138 IDd:406
- 1141 1947-01-23 *Proposal for an inter-economic budget analysis as part of the employment study of the Economic and Employment Commission, United Nations, Economic and Employment Commission, UN Document E/CN.1/18/Add.1, 14 pp.*
Submitted by the member from Norway in connection with proposal, Document E/CN.1/18, see Frisch 1947-01-21 IDa. See also Frisch 1947ah IDb, 1947-01-27 IDc and 1947-03-22 IDd. A copy of the present document is available at UB Oslo (DE UO); not for lending.
IDA:402, 1140 IDb:400, 1138 IDc:404, 1142 IDd:406
- 1142 1947-01-27 *Proposal for an intereconomic budget analysis as part of the employment study of the Economic and Employment Commission, United Nations, Economic and Employment Commission, UN Document E/CN.1/18/Add.2, 5 pp.*
Submitted by the member from Norway in connection with proposal, Document E/CN.1/18. See Frisch 1947-01-23 IDa, 1947-01-21 IDb, 1947ah IDc and 1947-03-22 IDd. A copy of the present document is available at UB Oslo (DE-UO); not for lending.
IDA:403, 1141 IDb:402, 1140 IDc:400, 1138 IDd:406
- 1143 1948c The problem of multicompensatory trade. Outline of a system of multicompensatory trade, *The Review of Economics and Statistics*, Vol 30, 265-271.
The problem was first treated in 1947ai IDa. Comments: Hinshaw 1948 IDb and Chipman 1998 IDc (pp 97-99). Reprinted (in Bjerkholt) as Frisch 1995av IDd.
IDA:96, 1139 IDb:1833 IDc:2091 IDd:299, 1378
- 1144 1948-01-25 *Skisse til et system for multikompensasjonshandel [An outline of a system for multicompensatory trade]*, Oslo, memo DE-UO, 8 pp.
Refer to Frisch 1963d IDa with annotations.
IDA:176, 1315
- 1145 1948-03-04 *Outline of a system of multicompensatory trade*, Oslo, memo DE-UO, 9 pp.
Frisch has dealt with this subject in a number of notes and articles, first in Frisch 1947ai IDa, see Frisch 1963d IDb with annotations.
IDA:96, 1139 IDb:176, 1315
- 1146 1948-03-07 *Draft of parts of introductory remarks in the report of The Sub-Commission on Employment and Economic Stability*, Oslo, memo DE-UO, 4 pp.
- 1147 1948-03-09 *Employment and economic stability in the post war world*, Oslo, memo DE-UO, 14 pp.
With Gunnar Bøe and Trygve Haavelmo. Draft material for the Sub-Commission on Employment and Economic Stability.
- 1148 1949c Work done and work planned at the University Institute of Economics Oslo, *Stimulator*, Vol 3 No 5, 4-10.
Also as reprint No 1 from DE-UO.
- 1149 1949-01-11 *Kondensert liste over variable i modellen: "Optimalskattsystemet" [A condensed list of variables in the model: "The optimum tax system"]*, Oslo, memo DE-UO, 2 pp.
Refer to 1949-02-14 IDa.
IDA:461, 1150
- 1150 1949-02-14 *Foreløpig rapport nr. 2 om arbeidet med optimalskattsystemet [A preliminary*

- report No 2 on the work on the optimum tax system*], Oslo, memo DE-UO, 12 pp.
From an introductory note: A first orientation (on the optimum tax system) was given in a memo Frisch 1949-01-11 IDa. The present memo gives the results of some calculations from cases with regulated labour market. A preliminary report No 3 is announced to discuss cases with unregulated labour market. The theory is not to be dealt with in the preliminary reports, but is announced to be thoroughly treated in the final complete presentation. It seems that neither a report No 3 nor a final presentation ever appeared.
IDA:458, 1149
- 1151 1949-03-13 *Samfunnsøkonomi og økonomisk demokrati [Economics and economic democracy]*, Oslo, memo DE-UO, 45 pp.
See the annotations to Frisch 1949-09-28a IDa.
IDA:477, 1159
- 1152 1949-03-28 *Price-wage-tax policies as instruments in maintaining optimal employment - A working paper*, Oslo, memo DE-UO, 58 pp.
Assisted by Svein Brenna, Thor Johnsen and Sven Vigger. The memo is identical with the first seven chapters of the UN document Frisch 1949-04-18 IDa. The memo gives first a birds-eye-view of the problem, then a detailed presentation of the model to be used, named the Oslo Sub-Model. It differs most significantly from the later Oslo models by not having any input-output part. See also Frisch 1949-09-23 IDb (with annotations), 1949-09-28b IDc, 1953-02-12 IDd and 1955f IDE. 1955f is reproduced as Frisch 1995v IDf (in Bjerkholt).
IDA:468, 1153 IDb:475, 1157 IDc:478, 1160 IDd:576, 1187 IDE:134, 1201 IDf:270, 1371
- 1153 1949-04-18 *Price-wage-tax-subsidy policies as instruments in maintaining optimal employment - A memorandum on analytical machinery to be used in discussions on causes of and remedies to unemployment*, UN Document E/CN.1/Sub.2/13, 67 pp.
A memorandum (an Oslo Sub-Model work) submitted to the United Nations Sub-Commission on Employment and Economic Stability. Also as memo from DE-UO, Frisch 1953-02-12 IDa, see the annotations.
IDA:576, 1187
- 1154 1949-04-20 *Repercussion studies at Oslo*, Oslo, memo DE-UO, 7 pp.
Original issue: Frisch 1948d IDa, see the annotations.
IDA:102, 1044
- 1155 1949-04-27 *Statement of Professor Ragnar Frisch, member of the Sub-Commission on Employment and Economic Stability, concerning the report of the third session of the Sub-Commission on Employment and Economic Stability*, United Nations, Economic and Employment Commission, UN Document E/CN.1/67, 10 pp.
Frisch gives a severe and thoroughgoing - and also rather provocative - criticism of the work done so far by the Sub-Commission in order to fulfil the obligations embodied in its terms of reference. Reference is given to the UN Documents E/CN.1/66 and E/CN.1/Sub.2/13 (the latter is recorded in this bibliography as Frisch 1949-04-18 IDa). Copy of the present document is available at UB Oslo (DE-UO); not for lending.
IDA:468, 1153
- 1156 1949-05-24 *Svar på spørsmål om pris-lønns-skatt-subsidiesystemet [Answers to questions on the price-wage-tax-subsidy system]*, Oslo, memo DE-UO, 2 pp.
- 1157 1949-09-23 *Mathematical appendix to a memorandum on price-wage-tax-subsidy policies as instruments in maintaining optimal employment*, Oslo, memo DE-UO, 28 pp.
Assisted by Svein Brenna, Thor Johnsen and Sven Vigger. Footnote on p 0: "The main memorandum appeared as a UN Document E/CN.1/Sub.2/13, 18 April 1949." (Reference for the UN Document: Frisch 1949-04-18 IDa.) See also Frisch 1949-03-28 IDb, 1949-09-28b IDc and 1953-02-12 IDd. The present appendix came in print as 1955f IDE. A reprint appeared as 1995v IDf (in Bjerkholt). The model in the present memo is later (in

- Frisch 1949-09-28b) named the Oslo Sub-Model.
IDA:468, 1153 IDb:467, 1152 IDc:478, 1160 IDd:576, 1187 IDe:134, 1201 IDf:270, 1371
- 1158 1949-09-26 *Innledningsmerknader ved begynnelsen av forelesningene over reperkusjonsanalyse [Introductory remarks at the start of the lectures on repercussion analysis]*, Oslo, memo DE-UO, 7 pp.
- 1159 1949-09-28a *Om desisjonsmodeller [On decision models]*, Oslo, memo DE-UO, 12 pp.
 From the list of contents (translated): 1. Some remarks on economic democracy and why it is necessary to popularize also some of the latest research achievements in macroeconomic planning. 2. The general analysis of interaction in economics. 3. Short on the notion "the number of degrees of freedom in a system". It is referred to the memoranda Frisch 1949-03-13 IDa and 1949-09-23 IDb and to the UN Document 1949-04-18 IDc for a list of variables and a closer discussion of the model (the Oslo Sub-Model).
IDA:464, 1151 IDb:475, 1157 IDc:468, 1153
- 1160 1949-09-28b *Tilleggsliste over variable og relasjoner i "submodellen" [Additional list of variables and relations in the "Sub-Model"]*, Oslo, memo DE-UO, 2 pp.
 See Frisch 1949-09-23 IDa.
IDA:475, 1157
- 1161 1949-10-24 *Reperkusjons-spill. Eksempel 1 - "Arbeiderregjeringens" politikk [Repercussion games. Example 1 - The policy of "the Labour Party Government"]*, Oslo, memo DE-UO, 4 pp.
 Lecture notes by Per Kleppe and Arne Amundsen. The policy of "the Labour Party Government" is defined. Further discussions are presented in Frisch 1949-10-29 IDa. See also Frisch 1950-01-23 IDb with references to related repercussion games.
IDA:482, 1162 IDb:493, 1173
- 1162 1949-10-29 *Reperkusjons-spill. Eksempel 1 - "Arbeiderregjeringens" politikk [Repercussion games. Example 1 - The policy of "the Labour Party Government"]*, Oslo, memo DE-UO, 10 pp.
 Assisted by Svein Brenna and Sven Vigger. The policy of "the Labour Party Government" is defined in Frisch 1949-10-24 IDa. Further discussions are presented in the present memo. See also Frisch 1950-01-23 IDb with references to related repercussion games.
IDA:481, 1161 IDb:493, 1173
- 1163 1949-11-02 *Reperkusjons-spill. Eksempel 2 - "Høyre regjeringens" politikk [Repercussion games. Example 2 - The policy of "the Conservative Party Government"]*, Oslo, memo DE-UO, 3 pp.
 Lecture notes by Arild Holland, Per Krog, Oddvar Omre and David Vikøren. The policy of "the Conservative Party Government" is defined here, and is discussed further in Frisch 1949-11-05 IDa. See also Frisch 1950-01-23 IDb with references to related repercussion games.
IDA:484, 1164 IDb:493, 1173
- 1164 1949-11-05 *Reperkusjons-spill. Eksempel 2 - "Høyre regjeringens" politikk [Repercussion games. Example 2 - The policy of "the Conservative Party Government"]*, Oslo, memo DE-UO, 6 pp.
 With Sven Vigger. The policy of "the Conservative Party Government" is defined in Frisch 1949-11-02 IDa and is discussed further in the present memo. See also Frisch 1950-01-23 IDb with references to related repercussion games.
IDA:483, 1163 IDb:493, 1173
- 1165 1949-11-10 *Reperkusjons-spill. Eksempel 3 - Formuleringen av "venstreregjeringens" politikk [Repercussion games. Example 3 - The formulation of the policy of "the Liberal Party Government"]*, Oslo, memo DE-UO, 2 pp.
 Lecture notes by Rolf Høgsæt, Trygve Mølmen and Bjørn Thalberg. The policy of "the Liberal Party Government" is formulated in the present memo and is further discussed in Frisch 1949-11-12 IDa. See also Frisch 1950-01-23 IDb with references to related repercussion games.
IDA:486, 1166 IDb:493, 1173

- 1166 1949-11-12 *Reperkusjons-spill [Repercussion games]*, Oslo, memo DE-UO, 5 pp.
Lecture notes by Per Kleppe and Sven Vigger. The policy of "the Liberal Party Government" is defined in Frisch 1949-11-10 IDa (example 3). Implications of this policy are discussed in the present memo. On pp 3-5 of the present memo a version of the policy of "the Labour Party Government" is formulated (example 4). Implications of this formulation are discussed in Frisch 1949-11-18 IDb. See also Frisch 1950-01-23 IDc with references to related repercussion games.
IDa:485, 1165 IDb:488, 1168 IDc:493, 1173
- 1167 1949-11-16 *Remarks on multicompensatory trade*, Oslo, memo DE-UO, 2 pp.
The issue was first treated in 1947ai IDa.
IDa:96, 1139
- 1168 1949-11-18 *Reperkusjons-spill. Eksempel 4 - Konsekvenser av "arbeiderregjeringens" politikk [Repercussion games. Example 4 - Implications of the policy of "the Labour Party Government"]*, Oslo, memo DE-UI, 4 pp.
Lecture notes by Arne Amundsen and Sven Vigger. A version of the policy of "the Labour Party Government" (example 4) is formulated on pp 3-5 of Frisch 1949-11-12 IDa. Implications of that formulation are discussed in the present memo. See also Frisch 1950-01-23 IDb with references to related repercussion games.
IDa:486, 1166 IDb:493, 1173
- 1169 1949-11-25 *Reperkusjons-spill. Konsekvenser av den politikken som er angitt i spill nr. 5, nr. 6 og nr. 7 [Repercussion games. Implications of the policies presented in the games Nos 5, 6 and 7]*, Oslo, memo DE-UO, 5 pp.
Lecture notes by Arne Amundsen and Sven Vigger. The games Nos 5, 6 and 7 are presented in Frisch 1949-11-12 IDa. See also Frisch 1950-01-23 IDb with references to related repercussion games.
IDa:486, 1166 IDb:493, 1173
- 1170 1950c *L'emploi des modèles pour l'élaboration d'une politique économique rationnelle, Revue d'Économie Politique, Vol 60, 474-498 and 601-634*,
An article in two parts based on lectures and colloquia held in Paris and Rome in the autumn 1950. The article deals with the problem of the Government's obligation to perform adequate regulation of the country's liquidity circulation, thus the problem which was originally dealt with in the confidential note "written down in haste" in 1932 and issued as memo 1951-01-11 IDa ('Statens plikt ...'). The article gives a more comprehensive treatment than the note, in accordance with the understanding of the problem complex Frisch had reached in 1950. Reissued as memo from DE-UO, Frisch 1951-09-20 IDb.
IDa:527, 1178 IDb:550, 1180
- 1171 1950g *Samfunnsøkonomi og økonomisk demokrati [Economics and economic democracy], Kontakt, Vol 4 No 9, 30-37*.
Refer to Frisch 1951g IDa.
IDa:118, 1177
- 1172 1950-01-18 *Memorandum on optimum forms of liberalization and on multicompensatory trade*, Submitted to the UN Sub-Commission on Employment and Economic Stability, DE-UO, 6 pp.
UN Document E/CN.1/Sub.2/15, 1950-24-01. Frisch refers to 1949-04-18 IDa. He specifies, in general terms, some conditions which a policy towards liberalization should fulfil. He suggests the Sub-Commission to consider the problem of *the optimum form of liberalization*. And regarding international trade he points at what he has published on multicompensatory trade, Frisch 1948c IDb. A few copies of the memorandum are available at DE UO; not for lending.
IDa:468, 1153 IDb:101, 1143
- 1173 1950-01-23 *Determinerings-skjemaet som hjelpemiddel under spesifiseringen av desisjonsmodellen [The determination form as a remedy for specifying the decision model]*, Oslo, memo DE-UO, 9 pp.
Assisted by Arne Amundsen and Hans Jacob Kreyberg. From the introductory passage (translated here): "In Frisch 1949-11-05 IDa p 5 a short classification is given as to the distinction in principle between assumption parameters, target parameters and means

- parameters. We shall use *the determination form* (italicized here) to make the meaning of assumptions, targets and means as clear as possible. The form is illustrated by demonstrating how to use it on some of the examples which were treated in the repercussion games (gone through in the autumn term of 1949)". See Frisch 1949-10-24 IDb, 1949-10-29 IDc, 1949-11-02 IDd, 1949-11-10 IDe, 1949-11-12 IDf, 1949-11-18 IDg and 1949-11-25 IDh.
IDA:484, 1164 IDb:481, 1161 IDc:482, 1162 IDd:483, 1163 IDe:485, 1165 IDf:486, 1166 IDg:488, 1168 IDh:489, 1169
- 1174 1950-02-03 *Hovedsynspunkter for arbeidet med den økonomiske samgripingsanalyse (desisjonsmodellen) [Basic viewpoints for the work on the economic interaction analysis (the decision model)]*, Oslo, memo DE-UO, 13 pp.
 A passage of the present memorandum (translated): "The first stage of the work on the Oslo interacting model - the first approach towards a comprehensive decision model - we now consider finished. The main result is presented in the UN memorandum Frisch 1949-04-18 IDa and in a series of more special memoranda (listed on p 13 in the present memo). Now we are working on the second stage. A closer description of the plans is given in Frisch 1949c IDb and in the present memorandum." Under the work on the general interacting problems Frisch claims that there have been observed a number of serious misapprehensions. He gives a list of four such misapprehensions and argues strongly against each of them. The final outcome of the second stage became the Oslo Median Model. A critical discussion of the present memorandum is given in *Farmand*. Editor 1950-02-25 IDc and 1950-03-11 IDd.
IDA:468, 1153 IDb:105, 1148 IDc:1878 IDd:1880
- 1175 1950-04-19 *Memorandum on optimum forms of liberalization and on multicompensatory trade*, Oslo, memo DE-UO, 6 pp.
- 1176 1951e *Rasjonell økonomisk politikk [A rational economic policy]*, *Kontakt*, Vol 5 No 2, 30-38.
 Refer to Frisch 1951g IDa. Reissued as Frisch 1995aø IDb.
IDA:118, 1177 IDb:305, 1379
- 1177 1951g *Økonomisk demokrati [Economic democracy]*, Oslo, Arbeidernes Aktietrykkeri, 20 pp.
 The articles 1950g IDa and 1951e IDb are put together into the present pamphlet.
IDA:111, 1171 IDb:116, 1176
- 1178 1951-01-11 *Statens plikt til sirkulasjonsregulering [The Government's obligation to circulation regulation]*, Oslo, memo DE-UO, 35 pp.
 A statement in parenthesis on the front cover: "Nedtegnet i hast 10. - 12. desember 1932" [Put down in haste 10 - 12 December 1932]. The memo was at that time labelled "not for publication". It was distributed confidentially to a number of distinguished politicians and bank people and was discussed in a meeting as well. "It was a miserable meeting. I had the impression that to put forward these thoughts in that circle was as to run one's head against the wall. Those who now ordinarily deal with such concepts as the national budget and the national accounts, trade cycle regulating taxes, trade cycle regulating account in the Central Bank of Norway, ..., etc, etc, will hardly understand how the situation was in 1932." (Frisch in the preface of the memo. Translated.) Reprinted (slightly shortened) as Frisch 1995bj IDa. Refer also to Frisch 1933l IDb.
IDA:315, 1383 IDb:53
- 1179 1951-02-05 *Outline of a system of multicompensatory trade*, Oslo, memo DE-UO, 10 pp.
 A second printing of a memo from DE-UO, Frisch 1948-03-04 IDa, see the annotations.
IDA:432, 1145
- 1180 1951-09-20 *L'emploi des modèles pour l'élaboration d'une politique économique rationnelle*, Oslo, memo DE-UO, 51 pp.
 Note on the front page: "Extrait de la Revue d'Économie Politique Nos 5 et 6, Paris 1950". Refer to Frisch 1950c IDa.
IDA:107, 1170
- 1181 1952-10-04 *Forskningsplanmøte 23. september 1952 om kryssløpsanalyse med særlig anvendelse på norske forhold [Research plan conference September 23 1952*

on input-output analysis with particular application to Norwegian conditions], Oslo, memo DE-UO, 13 pp.

Participants in the conference: From the Central Bureau of Statistics, Oslo: Leiv Vidvei; from the Economic Policy Department: Hermod Skånland and Robert F. Nordén; and from the Department of Economics, University of Oslo: Ragnar Frisch, Leif Johansen, Hans Jacob Kreyberg and Sven Vigger.

- 1182 1952-10-16 *Økonomisk demokrati [Economic democracy]*, Oslo, memo DE-UO, 20 pp.
The memorandum contains - with minor changes - two articles from the journal *Kontakt*, of October 1950 and February 1951. Refer to Frisch 1950g IDa and 1951g IDb.
Ida:111, 1171 IDb:118, 1177
- 1183 1952-11-06a *Reperkusjonsanalytiske problemer som kan studeres på grunnlag av vare- og tjenestetilgangen oppdelt etter tilrekningsandeler, hovedkategorier av goder og næringssektorer [Repercussion-analytical problems which can be studied on the basis of the flow of goods and services divided by shares of input requirements, main categories of goods, and industry sectors]*, Professor Ragnar Frisch's forelesninger i høstsemesteret 1952 [Professor Ragnar Frisch's lectures in the autumn of 1952], Oslo, memo DE-UO, 156 pp.
Lectures in the autumn term of 1952, further touched up in the spring term of 1953. Elaborated notes by Leif Johansen.
- 1184 1952-11-06b *Reperkusjonsanalytiske problemer som kan studeres på grunnlag av vare- og tjenestetilgangen oppdelt etter tilrekningsandeler, hovedkategorier av goder og næringssektorer [Repercussion-analytical problems which can be studied on the basis of the flow of goods and services divided by shares of input requirements, main categories of goods, and industry sectors]*, Professor Ragnar Frisch's forelesninger i høstsemesteret 1952 [Professor Ragnar Frisch's lectures in the autumn term of 1952], Oslo, memo DE-UO, 9 pp.
Lecture notes by Leif Johansen.
- 1185 1952-11-14 *Forskningsplanmøte 28. oktober 1952 om de næringsdrivendes inntektsstruktur i Norge [Research Plan Conference October 28 1952 on the income structure of the trades-folk in Norway]*, Oslo, memo DE-UO, 17 pp.
Besides staff people at the Department of Economics there were representatives from a number of institutions outside the University: Norwegian Union of Commercial and Office Employers, Oslo Taxation Authorities, the Price Directorate, the Inspector of Taxes in Akerhus, the Bureau of Statistics in Oslo, and National Bureau of Statistics.
- 1186 1953d *Samfunnsmodell anvendt i en analyse av hvordan de økonomiske faktorer griper inn i hverandre [An economic model of the society used in an analysis of how the economic factors interact]*, *Stimulator*, Vol 7 No 3, 5-19.
Lecture given at the annual meeting in Norges almenvitenskapelige forskningsråd April 8 1953.
- 1187 1953-02-12 *Price-wage-tax-subsidy policies as instruments in maintaining optimal employment - A memorandum on analytical machinery to be used in discussions on causes of and remedies to unemployment*, Oslo, memo DE-UO, 65 pp.
The model was named the (Oslo) Sub-Model. Footnote on p 1: "Originally submitted as a memorandum to the United Nations Sub-Commission on Employment and Economic Stability 18 April 1949". The identification of the UN Document: E/CN.1/Sub.2/13, see Frisch 1949-04-18 IDa. See also Frisch 1949-03-28 IDb, 1949-09-23 IDc, 1949-09-28b IDd and 1955f IDE. A reprint of the 1955f article is issued as Frisch 1995v IDf (in Bjerkholt).
Ida:468, 1153 IDb:467, 1152 IDc:475, 1157 IDd:478, 1160 IDE:134, 1201 IDf:270, 1371
- 1188 1953-03-24 *Ekstrakt fra memorandum av 6. november 1952. Om reperkusjonsanalytiske problemer [Extract from memorandum of 6 November 1952. On repercussion-analytical problems]*, Oslo, memo DE-UO, 156 pp.
Frisch's lectures in the autumn term of 1952, further touched up in the spring term of 1953. Elaborated notes by Leif Johansen. Refer to Frisch 1952-11-06a IDa.
Ida:568, 1183

- 1189 1953-04-08 *Samfunnsmodell anvendt i en analyse av hvordan de økonomiske faktorer griper inn i hverandre [A model of the society used in an analysis of how the economic factors interact]*, Oslo, memo DE-UO, 14 pp.
Lecture given at the annual meeting in Norges almenvitenskapelige forskningsråd April 8 1953.
- 1190 1953-08-27 *From national accounts to macro-economic decision models*, Oslo, memo DE-UO, 27 pp.
Note to the title: "A synopsis of ideas to be presented at the meeting of the International Association for Research in Income and Wealth, Rome, September 1953". Published in print (with a few minor changes) as Frisch 1955b IDa.
IDa: 130, 949, 1200
- 1191 1954-05-29 *Extracts from letters from Professor Ragnar Frisch to Professor Mahalanobis*, Calcutta, Indian Statistical Institute, 11 pp.
The originals are kept at the University of Oslo Library's collection of letters. A copy is available at DE-UO (Boks 56, Oppdrag i India (1954-55)), not for lending.
- 1192 1954-06-16 Foreword, in Mukherjee, M.: *A scheme for collecting and utilizing data on the Indian economy*, Oslo, memo DE-UO, 1 p.
Foreword to Mukherjee 1954-06-16 IDa.
IDa: 1900
- 1193 1954-09-05 *Prinsipielt om formen på hovedmatriksen for makroøkonomisk programmering [Fundamental reflections on the form of the main matrix in macro-economic programming]*, Oslo, memo DE-UO, 10 pp.
- 1194 1954-09-28 *Jamføring mellom 1948-modellen og medianmodellen [A comparison between the 1948 model and the Median Model]*, Oslo, memo DE-UO, 17 pp.
Frisch's lectures 24 September 1954. Lecture notes by Sigmund Kjos, read through and corrected by Frisch.
- 1195 1954-11-26 *Planning for economic development in India. A memorandum on the broad macroeconomic aspects of the problem*, in the series *Studies relating to planning for national development*, Indian Statistical Institute, Calcutta, 23 pp.
The memorandum seems to be a letter to Professor Mahalanobis.
- 1196 1954-12-11 *A short memorandum on a technique for elaborating the new five-year plan for India*, in the series *Studies relating to planning for national development*, Indian Statistical Institute, Calcutta, Working paper No 5/R.U. 1.4, 13 pp.
- 1197 1954-12-25 *General remarks on the programming matrix*, in the series *Studies relating to planning for national development*, Indian Statistical Institute, Calcutta, Working paper No 11/R.U. 11.7, 11 pp.
- 1198 1954-12-29 *A basic instrument in the planning work: The technical description sheet*, in the series *Studies relating to planning for national development*, Indian Statistical Institute, Calcutta, Working paper No 13/R.U. 1.9, 12 pp.
- 1199 1955a *Arbeid med metodeproblemer ved økonomisk planlegging i India [Work on problems of method in economic planning in India]*, *Stimulator*, Vol 8 No 4, 4-21.
A causerie in Sosialøkonomisk Samfunn, Oslo, April 21 1955.
- 1200 1955b *From national accounts to macro-economic decision models*, in Gilbert, M. and R. Stone (eds): *Income and wealth - Series IV*, London, Bowes & Bowes Publishers Ltd., 1-26
A paper presented at the Third Conference of the International Association for Research in Income and Wealth, held at Castelgandolfo, near Rome, 1-6 September 1953. A memo by Ragnar Frisch 1953-08-27 IDa made manuscript for the article. It is headed as the article, but with the under-heading: "A synopsis of ideas to be presented at the meeting of the International Association for Research in Income and Wealth, Rome, September 1953". See also Frisch 1956-01-02 IDb.

Ida:583, 946, 1190 IDb:636, 1215

- 1201 1955f The mathematical structure of a decision model: The Oslo Sub-Model, *Metroeconomica*, Vol 7, 111-136.
A footnote on p 111: "This study was first presented as a mimeographed appendix to a United Nations memorandum: "Price-Wage-Tax-Subsidy Policies as Instruments in Maintaining Optimal Employment. A memorandum on analytical machinery to be used in discussions on causes of and remedies to unemployment", E/CN.I/Sub.2/13, 18 April 1949. The present study, giving a complete account of the mathematics, appears here for the first time in print." The memorandum mentioned in the footnote is Frisch 1949-09-23 IDa. See also Frisch 1949-03-28 IDb, 1949-09-28b IDc, 1949-04-18 IDd (the UN Document) and 1953-02-12 IDE. The present article is reproduced as Frisch 1995v IDf (in Bjerkholt).
Ida:475, 1157 IDb:467, 1152 IDc:478, 1160 IDd:468, 1153 IDE:576, 1187 IDf:270, 1371
- 1202 1955-01-11 *A letter to Professor Mahalanobis*, Calcutta, 6 pp.
Two main points are treated: 1) A few words on preparing the material for the conference with the Prime Minister on 27 January 1955, including preparing a preliminary joint paper to him - all this material in non-technical language. 2) The working out of a complete planning system taking account of administrative problems as well as problems of computations and the training of Indians to carry on after the foreign experts have left the country.
- 1203 1955-01-16 *Investment, consumption and employment under a balanced expansion*, in the series *Studies relating to planning for national development*, Indian Statistical Institute, Calcutta, Working paper No 14/R.U. 1.10, 7 pp.
- 1204 1955-01-20 *The programming chart with a preliminary draft of a nomenclature of production sectors*, in the series *Studies relating to planning for national development*, Indian Statistical Institute, Calcutta, Working paper No 15/R.U. 1.11, 12 pp.
- 1205 1955-01-25 *The methodology of planning in an underdeveloped country*, in the series *Studies relating to planning for national development*, Indian Statistical Institute, Calcutta, Working paper No 20/R.U. 1.13, 14 pp.
- 1206 1955-02-04 *A sequence of calculations for determining an optimal plan frame by means of linear programming*, in the series *Studies relating to planning for national development*, Indian Statistical Institute, Calcutta, Working paper No 22/R.U. 1.14, 36 pp.
- 1207 1955-02-15 *Some preliminary results on experimental plan frame No.1*, in the series *Studies relating to planning for national development*, Indian Statistical Institute, Calcutta, Working paper No 23/R.U. 1.15, 3+27 pp.
- 1208 1955-02-26 *The compact form of the Gaussian algorithm for solving linear equations and inverting matrices in the general case where the original matrix need not be symmetrical*, in the series *Studies relating to planning for national development*, Indian Statistical Institute, Calcutta, Working paper No 26/R.U. 1.16, 19 pp.
- 1209 1955-03-12 *Experimental plan frame No.1. Structure of the set up and numerical results*, in the series *Studies relating to planning for national development*, Indian Statistical Institute, Calcutta, Working paper No 34/R.U. 1.19, 41 pp.
- 1210 1955-04-13 *Notes made during computational work on linear programming problems in connection with national planning*, Indian Statistical Institute, Calcutta, mimeographed notes, 22 pp.
The notes were produced during February-March 1955, in connection with the work on the project described in Frisch 1955-03-12, IDa.
Ida:625, 1209
- 1211 1955-05-13 *The logarithmic potential method of convex programming. With particular application to the dynamics of planning for national development*, Oslo,

- memo DE-UO, 35 pp.
Synopsis of a communication to be presented at the international colloquium in Paris 23-28 May 1955. For other references, see the annotations to Frisch 1954-10-18 IDa.
IDA:613, 1432
- 1212 1956a Formulazione di un piano di sviluppo nazionale come problema di programmazione convessa (Il caso del piano indiano), *L'Industria*, 1956, 1-12.
- 1213 1956b Macroeconomics and linear programming, in *25 economic essays in honour of Erik Lindahl 21 November 1956*, *Ekonomisk Tidskrift*, 1956, 38-67.
The article describes the logarithmic potential method and also links it to the general problem of macroeconomic planning. It is fairly similar to Frisch 1956-01-10 IDa. The latter, however, contains more detailed discussions on several points. The article is reprinted (in Bjerkholt) as Frisch 1995u IDb. See the annotations to Frisch 1954-10-18 IDc for references to other works by Frisch in which the logarithmic potential method is dealt with.
IDA:638, 1216, 1445 IDb:269, 1370, 1499 IDc:613, 1432
- 1214 1956d Programme convexe et planification pour le développement national, *Colloques internationaux du Centre National de la recherche scientifique LXII*, Les modèles dynamiques. Conférence à Paris mai 1955, Publiée 1956, 47-80.
- 1215 1956-01-02 *Submodell, Medianmodell og Refimodell [Sub Model, Median Model and Refi Model]*, Oslo, memo DE-UO, 24 pp.
The heading of chapter I reads: "From national accounts to macro-economic decision models". Thus identical with the title of the article 1955b IDa (in *Income and Wealth*). However, in the present mimeographed version only the main sections immediately connected with the interflow matrix defined in Tab. II are reproduced.
IDA:130, 949, 1200
- 1216 1956-01-10 *Macroeconomics and linear programming*, Oslo, memo DE-UO, 48 pp.
The memo is fairly similar to Frisch 1956b IDa. It contains, however, more detailed discussions on several points. See the annotations to 1956b. For references to other works on the logarithmic potential method, see the annotations to Frisch 1954-10-18 IDb.
IDA:138, 1213, 1442 IDb:613, 1432
- 1217 1956-02-19 *Polytomisk og dikotomisk intervjuing for å bestemme vektene i en preferanseindeks eller viktigheten av de enkelte formålsbeskravninger ved lineær programmering [Polytomic and dichotomic interviewing in order to decide the weights in a preference index or the importance of the individual preference constraints in linear programming]*, Oslo, memo DE-UO, 29 pp.
Assisted by Per Meinich.
- 1218 1956-03-05 *Preferansefunksjonens koeffisienter bestemt på grunnlag av svarene på dikotomiske spørsmål [The coefficients of the preference function decided from the answers to dichotomic questions]*, Oslo, memo DE-UO, 7 pp.
- 1219 1956-03-16 *Om målsettingsformuleringen ved nasjonal planlegging [On the formulation of objectives in national planning]*, Oslo, memo DE-UO, 5 pp.
The memo became reissued in print as Frisch 1957c IDa, with minor changes.
IDA:143, 1225
- 1220 1956-10-10 *Main features of the Oslo Median Model*, Oslo, memo DE-UO, 37 pp.
Bjerkholt and Longva 1980 IDa on Frisch's contributions to the theory of macroeconomic planning (p 12): "Professor Ragnar Frisch, s contributions ... were pioneering and far-reaching. ... Of more direct interest for our exposition are his contributions to the philosophy and methodology of macro-economic model building. ... His efforts in this field were not limited to theoretical studies, he initiated a number of pioneering attempts to build models of the Norwegian economy at a time when the available data and computing equipment could not do justice to his ambitious aims. Some of these early models of the 1950's, in particular the Oslo Median Model, ... are direct precursors of the first MODIS model.
IDA:1998

- 1221 1956-10-21 *Supplementary remarks on the Oslo Median Model*, Oslo, memo DE-UO, 27 pp.
- 1222 1956-11-09 *Introduction to the Oslo Median Model*, Oslo, memo DE-UO, 2 pp.
The present note reproduces in the main the introductory section of Frisch 1956-10-10 IDa (Main features ...).
IDa:647, 1220
- 1223 1956-11-15b *Kvadratisk preferansefunksjon bestemt ved intervjudata og anvendt for konveks programmering [Quadratic preference function decided from interview data and applied in convex programming]*, Oslo, memo DE-UO, 74 pp.
- 1224 1957a *Mot en økonomisk varslings-tjeneste [Towards an economic warning service]*, *Forskningssnytt*, Oslo, Universitetsforlaget's tidsskriftavdeling, Vol 2, 2-3.
- 1225 1957c *Om målsettingsformuleringen ved nasjonal planlegging [On the formulation of objectives in national planning]* *Nationaløkonomisk Tidsskrift*, Vol 95, 125-130.
The content of the article is, except for some minor textual changes and some added footnotes, identical with the content of the memo of 1956-03-16 from DE-UO IDa. See also 1956a IDb (Formulazione ..), 1956d IDc (Programme convex..) and 1956b IDd (Festschrift to Erik Lindahl). Reissued as Frisch 1995ae IDE.
IDa:642, 1219 IDb:137, 1212, 1441 IDc:139, 1214 IDd:138, 1213, 1442 IDE:282, 1374
- 1226 1957-02-14 *Numerical determination of a quadratic preference function for use in macroeconomic programming*, Oslo, memo DE-UO, 37 pp.
This is the original issue. The first printed issue 1961i IDa. Reprints: 1963f IDb and 1995ac IDc. Also issued as reprint No 11 from DE-UO. See the annotations to 1961i.
IDa:163, 1105, 1298 IDb:178, 1106, 1316 IDc:280, 1127, 1372
- 1227 1957-02-26 *Generalities on planning*, Oslo, memo DE-UO, 26 pp.
Published in print as Frisch 1960a IDa.
IDa:152, 1262
- 1228 1957-06-04 *Oslo decision models. A summary of work done on the Sub Model, the Median Model and models of similar types, as well as a draft of the Refi Model*, Oslo, memo DE-UO, 47 pp.
- 1229 1957-11-16 *Hovedmatriksen for refimodellen [The main matrix for the Refi Model]*, Oslo, working note DE-UO, 11 pp.
- 1230 1957-11-27 *The compact method for solving linear equations and inverting matrices in the non symmetric case*, Cairo, Memorandum No 1 to the National Planning Committee, 20 pp.
- 1231 1957-11-30 *Some basic notions of input-output analysis. Being section 1 of a general interflow theory for use in economic planning*, Cairo, Memorandum No 2 to the National Planning Committee, 12 pp.
- 1232 1957-12-20 *The first steps in Kernel planning. (With an explanation on the use of the multiplex method when the number of conditional equations is small)*, Cairo, Memorandum No 6 to the National Planning Committee, 15 pp.
- 1233 1958-01-10 *Numerical determination of a macroeconomic preference function*, Cairo, Memorandum No 11 to the National Planning Committee, 60 pp.
- 1234 1958-01-17 *Inter-regional input-output analysis. With some remarks on foreign trade optimization in a given region*, Cairo, Memorandum No 12 to the National Planning Committee, 14 pp.
- 1235 1958-02-07 *General theory of the Kernel model*, Oslo, memo DE-UO, 187 pp.
A reprint of section 11 was later issued as Frisch 1958-04-25 IDa and still later published

- in print as Frisch 1959a IDb.
IDa:677, 848 IDb:147, 849, 921
- 1236 1958-02-20 *Investeringer som kostnadselementer ved å flytte kapasitetsskranker i økonomisk lineær programmering [Investments as cost elements when moving capacity bounds in economic linear programming]*, Oslo, memo DE-UO, 9 pp.
- 1237 1958-08-14 *Structure of the Norwegian input-output work on 1954 data*, Oslo, memo DE-UO, 5 pp.
- 1238 1958-10-14 *A method of working out a macroeconomic plan frame with particular reference to the evaluation of development projects, foreign trade and employment*, Oslo, memo DE-UO, 48 pp.
 A note on the front page: "This memorandum is issued as a memorandum from the Institute of Economics at the University of Oslo, but can at the same time be classified as my memorandum No. 16 to the National Planning Committee, Cairo."
- 1239 1958-11-07 *The investment plan frame. A tool for selecting the optimum investment policy that will not deteriorate the balance of payments and not tend to produce inflation*, Cairo, Memorandum No 17 to the National Planning Committee, 10 pp.
- 1240 1958-11-10 *A pilot investment decision frame for Egypt*, Cairo, Memorandum No 18 to the National Planning Committee, 69 pp.
- 1241 1958-11-11 *An overall feasibility test for economic development projects*, Cairo, Memorandum No 19 to the National Planning Committee, 15 pp.
- 1242 1958-12-20 *Practical procedures for overall optimum investment planning in Egypt*, Cairo, Memorandum No 21 to the National Planning Committee, 19 pp.
- 1243 1959b On the need for forecasting a multilateral balance of payments, in Allen, William R. and Clark Lee Allen (eds): *Foreign trade and finance*, New York, The Macmillan Company, 410-425.
 A considerably shortened reprint of 1947ai IDa.
IDa:96, 1139
- 1244 1959d The principle of recurrent planning, in Bergvall, John et al (eds): *Ekonomi Politik Samhälle*, Stockholm, Bokförlaget Folk och Samhälle, 67-74.
 Editors: John Bergvall, Erik Dahmén, Olle Dahlén, Gunnar Gerdner and Birger Lundström. Dedicated to Bertil Ohlin on his sixtieth anniversary, 23 April 1959.
- 1245 1959e Recept på investeringspolitik för stabil framstegstakt [Recipe for an investment policy for a steady rate of progress], *Ekonomien*, Vol 35, 6-13.
- 1246 1959-01-27 *A powerful method of approximation in optimum investment computations of the normal type. With particular reference to the case where the number of investment projects is large*, Cairo, Memorandum No 22 to the National Planning Committee, 68 pp.
 A handwritten note (in Norwegian; translated here): An improved presentation is given in the Oslo memo Frisch 1959.06.01.
- 1247 1959-01-31 *Dual formulation of the phasing problem in investment planning*, Cairo, Memorandum No 23 to the National Planning Committee, 47 pp.
- 1248 1959-02-10 *A concrete investment priority table for Egypt*, Cairo, Memorandum No 24 to the National Planning Committee, 20 pp.
- 1249 1959-02-27 *The preparation of a draft investment plan for Egypt*, Cairo, Memorandum No 25 to the National Planning Committee, 12 pp.
- 1250 1959-03-15 *Elsås-modellen og dens utbygging for programmeringsformål [The Elsås model and its extension for programming purposes]*, Oslo, memo DE-UO, 11 pp.

- 1251 1959-04-20 *Aggregat-Refi-modeller [Aggregate Refi models]*, Oslo, memo DE-UO, 71 pp.
Assisted by Eva-Karin Karlsen, Per Schreiner and Arne Dag Johansen.
- 1252 1959-04-27 *Optimal investments under limited foreign resources. Part I*, Oslo, memo DE-UO, 5 pp.
Refer to Frisch 1959-07-15b IDa.
IDa:711, 1259
- 1253 1959-06-01 *A powerful method of approximation in optimum investment computations of the normal type. With particular reference to the case where the number of investment projects is large*, Oslo, memo DE-UO, 45 pp.
A note on the front page: "Paper to be presented at the meeting of the Econometric Society, Amsterdam, September 1959."
- 1254 1959-06-07 *A macroeconomic interflow table with specification of competitive imports*, Oslo, memo DE-UO, 16 pp.
- 1255 1959-06-21 *Note on the steering problem in macroeconomic programming*, Oslo, memo DE-UO, 4 pp.
- 1256 1959-06-25 *Practical rules for interview determination of one-sided and two-sided preference coefficients in macroeconomic decision problems*, Oslo, memo DE-UO, 16 pp.
- 1257 1959-06-29 *Aggregat-Refi-modeller. Del II [Aggregate Refi models. Part II]*, Oslo, memo DE-UO, 9 pp.
- 1258 1959-07-15a *Optimal investments under limited foreign resources. Part II*, Oslo, memo DE-UO, 190 pp.
Refer to Frisch 1959-07-15b IDa.
IDa:711, 1259
- 1259 1959-07-15b *Optimal investments under limited foreign resources. Part I and part II*, Oslo, memo DE-UO, 196pp.
Part I and part II are also produced separately as Frisch 1959-04-27 IDa and Frisch 1959-07-15a IDb respectively.
IDa:700, 1252 IDb:710, 1258
- 1260 1959-11-17 *A generalized form of the Refi interflow table*, Oslo, memo DE-UO, 27 pp.
- 1261 1959-12-18 *The smoothing of an interpreference table*, Oslo, memo DE-UO, 10 pp.
Reproduced in print, first as Frisch 1967d IDa; reissued as Frisch 1995bh IDb.
IDa:207, 1496 IDb:313, 1504
- 1262 1960a *Generalities on planning*, *L'Industria*, 1960, 1-23.
First issued as Frisch 1957-02-26 IDa.
IDa:659, 1227
- 1263 1960b *The infra effect of investments*, in Bombach, G. (ed): *Stabile Preise in wachsender Wirtschaft. Das Inflationsproblem*, Tübingen, Verlag von J. C. B. Mohr (Paul Siebeck), 105-114.
Festschrift at the sixtieth anniversary of Erich Schneider.
- 1264 1960c *Market prices vs. factor costs and the constancy of production coefficients*, in Pfouts, R. W.: *Essays in economics and econometrics. A volume in honor of Harold Hotelling*, Chapel Hill, The University of North Carolina Press, 191-215.
- 1265 1960f *Planning for India: Selected explorations in methodology*, *Indian Statistical Series No. 8*, Calcutta, Statistical Publishing Society, 86 pp.
A foreword by P. C. Mahalanobis, Indian Statistical Institute. The chapters by Ragnar Frisch are: ii: Preface; 1 Planning in underdeveloped economy; 2 Organization of information and the mathematical method; 3 Some applications: The experimental

- plan-frame no.1. Finally an appendix: A flow chart for automatic computation according to the multiplex method, based on the memorandum of 12 September 1958 from the University Institute of Economics and on the report F-375, March 1959, by Ole-Johan Dahl, Norwegian Defence Research Establishment. See Frisch 1958-09-12 IDa. The appendix is identical with Frisch 1959-04-23 IDb.
IDa:683, 1461 IDb:699, 1464
- 1266 1960g Speed with safety through national planning, *L'Egypte Contemporaine*, Cairo, National Planning Committee, 1960, 5-43.
Frisch 1960-04-21 IDa made manuscript for the present article. Also as reprint No 118 from DE-UO.
IDa:742, 1287
- 1267 1960-01-06 *Interflow table for the Channel Model*, Cairo, National Planning Committee, 2 pp.
In cooperation with Dr.I.Abdel-Rahman, Dr.Nazih Deif and members of the staff.
- 1268 1960-01-19 *Current notes from Prof. Frisch. No.1*, Cairo, National Planning Committee, 4 pp.
A note to all units which are working on the Cairo Channel Model. List of contents: 1. The purpose of the Current notes 2. Work sheet for elaboration of carry-on-coefficients 3. Elaboration of the standard equations in terms of all channels' startings.
- 1269 1960-01-24 *Current notes from Prof. Frisch. No 2*, Cairo, National Planning Committee, 10 pp.
A note to all units which are working on the Cairo Channel Model. List of contents: 1. The concept of already-committed-to projects 2. Maintenance and replacement 3. The distinction between construction facilities, construction activity and the current account operations in sectors (for instance in housing) 4. The limitational complementarity between investments.
- 1270 1960-01-25 *Current notes from Prof. Frisch. No 3*, Cairo, National Planning Committee, 10 pp.
A note to all units which are working on the Cairo Channel Model. List of contents: 1. The private demand for housing 2. The demand for intratown transportation 3. A numerical example of the role of the investment carry-on coefficients 4. Special training (vocational and technical).
- 1271 1960-01-26 *Current notes from Prof. Frisch. No 4*, Cairo, National Planning Committee, 7 pp.
List of contents: 1. Capacity and output in the sectors railways and intertown roads 2. The consequential and the autonomous part of an investment starting 3. The extradecisional startings.
- 1272 1960-01-27 *Current notes from Prof. Frisch. No 5*, Cairo, National Planning Committee, 6 pp.
List of contents: 1. The committed-to part of investment in housing 2. The channel 256, construction facilities 3. Cif or fob prices for imported machinery 4. Payment through exports of Egyptian goods 5. Projects that are of a "continuous" sort 6. Railway side tracks and other capital outfit connected with a storage facility.
- 1273 1960-01-28 *Current notes from Prof. Frisch. No 6*, Cairo, National Planning Committee, 9 pp.
List of contents: 1. Certain import goods becoming competitive in the planning period 2. Prices to be used for recording imports and exports.
- 1274 1960-01-31a *Current notes from Prof. Frisch. No 7*, Cairo, National Planning Committee, 10 pp.
List of contents: 1. The solution or the equations for consequential startings 2. The subiteration 3. The subelimination 4. Reducing the number of the degrees of freedom by considering average capacities.
- 1275 1960-01-31b *Current notes from Prof. Frisch. No 8*, Cairo, National Planning Committee, 14 pp.

Note: This issue of the current notes summarizes the data needed for programming the Channel model. These data are partly coefficients and partly certain absolute figures.

- 1276 1960-02-04 *Current notes from Prof. Frisch. No.9*, Cairo, National Planning Committee, 18 pp.
List of contents: 1. Nature of the matrix in the capacity of decision method 2. Time shape of the capacity effect coefficients 3. Computation of the automoments 4. The singular and the non-singular case 5. The computational form to be used 6. Bounds on the investment startings.
- 1277 1960-02-11 *Current notes from Prof. Frisch. No.10*, Cairo, National Planning Committee, 10 pp.
The national profit rate on an investment project.
- 1278 1960-03-04a *Current notes from Prof. Frisch. No.11*, Cairo, National Planning Committee, 9 pp.
Macroeconomic policy making through the Channel Model. Points to be discussed in meeting 5 March 1960.
- 1279 1960-03-04b *Current notes from Prof. Frisch. No.12*, Cairo, National Planning Committee, 17 pp.
List of contents: 1. Balance producing prices 2. The concept of the capital output ratio 3. Further considerations on the private demand for housing and for intratown transportation 4. Transformation of structural demand equations from one base year to another.
- 1280 1960-03-11 *Current notes from Prof. Frisch. No.13*, Cairo, National Planning Committee, 15 pp.
List of contents: 1. A project that aims at progressively substituting domestically produced special parts for imported parts 2. The exports from the sector trade and financial services 3. Investment planning vs investment pushing 4. Should the developmenmt be in the form of a balanced or unbalanced growth? 5. Discovering and releasing new resources or making an optimal use of available resources? 6. Discipline and responsibility 7. The ultimate purpose.
- 1281 1960-03-12 *Current notes from Prof. Frisch. No.14*, Cairo, National Planning Committee, 13 pp.
List of contents: 1. Time stretching the capacity curve for new projects to make it applicable to non modern capital stock 2. Computation of the committed to capacities.
- 1282 1960-03-20 *Current notes from Prof. Frisch. No.15*, Cairo, National Planning committee, 12 pp.
Coordination between the Channel Model and National Budgeting.
- 1283 1960-03-23 *Current notes from Prof. Frisch. No.16*, Cairo, National Planning Committee, 14 pp.
The infra effect of investments.
- 1284 1960-03-25 *Current notes from Prof. Frisch. No.17*, Cairo, National Planning Committee, 10 pp.
Why national planning?
- 1285 1960-03-30 *Current notes from Prof. Frisch. No.18*, Cairo, National Planning Committee, 21 pp.
A survey of tables and data to be included in memorandum No.28.
- 1286 1960-04-05 *The Cairo programming equations, Current notes No.19 from Prof. Ragnar Frisch*, Oslo and Cairo, memo DE-UO, 15 pp.
- 1287 1960-04-21 *Speed with safety through national planning*, Cairo, National Planning Committee, 42 pp.
The present memo made manuscript for the article in L'Egypte Contemporaine, Frisch 1960g IDa. (Note: Corrected edition.)
IDa:158, 1266
- 1288 1960-06-12 *Current notes from Prof. Frisch. No.20*, Cairo, National Planning Committee,

- 28 pp.
A survey of possible uses of the Channel Model.
- 1289 1960-06-14 Current notes from Prof. Frisch. No.21, Cairo, National Planning Committee, 10 pp.
The "skeleton model".
- 1290 1960-06-19 *Current notes from Prof. Frisch. No.22*, Cairo, National Planning Committee, 16 pp.
Basic philosophy of national planning.
- 1291 1960-06-24 *Current notes from Prof. Frisch. No.23*, Cairo, National Planning Committee, 1 p.
A general method of achieving equational consistency.
- 1292 1960-06-27 *The Oslo Refi interflow table*, Oslo, memo DE-UO, 15 pp.
In co-operation with Hans Heli, Tore Johansen, H. J. A. Kreyberg, Per Schreiner, Jan Serck-Hanssen and Tore Thonstad.
- 1293 1960-08-23 *Synopsis of a channel model for macroeconomic programming*, Oslo, memo DE-UO, 3 pp.
- 1294 1961a Economic planning and the growth problem in developing countries, *Statsøkonomisk Tidsskrift*, Vol 75, 115-135.
The article was presented at a seminar held in October 1960 at the Norwegian Institute of International Affairs in Oslo. It includes a report from a succeeding discussion (135-138) with contributions by H. J. Kreyberg, M. Kaser, L. Johansen, K. E. Svendsen, Y. Sadek, R. Kregel and comments by R. Frisch. A reprint is issued (in Long) as Frisch 1976b IDa. Also issued as reprint No 10 from DE-UO. See the annotations to 1961b IDb.
IDA:235, 1364 IDb:160, 1295
- 1295 1961b Economic planning and the growth problem in developing countries, *Øst-Økonomi*, Oslo, special issue 1961, 51-71.
This special issue of *Øst-Økonomi* gives a report of discussions and presentations at a seminar held on 8 and 9 October 1960 at the Norwegian Institute of International Affairs in Oslo. The report is a reprint, with some additions, from *Statsøkonomisk Tidsskrift* No 4 1960 and Nos 1 and 2 1961. Frisch's lecture is reprinted unchanged from 1961a IDa, see the annotations.
IDA:159, 1294
- 1296 1961c Five of the interventions of Ragnar Frisch at the ISI Conference 1961 and the Geneva Input-Output Conference 1961, *Sosialøkonomen*, Vol 5 No 10, 2-7.
- 1297 1961f Litt om desisjonsmodeller i regional planlegging [Some reflections on decision models in regional planning], *Sosialøkonomen*, Vol 15 No 8, 5-6.
Issued as memo from DE-UO, Frisch 1961-06-28 IDa.
IDA:765, 1302
- 1298 1961i Numerical determination of a quadratic preference function for use in macroeconomic programming, *Giornale Degli Economisti e Annali di Economica*, Vol 20, 3-43.
The first printed issue. Reissued in print 1963f IDa and 1995ac IDb. The very first issue is the memo from DE-UO of 1957-02-14 IDc. Also as reprint No 11 from DE-UO. The subject is treated in a number of other works by Frisch. See also Johansen 1974b IDd.
IDA:178, 1106, 1316 IDb:280, 1127, 1372 IDc:658, 1097, 1226 IDd:1982
- 1299 1961j The Oslo Refi interflow table, *Bulletin de L'institut International de Statistique*, Paris, 33e Session, 1961, 1-12.
In co-operation with Hans Heli, Tore Johansen, H. J. A. Kreyberg, Per Schreiner, Jan Serck-Hanssen and Tore Thonstad. Pp 10-12 is an appendix presenting a list of 39 memoranda written by staff members of DE-UO, treating several sides of the Oslo decision models. The article is reissued as reprint No 13 from DE-UO.
- 1300 1961-02-22 *Infraeffekt og kvadratisk programmering. Et generelt makro-programmeringsopplegg med spesialiseringsmuligheter. [Infra effect*

and quadratic programming. A general macro programming arrangement with openings for specializations], Oslo, memo DE-UO, 11 pp.

- 1301 1961-05-13 *A survey of types of economic forecasting and programming and a brief description of the Oslo Channel Model*, Oslo, memo DE-UO, (60+12)pp=72 pp
 Stated on the front cover: "To Accademia Nazionale dei Lincei - this paper is respectfully dedicated as a token of gratitude". As regards the content this contribution and 1961-10-20 IDa (and 1962g IDb) are fairly similar. The present one contains more about the general mathematical problem of the Oslo Channel Model.
Ida:768, 1304 IDb:172, 1309
- 1302 1961-06-28 *Litt om desisjonsmodeller i regional planlegging [Some reflections on decision models in regional planning]*, Oslo, memo DE-UO, 3 pp.
 Published as article in *Sosialøkonomen* 1961f IDa.
Ida:161, 1297
- 1303 1961-09-23 *Five of the interventions of Ragnar Frisch at the Paris ISI Conference 1961 and at the Geneva Input-Output Conference 1961*, Oslo, memo DE-UO, 12 pp.
- 1304 1961-10-20 *Preface to the Oslo Channel Model - A survey of types of economic forecasting and programming*, Oslo, memo DE-UO, 44 pp.
 The same as the printed publication 1962g IDa. Issued also as reprint No 15 from DE-UO. An in many ways similar contribution is 1961-05-13 IDb.
Ida:172, 1309 IDb:763, 1301
- 1305 1962a Address delivered at the Britain-Commonwealth-EFTA Conference July 17, 1962, in Report of the conference: *Britain should stay out, The Britain-Commonwealth-EFTA Conference, July 16-19, 1962*, House of Commons, Westminster, London, S. W. I., The Forward Britain Movement, 102-107.
 The sole issue of the conference was to discuss whether Britain should join the European Common Market or stay out. In his address Frisch advocated his idea of organizing the economic interdependence between all nations by establishing a multilateral trade clearing agency, and gave a brief verbal sketch of how such an agency in his opinion should be based and put to work. For a more thorough presentation of the trade clearing idea, see e.g. Frisch 1963d IDa. Frisch's address to the conference was reproduced as Frisch 1962-07-20b IDb. See also Robinson 1962 IDc. Address for loan of the conference report: The British Library Document Supply Centre, Boston Spa, Wetherby, West Yorkshire, United Kingdom, LS23 7BQ.
Ida:176, 1315 IDb:773, 1311 IDc:1933
- 1306 1962b *Confidential report to His Excellency Abdel Latif El Boghady, Vicepresident of the United Arab Republic, from Professor Ragnar Frisch*, Oslo, DE-uo, 34 pp.
 A report based on work done by Frisch during several visits to the National Planning Committee, Cairo, as a United Nations expert, and on extensive computations carried out on the Norwegian Defence Organization electronic computer at Kjeller near Oslo under Frisch's supervision, using the Cairo data. It is referred to Frisch 1960g IDa and, without closer specifications, to several memoranda and current notes written for the National Planning Committee during Frisch's stays in Cairo.
Ida:158, 1266
- 1307 1962e Note generali sulla pianificazione, in Caffè, F. (ed): *Economisti moderni*, Milan, Geranzi Editore, 202-235.
 Translation of 1960a IDa.
Ida:152, 1262
- 1308 1962f *La pianificazione economica ed il problema della crescita nei paesi in sviluppo, L'Industria*, 1962, 5-?.
 The article is an Italian translation of Frisch 1961a IDa. An added note: M.Talamona: Note in margine al saggio di Ragnar Frisch, su alcuni problemi dellapianificazione, p 25.
Ida:159, 1294

- 1309 1962g Preface to the Oslo Channel Model - A survey of types of economic forecasting and programming, in Geary, R. C. (ed): *Europe's Future in Figures*, Amsterdam, North-Holland Publishing Company, 248-286.
In a classification wellknown among his students Frisch distinguishes between four stages in economic forecasting and planning: The *on-looker approach*, the *ad hoc instrument approach*, the *feasible instrument approach*, and finally the *optimalization approach* which includes a preference function and a mathematical programming technique for locating the (or an) optimal solution. The better part of the paper gives a survey of problems to face within the optimalization approach and hints on how to handle them. An appended numerical input-output table presents the actual flows in value figures for Norway 1956. Reprints: Frisch 1976g IDa (in Long) and 1995as IDb (in Bjerkholt). First issued as memo from DE-UO 1961-10-20 IDc. See the fairly similar contribution 1961-05-13 IDd. Also as reprint No 15 from DE-UO.
IDa:240, 1367 IDb:296, 1376 IDc:768, 1304 IDd:763, 1301
- 1310 1962-07-20a *Draft of a multilateral trade clearing agency*, Oslo, memo DE-UO, 7 pp.
With Joan Robinson. The memorandum contains "Speech on 18 July 1962 at the Britain-Commonwealth-EFTA Conference in London" by Joan Robinson, and "Tentative draft of a multilateral trade clearing agency. Address on 17 July 1962 at the Britain-Commonwealth-EFTA Conference in London" by Ragnar Frisch. Refer to Robinson 1962 IDa and Frisch 1962a IDb.
IDa:1933 IDb:168, 1305
- 1311 1962-07-20b Tentative draft of a multilateral trade clearing agency -. Address on 17 July 1962 at the Britain-Commonwealth-EFTA Conference in London, in *Draft of a multilateral trade clearing agency*, Oslo, memo, DE-UO, 3-7.
See Frisch 1962a IDa with annotations.
IDa:168, 1305
- 1312 1962-08-17 Economic planning and the growth problem in developing countries, Oslo, memo DE-UO, 15 pp.
Lecture at the United Nations International Seminar in Norway (Gol, Halingdal) 8-17 August 1962: "Cooperation between developed and less developed countries".
- 1313 1962-12-07 *Prinsipiell diskusjon om makroøkonomiske virkemidler [A fundamental discussion on macro-economic policy instruments]*, Oslo, memo DE-UO, 6 pp.
A correspondence between Petter Jakob Bjerve, at the time general manager of Central Bureau of Statistics of Norway, and Ragnar Frisch. Also reproduced in Andvig 1994 IDa.
IDa:2051
- 1314 1963b An implementation system for optimal national economic planning without detailed quantity fixation from a central authority, *Extrait des Actes de la 3^e conference internationale de recherche operationelle, Oslo 1963*, Paris, London, Dunod and English Universities Press Ltd, 20-59.
The article gives a broad and mostly verbal presentation of the selection problem. One section gives a discussion of a coalition preference function. First issued as 1963-01-03 IDa. Republished as Frisch 1976e IDb (in Long) and as Frisch 1995o IDc (in Bjerkholt). Also issued as reprint No 18 from DE-UO.
IDa:779, 1317 IDb:238, 1366 IDc:263, 1369
- 1315 1963d A multilateral trade clearing agency, *Statsøkonomisk Tidsskrift*, Vol 77, 1-10.
Prepared for the All Nations Trade and Economic Discussion Conference under the title "Towards a world economic conference", initiated by The Forward Britain Movement, held in London March 1963. Originally issued as 1963-02-03 IDa, later as 1964d IDb and slightly revised as 1967b IDc. Frisch suggested the basic ideas of a trade clearing agency in 1947ai IDd, 1948c IDe, 1948-03-04 IDf, and 1959b IDg. A mathematical theory for a multilateral trade clearing is presented in Frisch 1963-02-07 IDh, Alstadheim 1963-04-04 IDi and Alstadheim 1967 IDj. For a brief popularized presentation, see Frisch 1962a IDk. Frisch 1967b is reissued together with Alstadheim 1967 as reprint No 36 from DE-UO.
IDa:780, 1318 IDb:182, 1327 IDc:205, 1351 IDd:96, 1139 IDe:101, 1143 IDf:432, 1145 IDg:148, 1243 IDh:781, 1319 IDi:1951 IDj:1962 IDk:168, 1305

- 1316 1963f Numerical determination of a quadratic preference function for use in macroeconomic programming, in *Studies in honour of Gustavo del Vecchio*, Padova, Cedam, 311-351.
A reprint of Frisch 1961i IDa, see the annotations for other references.
IDA:163, 1105, 1298
- 1317 1963-01-03 *An implementation system for optimal national economic planning without detailed quantity fixation from a central authority*, Oslo memo DE-UO, 40 pp.
Printed as Frisch 1963b IDa and reprinted as Frisch 1976b IDb (in Long) and Frisch 1995o IDc (in Bjerkholt). Also as reprint No 18 from DE-UO.
IDA:174, 1314 IDb:235, 1364 IDc:263, 1369
- 1318 1963-02-03 *A multilateral trade clearing agency*, Oslo, memo DE-UO, 11 pp.
Published in print as Frisch 1963d IDa (see the annotations) and 1964d IDb. See also Frisch 1967b IDc.
IDA:176, 1315 IDb:182, 1327 IDc:205, 1351
- 1319 1963-02-07 *Matematisk teori for multilateral clearing, Del I [Mathematical theory for multilateral clearing, Part I]*, Oslo, memo DE-UO, 19 pp.
See Alstadheim 1963-04-04 IDa and Alstadheim 1967 IDb. See also Frisch 1967b IDc.
Further references in the annotations to Frisch 1963d IDd.
IDA:1951 IDb:1962 IDc:205, 1351 IDd:176, 1315
- 1320 1963-10-03 *Et numerisk eksempel som viser hvorledes prinsipper fra "The Oslo Channel Model" kan brukes for å avgjøre valg mellom investeringsprosjekter [A numerical example which shows how principles from "The Oslo Channel Model" can be used to decide choices between investment projects]*, Oslo, memo DE-UO, 72 pp.
In cooperation with Aina Uhde and Håvard Alstadheim. Reproduced in print as Frisch 1969 IDa.
IDA:209, 1353
- 1321 1963-10-17 Foreword, in Fraser 1963-10-17 *New ways of planning for growth in Britain*, Oslo, memo DE-UO, 1 p.
From the foreword: "We are extremely glad that T. C. Fraser, Industrial Director of the National Economic Development Office, London, has consented to bringing out as a memorandum from the Oslo University Institute of Economics his talk in Oslo 17 September 1963 on the British planning activity organized in National Economic Development Council ... It is highly significant and important that through the work of N.E.D.C. "planning" has now become a respectable concept that may be talked about even in conservative circles in Great Britain. ... This it not saying that I believe the N.E.D.O. *scientific method* of approaching planning is the best. I have a strong feeling that it is not an effective and rational procedure from a more advanced viewpoint. ...". See Fraser 1963-10-17 IDa.
IDA:1953
- 1322 1963-12-07 *Model 1. Investment requirements under a given time shape of current final demand*, Cairo, Memo. 102: The Institute of National Planning, 22 pp.
Note: "The numbering of my new series of memoranda starts on 101 to avoid confusion with the several memoranda I have written to the former "National Planning Committee"".
- 1323 1963-12-13a *Explanation to tabs. 1 - 14 in Appendix to Memo. 102*, Cairo, The Institute of National Planning, 14 pp.
- 1324 1963-12-13b *HOW TO PLAN ? In national planning everything has its price, and economic policy making means a compromise among several desiderata*, Cairo, memo. 102: The Institute of National Planning, 114 pp.
An introductory remark: "The purpose of this Model is to use Egyptian data to illustrate how the basic principle described in the title of this memorandum will work in the Egyptian situation. ... The present Model is designed to shed light on problems connected with the elaboration of the five year plan whose execution is to start in the year 1965/66, i.e. in the year beginning 1 July 1965. ...".

- 1325 1964b Economic planning and the role of econometrics, *Statsøkonomisk Tidsskrift*, Vol 78, 1-7.
A reprint issued as Frisch 1965g IDa.
IDA:190, 1110, 1337
- 1326 1964c Die grundlegenden Züge des zwischenzweiglichen Modells "Oslo", in Förster, E., K. König, and G. Wintgen (eds): *Mathematische Methoden in der Wirtschaft*, Berlin, Verlag die Wirtschaft, 383-472.
Translated from Russian by Birgitte Berthold, Erhard Förster, Heinz Geiáler, Karl König, Herbert Kluge, Wolfgang Salecker and Joachim Ulbricht. Original title of the book of readings (in Russian): *Primeniye matematiki v ékonomicheskikh issledovaniyakh*.
- 1327 1964d A multilateral trade clearing agency, in *On political economy and econometrics - Essays in honour of Oskar Lange*, Warszawa, PWN-Polish Scientific Publishers, 165-172.
Also issued as 1963d IDa, 1963-02-03 IDb and slightly revised as 1967b IDc. See the annotations to 1963d.
IDA:176, 1315 IDb:780, 1318 IDc:205, 1351
- 1328 1964g Planning for The United Arab Republic, *L'Egypte Contemporaine*, LVème annee, 5-17.
Public lecture delivered on 8 February 1964 in the Egyptian Society for Political Economy, Legislation and Statistics, at the invitation of Cairo University. A revised version published as Frisch 1965d IDa.
IDA:189, 1336
- 1329 1964-02-28 *National economic planning and the role of the economist working with quantitative methods*, University of Pittsburgh, Graduate School of Public and International Affairs (GSPIA), 7 pp.
Remarks by Professor Ragnar Frisch on 28 February 1964 at Dean Stone's Dessert Seminar "Stone's Throw", University of Pittsburgh. Applied quantitative techniques in sectoral planning. Frisch's Pittsburgh papers 1964.
- 1330 1964-03-20 *Macroeconomic planning and the basic policy chart*, University of Pittsburgh, The Faculty-Student Seminar - GSPIA, 13 pp.
The lecture was based on a public lecture delivered on 8 February 1964 in the Egyptian Society for Political economy, Legislation and Statistics, see Frisch 1964-02-08 IDa. GSPIA is an abbreviation for Graduate School of Public and International Affairs.
IDA:
- 1331 1964-03-29a *An interviewing technique for determining linear (and constant) preference coefficients*, Pennsylvania USA, memo from GSPIA, UN of Pittsburgh, 14 pp.
GSPIA stands for Graduate School of Public and International Affairs.
- 1332 1964-03-29b *Optimal implementation*, Pennsylvania USA, memo from GSPIA, UN of Pittsburgh, 34 pp.
GSPIA stands for Graduate School of Public and International Affairs. The article was later issued in print as Frisch 1966h IDa and 1966g IDb.
IDA:199, 1346 IDb:198, 1345
- 1333 1964-04-08 *An interviewing technique for determining linear (and constant) preference coefficients*, Pittsburgh, Graduate School of Public and International Affairs (GSPIA), 14 pp.
Applied quantitative techniques in sectoral planning. Frisch's Pittsburgh papers 1964.
- 1334 1964-04-09 *The interpretation of growth rate, savings rate and output-to-capital ratio in a decision model*, Pittsburgh, Graduate School of Public and International Affairs (GSPIA), 24 pp.
Applied quantitative techniques in sectoral planning. Frisch's Pittsburgh papers (1964).
- 1335 1964-10-12 *Notat om frihetsgrader i makroøkonomiske planleggingsmodeller [A note on degrees of freedom in macroeconomic planning models]*, Oslo, memo DE-UO, 7 pp.
- 1336 1965d Planning for the United Arab Republic, *Economics of Planning*, Vol 5, 29-42.

Public lecture delivered on 8 February 1964 in the Egyptian Society for Political Economy, Legislation and Statistics, at the invitation of Cairo University. The present publication is a revised version of Frisch 1964g IDa. Also issued as reprint No 24 from DE-UO.

Ida:185, 1328

- 1337 1965g Selection and implementation - The econometrics of the future, in *Semaine d'Étude sur le Role de l'analyse econométrique dans la formulation de plans de developpement, Pontificiae Academiae Scientiarvm Scripta Varia - 28*, Rome, 1197-1204.
A speech delivered as an introduction to a paper presented October 10 1963 in a study week organized in the Vatican by the Pontifical Academy of Science. Frisch's complete contribution to the conference, included various mimeographed documents which he distributed among the participants, was not included in the proceedings. A footnote on p 1204 might indicate that he intended to publish his contribution elsewhere. In the discussion after Frisch's oral presentation the following workshop members participated: M. Allais, R. Dorfman, T. C. Koopmans, P. C. Mahalanobis, F. Fisher, H. Wold, W. Leontief and H. Theil. Their contributions to the discussion are reported on pp 1205-1232. The present publication is a reprint of Frisch 1964b IDa.
Ida:180, 1107, 1325
- 1338 1965-01 Planning for the United Arab Republic, Oslo, memo DE-UO, 12 pp.
A note by Frisch: "An improved formulation, January 1965, of a paper published in L'Egypte Contemporaine, Cairo, July Issue 1964". The ref. in this bibliography: Frisch 1964g IDa.
Ida:185, 1328
- 1339 1965-05-08 *How mathematical programming may be used to great advantage in the federal part of Yugoslav economic planning*, Oslo, memo DE-UO, 6 pp.
An introductory note: "This memorandum reproduces (with some minor verbal changes) a letter I wrote in the night between 8 and 9 May in Graz, Austria, after an ESTØ conference of Western and Eastern economists". The mentioned letter was written to Professor Dusan Sabolovic.
- 1340 1965-09-11 *From growth models to realistic decision models*, Rome, the First World Congress of the Econometric Society, 13.
Invited address given on 11 September 1965 at the first World Congress of the Econometric Society, held in Rome. Also presented as a token of friendship to Sir Roy Harrod.
- 1341 1965-12-14 *General outlook on a method of advanced and democratic macroeconomic planning*, Oslo, memo DE-UO, 25 pp.
The first two of eight lectures given at the Centro Internazionale Matematico (CIME) Summer Session L'Aquila, Italy 30 August - 7 September 1965. Note: "To appear (in English) in the compte rendu of the Conference under the editorship of Professor Bruno de Finetti and (in Italian) in the "Rassegna Economica, Banco di Napoli" under the editorship of Professor Giuseppe Palomba."
- 1342 1966a General outlook on a method of advanced and democratic macroeconomic planning, in Bruno de Finetti (ed): *Mathematical Optimization in Economics*, Roma, III Ciclo, l'aquila, 29 Agosto - 7 Settembre 1965, Edizioni Cremonese, 223-264.
Issued in Italian translation as 1966c IDa (Intorno ad un metodo ...).
Ida:195, 1344
- 1343 1966b A generalized form of the Refi interflow table, in Kowalik, T. (ed): *Problems of economic dynamics and planning. Essays in honour of Michal Kalecki*, Warszawa, PWN-Polish Scientific Publishers (Pergamon Press), 133-156.
- 1344 1966c Intorno ad un metodo di pianificazione macroeconomica avanzata e democratica, *Rassegna Economica*, Vol 30, 5-42.
Translation of 1966a IDa (General outlook ...) by Antonio Maria Fusco.
Ida:193, 1342

- 1345 1966g Optimal implementation, *Rivista Internazionale de Scienze Economiche e Commerciali*, 1966 No 1, ?
Originally published as a memorandum from the Graduate School of Public and International Affairs, University of Pittsburgh, Frisch 1964-03-29b IDa. A reprint was published as Frisch 1966h IDb.
IDA:796, 1332 IDb:199, 1346
- 1346 1966h Optimal implementation, in Tullio Bagiotti (ed): *Essays in honour of Marco Fanno*, Padova, Cedam - Casa Editrice Dott. Antonio Milani, 270-286.
Reprint of Frisch 1966g IDa.
IDA:198, 1345
- 1347 1966j Rational price fixing in a socialistic society, *Economics of Planning*, Vol 6, 97-124.
A footnote 1 p 97: "This paper is based on an address given on 18 March 1966 in the Economic Institute of the Academy of Sciences of the Sovjet Union. The meeting was chaired by Professor D. A. Allachverdjan, Deputy Director of the Institute, and by Professor Hachaturov. A very active participant in the ensuing discussion was Professor Istislavsky. My thanks to Professor Allachverdjan are also due because of an elaborate personal memorandum which he wrote me in the fall of 1963 on the rules for price fixation in the Sovjet Union." The article was to be continued, but the continuation never appeared. A reprint (in Bjerkholt): Frisch 1995aå IDa.
IDA:306, 1380
- 1348 1966k Øst og Vest - og avanserte planleggingsmetoder [East and West - and advanced planning methods], *Sosialøkonomen*, Vol 20 No 1, 3-10.
A slightly revised reproduction of the first part of a lecture given in Sosialøkonomisk Samfunn, Oslo, 1965. An excerpt of part two of the article (in which theoretical and mathematical discussions are omitted) is issued as Frisch 1995au IDa.
IDA:298, 1377
- 1349 1966l Øst og vest - og avanserte planleggingsmetoder. Annen artikkel: Prisproblemet [East and west - and advanced planning methods. The second article: The price problem], *Sosialøkonomen*, Vol 20 No 3, 22-32.
The present article is a revised reproduction of the second part of a lecture given in Sosialøkonomisk Samfunn, Oslo, on October 5 1965. Frisch 1966k IDa is a revised reproduction of the first part of the same lecture. The present article deals with the fundamental question of how to find a system of prices which should be fixed officially through an optimal programming analysis and which should serve as an active vehicle for steering the economic activity in accordance with established preferences. An excerpt of the article (where theoretical and mathematical discussions are omitted) is issued as Frisch 1995au IDb.
IDA:202, 1348 IDb:298, 1377
- 1350 1967a Investment starting vs. investment sinking, *Economics of Planning*, Vol 7, 219-231.
A paper prepared as background material for invited lectures to be given April 1968 in the Department of Economics and Jurisprudence of the Hungarian Academy of Sciences, Budapest.
- 1351 1967b A multilateral trade clearing agency, *Economics of Planning*, Vol 7, 97-105.
A slightly revised version of 1963d IDa, 1963-02-03 IDb and 1964d IDc. See the annotation to 1963d. Reissued together with Alstadhe im 1967 IDd as reprint No 36 from DE-UO.
IDA:176, 1315 IDb:780, 1318 IDc:182, 1327 IDd:1962
- 1352 1967c Möglichkeiten einer vorteilhaften Anwendung der matematischen Programmierungsmethode in der bundesstaatlichen Wirtschaftsplanung Jugoslawiens, in Mayrzedt, Hans und Heelmut Romé (eds): *Koexistenz zwischen Ost und West - Konflikt, Kooperation, Konvergenz*, Wien, Frankfurt, Zürich, Europa Verlag Wien, 157-164 and 311-312.
Notes to the article are presented on pp 311 and 312. Note 1 and 2 are by the editors, note 3, 4, 5 and 6 by the author. A number of references to writings by the author himself are given in note 6.

- 1353 1969 *Et numerisk eksempel som viser hvorledes prinsipper fra "The Oslo Channel Model" kan brukes for å avgjøre valg mellom investeringsprosjekter [A numerical example which shows how principles from "The Oslo Channel Model" can be used to decide choices between investment projects]*, Oslo, Bergen, Tromsø, Universitetsforlaget, 72 pp.
Reprint of Frisch 1963-10-03 IDa.
IDA:782, 1320
- 1354 1969-02-03 Economic steering by incentives instead of by commands, Oslo, MS DE-UO, 15 pp.
MS for *Acta Oeconomica* Budapest. Lecture in Budapest on 5 April 1968 in a meeting organized by the Hungarian Economic Association.
- 1355 1971a *Co-operation between politicians and econometricians on the formalization of political preferences*, Esselte Tryck, Stockholm, The Federation of Swedish Industries, 66 pp.
Background paper for a seminar held by the Federation of Swedish Industries. See 1971f IDa, which seems to be a Norwegian translation of the present English original. Also as reprint No 90 from DE-UO.
IDA:220, 1357
- 1356 1971c Note generali sulla pianificazione, in Caffè, F. (ed): *Economisti moderni*, Bari, Casa editrice Gius. Laterza & Figli, 195-226.
The same as 1962e IDa.
IDA:170, 1307
- 1357 1971f Samarbeid mellom politikere og økonometrikere om formuleringen av politiske preferanser [Cooperation between politicians and econometricians on the formulation of political preferences], *Sosialøkonomen*, Vol 25 No 6, 5-13.
Lecture given in Sosialøkonomisk Samfunn, Oslo, March 1971. It seems to be a Norwegian translation of 1971a IDa. Also issued as reprint No 81 from DE-UO. Parts of the article (from pp 5-9) are reprinted (in *Troen på nøkken*) as Frisch 1995bf IDb.
IDA:215, 1355 IDb:311, 1382
- 1358 1971h Økonomisk teori og økonomisk politikk [Economic theory and economic policy], in *Økonomi og politikk*, Oslo, H. Aschehoug & co. (W. Nygaard), 5-13.
With Petter Jakob Bjerve. *Økonomi og politikk* is a selection of articles issued as Festschrift to Ole Myrvoll on his 60th anniversary May 18 1971. The Frisch-Bjerve article is from a conversation on the radio July 5 1970. Also as reprint No 78 from DE-UO.
- 1359 1974d Bevezetés az Oslo Chanell modellhez. A gazdasági előrejelzés és programozás típusai [Preface to the Oslo Channel Model. A survey of types of economic forecasting and programming], in Frisch, Ragnar: *Kvantitatív és dinamikus közgazdaságtan*, Budapest, Közgazdasági és Jogi Könyvkiadó, 297-334.
Translation by Ámon, Zsolt of Frisch 1962ge IDa. The input output table appended in the original publication is omitted. See Frisch 1974f IDb.
IDA:172, 1309 IDb:227
- 1360 1974h Modellek alkalmazása racionális gazdaságpolitika kidolgozásához [L'emploi des modèles pour l'élaboration d'une politique économique rationnelle], in Frisch, Ragnar: *Kvantitatív és dinamikus közgazdaságtan*, Budapest, Közgazdasági és Jogi Könyvkiadó, 189-242.
Translation by Ágainé, Tüzes Klára of Frisch 1950c IDa, see the annotations. See Frisch 1974f IDb.
IDA:107, 1170 IDb:227
- 1361 1974j A nemzeti elszámolási rendszertől a makroökonómiai döntési modellekig [From national accounts to macro-economic decision models], in Frisch, Ragnar: *Kvantitatív és dinamikus közgazdaságtan*, Budapest, Közgazdasági és Jogi Könyvkiadó, 243-267.
Translation by Kupa, Ildikó of Frisch 1955b IDa, see the annotations. See Frisch 1974f

- IDb.
IDA:130, 949, 1200 IDb:227
- 1362 1974k Politikai preferenciák kialakítására irányuló együttműködés politikusok és ökonometrikusok között [Co-operation between politicians and econometricians on the formalization of political preferences], in Frisch, Ragnar: *Kvantitatív és dinamikus közgazdaságtan*, Budapest, Közgazdasági és Jogi Könyvkiadó, 335-382.
Translation by Ámon, Zsolt of Frisch 1971a IDa, see the annotations. See Frisch 1974f IDb.
IDA:215, 1355 IDb:227
- 1363 1976a Co-operation between politicians and econometricians on the formalization of political preferences, in Long, Frank (ed): *Economic planning studies. A collection of essays by Ragnar Frisch, International studies in economics and econometrics Vol 8*, Dordrecht-Holland, Boston-U.S.A., D. Reidel Publishing Company, 41-86.
A reprint of Frisch 1971a IDa, see the annotations.
IDA:215, 1355
- 1364 1976b Economic planning and the growth problem in developing countries, in Long, Frank (ed): *Economic planning studies. A collection of essays by Ragnar Frisch, International studies in economics and econometrics Vol 8*, Dordrecht-Holland, Boston-U.S.A., D. Reidel Publishing Company, 175-195.
A reprint of Frisch 1961a IDa, see the annotations.
IDA:159, 1294
- 1365 1976c *Economic planning studies. Selected and introduced by Frank Long. Preface by Jan Tinbergen, International studies in economics and econometrics, Vol 8*, Dordrecht-Holland, Boston-USA, D. Reidel Publishing Company, 195 pp.
- 1366 1976e An implementation system for optimal national economic planning without detailed quantity fixation from a central authority, in Long, Frank (ed): *Economic planning studies. A collection of essays by Ragnar Frisch, International studies in economics and econometrics Vol 8*, Dordrecht-Holland, Boston-U.S.A., D. Reidel Publishing Company, 129-174.
A reprint of Frisch 1963b IDa, see the annotations.
IDA:174, 1314
- 1367 1976g Preface to the Oslo Channel Model - A survey of types of economic forecasting and programming, in Long, Frank (ed): *Economic planning studies. A collection of essays by Ragnar Frisch, International studies in economics and econometrics Vol 8*, Dordrecht-Holland, Boston-U.S.A., D. Reidel Publishing Company, 87-127.
A reprint of Frisch 1962g IDa, see the annotations for other references.
IDA:172, 1309
- 1368 1995e Circulation planning: Proposal for a national organization of a commodity and service exchange, in Bjerkholt, O. (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume I*, Aldershot UK, Brookfield US, Edward Elgar, 360-438.
A reprint of pp 258-336 of Frisch 1934a IDa. Thus the mathematical appendix, pp 422-435, is omitted.
IDA:54, 1136
- 1369 1995o An implementation system for optimal national economic planning without detailed quantity fixation from a central authority, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*, Aldershot UK, Brookfield US, Edward Elgar, 154-193.
A reprint of Frisch 1963b IDa, see the annotations.
IDA:174, 1314
- 1370 1995u Macroeconomics and linear programming, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*, Aldershot UK, Brookfield US, Edward Elgar, 235-264.

- A reprint of Frisch 1956b IDa, see the annotations.
IDa:138, 1213, 1442
- 1371 1995v The mathematical structure of a decision model: The Oslo Sub-Model, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Vol II*, Aldershot UK, Brookfield US, Edward Elgar, 9-34.
A reprint of Frisch 1955f IDa, see the annotations.
IDa:134, 1201
- 1372 1995ac Numerical determination of a quadratic preference function for use in macroeconomic programming, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*, Aldershot UK, Brookfield US, Edward Elgar, 35-75.
A reprint of Frisch 1961i IDa, see the annotations for other references.
IDa:163, 1105, 1298
- 1373 1995ad Om desisjonsmodeller [On decision models], in Frisch, Ragnar: *Troen på nøkken*, Oslo, Det Blå Bibliotek, UF, 54-60.
An excerpt from 1958b IDa (*Økonomikkens landevinninger ...*). The excerpt is, except for a few short passages, identical with pp 277-285 of the article.
IDa:146
- 1374 1995ae Om målsettingsformuleringen ved nasjonal planlegging [On the formulation of objectives in national planning], in Frisch, Ragnar: *Troen på nøkken*, Oslo, Det Blå Bibliotek, UF, 185-189.
A reprint of 1957c IDa.
IDa:143, 1225
- 1375 1995ak On the need for forecasting a multilateral balance of payments, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*, Aldershot UK, Brookfield US, Edward Elgar, 353-369.
A reprint of Frisch 1947ai IDa, see the annotations.
IDa:96, 1139
- 1376 1995as Preface to the Oslo Channel Model - A survey of types of economic forecasting and programming, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*, Aldershot UK, Brookfield US, Edward Elgar, 76-115.
A reprint from Frisch 1976g IDa (Long). The original printed issue is Frisch 1962g IDb, see the annotations for other references.
IDa:240, 1367 IDb:172, 1309
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An excerpt of 1966l IDa. Theoretical and mathematical discussions are omitted.
IDa:203, 1349
- 1378 1995av The problem of multicompensatory trade. Outline of a system of multicompensatory trade, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*, Aldershot UK, Brookfield US, Edward Elgar, 370-376.
A reprint of Frisch 1948c IDa, see the annotations.
IDa:101, 1143
- 1379 1995aø Rasjonell økonomisk politikk [Rational economic policy], in Frisch, Ragnar: *Troen på nøkken*, Oslo, Det Blå Bibliotek, UF, 175-184.
A reprint of 1951e IDa.
IDa:116, 1176
- 1380 1995aå Rational price fixing in a socialistic society, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*, Aldershot UK, Brookfield US, Edward Elgar, 194-221.
A reprint of 1966j IDa, see the annotations.

IDA:201, 1347

- 1381 1995bb Repercussion studies at Oslo, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*, Aldershot UK, Brookfield US, Edward Elgar, 3-8.
A reprint of Frisch 1948d IDa, see the annotations. Also issued as memo from DE-UO: 1949-04-20 IDb.
IDA:102, 1044 IDb:469, 1056, 1154
- 1382 1995bf Samarbeid mellom politikere og økonometrikere om formuleringen av politiske preferanser [Cooperation between politicians and econometricians on the formulation of political preferences], in Frisch, Ragnar: *Troen på nøkken*, Oslo, Det Blå Bibliotek, UF, 200-207.
The present contribution is an excerpt from pp 5-9 of Frisch 1971f IDa, see the annotations.
IDA:220, 1357
- 1383 1995bj Statens plikt til sirkulasjonsregulering [The Government's obligation to circulation regulation], in Frisch, Ragnar: *Troen på nøkken*, Oslo, Det Blå Bibliotek, UF, 63-88.
Printed issue of 1951-01-11 IDa; a number of paragraphs of minor importance are omitted; see the annotations.
IDA:527, 1178

II.3.8 Mathematics and numerical optimization methods

- 1384 1923b Remarque sur le calcul numérique des fonctions symétriques élémentaires, *Norsk Matematisk Forenings Skrifter*, Oslo, Serie 1 nr 14, 83-86.
- 1385 1927d Sur le théorème des déterminants de M. Hadamard, *Comptes rendus des séances de l'Académie des Sciences*, Séance du 5 décembre 1927, Paris, Tome 185, 1244-1245.
- 1386 1929c On approximation to a certain type of integrals, *Skandinavisk Aktuarietidskrift*, Vol 12, 129-181.
- 1387 1935b The characteristic solutions of a mixed difference and differential equation occurring in economic dynamics, *Econometrica*, Vol 3, 225-239.
With Harald Holme. The equation in question arose in Frisch's propagation and impulse problems article, 1933i IDa. This type of equation has previously not been solved in mathematical literature. Reprints: Frisch 1990 IDb and 1995d IDc.
IDa:50, 968 IDb:245, 986 IDc:252, 1498
- 1388 1937f Note on the phase diagram of two variates, *Econometrica*, Vol 5, 326-328.
- 1389 1938d On the inversion of a moving average, *Skandinavisk Aktuarietidskrift*, Vol 21, 218-225.
Remarks on Wold, Herman 1938: *A study in the analysis of stationary time series*, Stockholm, Almqvist & Wiksell.
- 1390 1947a Appendiks 1. Litt differentialregning [Appendix 1. A note on differential calculus] in Frisch, Ragnar: *Notater til økonomisk teori. 4. utgave, annet hefte [Notes on economic theory. Fourth edition, second volume]*, Oslo, mimeo DE-UO, 366-381.
- 1391 1947b Appendiks 12. Litt om inversjon av likningssystemer [Appendix 12. A note on inversion of equation systems], in Frisch, Ragnar: *Notater til økonomisk teori. 4. utgave, annet hefte [Notes on economic theory. Fourth edition, second volume]*, Oslo, mimeo DE-UO, 511-527.
- 1392 1947c Appendiks 2. Regneregler for relative tilvekstgrader (elastisiteter). Definisjon av elastisiteten [Appendix 2. Calculation rules for relative degrees of growth (elasticities). Definition of the elasticity], in Frisch, Ragnar: *Notater til økonomisk teori. 4. utgave, annet hefte [Notes on economic theory. Fourth edition, second volume]*, Oslo, mimeo DE-UO, 382-392.
- 1393 1947d Appendiks 4. Elementær metode til løsning av lineære likninger [An elementary method for solving linear equations], in Frisch, Ragnar: *Notater til økonomisk teori. 4. utgave, annet hefte [Notes on economic theory. Fourth edition, second volume]*, Oslo, mimeo DE-UO, 393-402.
- 1394 1947f Appendiks 6. Løsning av ikke-lineære likninger [Appendix 6. Solving non-linear equations], in Frisch, Ragnar: *Notater til økonomisk teori. 4. utgave, annet hefte [Notes on economic theory. Fourth edition, second volume]*, Oslo, mimeo DE-UO, 415-422.
- 1395 1947g Appendiks 7. Litt om lineæroperasjoner [A note on linear operations], in Frisch, Ragnar: *Notater til økonomisk teori. 4. utgave, annet hefte [Notes on economic theory. Fourth edition, second volume]*, Oslo, mimeo DE-UO, 423-472.
- 1396 1947-05-22 *Logpart-funksjonen [The logpart function]*, Oslo, memo DE-UO, 6 pp.

- 1397 1947-10-10 *Grunnprinsippene for Bush-Caldwell integratoren [The basic principles of the Bush-Caldwell integrator]*, Oslo, memo DE-UO, 9 pp.
- 1398 1948-10-02 *Converging dyadic approximations by means of partially unknown elements*, Oslo, memo DE-UO, 13 pp.
- 1399 1949a On the zeros of homogeneous functions, *Econometrica*, Vol 17, 28-29.
Criticism of Patinkin, D. 1949: 'The indeterminacy of absolute prices in classical economic theory', *Econometrica*, Vol 17, 1-27.
- 1400 1949-12-14 *Foreløpig rapport til Matematikuttvalget av Norges Teknisk-Naturvitenskapelige Forskningsråd om numerisk løsning av store lineære likningssystemer [Preliminary report to Matematikuttvalget av Norges Teknisk-Naturvitenskapelige Forskningsråd on solving numerically large linear equation systems]*, Oslo, memo DE-UO, 8 pp.
- 1401 1950-01-21 *Inversjon av lineære likningssystemer [Inversion of linear equation systems]*, Oslo, memo DE-UO, 4 pp.
With Gustav Leunbach.
- 1402 1950-04-17 *Rapport nr. 2 til matematikmaskinutvalget om det forberedende arbeid med en iterasjonsmetode til numerisk løsning av store lineære likningssystemer ved hjelp av hullkortmaskiner [Report no 2 to the computer committee on the preparatory work on an iteration method for solving numerically large linear equation systems by means of punching machines]*, Oslo, memo DE-UO, 3 pp.
- 1403 1950-09-06 *Numerisk løsning av store lineære likningssystemer [Numerical solution of large linear equation systems]*, Oslo, memo DE-UO, 8 pp.
Assisted by Sven Vigger.
- 1404 1951-01-31 *Kort notat om determinantregning [A short note on determinants]*, Oslo, memo DE-UO, 12 pp.
- 1405 1951-02-15 *En iterasjonsmetode for numerisk løsning av kryssløpslikningene [An iterative method for numerical solution of the input-output equations]*, Oslo, memo DE-UO, 13 pp.
- 1406 1951-02-18 *Prøverekning på numerisk løsning av kryssløpslikningene [A test calculation on numerical solution of the input-output equations]*, Oslo, memo DE-UO, 16 pp.
With Odd Aukrust.
- 1407 1951-02-19 *Numerisk løsning og sifferkontroll ved store lineære likningssystemer [Numerical solution and accuracy control of large linear equation systems]*, Oslo, memo DE-UO, 26 pp.
- 1408 1951-02-28 *Numerisk løsning av kryssløpslikningene når produksjonskoeffisientene ikke er konstante [Numerical solution of the input-output equations when the production coefficients are not constant]*, Oslo, memo DE-UO, 9 pp.
- 1409 1951-03-05 *Kontrollmetoder ved iterasjonsløsning av store lineære likningssystemer [Checking methods when solving iteratively large linear equation systems]*, Oslo, memo DE-UO, 5 pp.
- 1410 1951-03-17 *Seleksjons-iterasjonsmetoden og en prospektiv restleddsformel ved numerisk løsning av store lineære likningssystemer [The selection-iteration method and a prospective remainder formula for numerical solution of large linear equation systems]*, Oslo, memo DE-UO, 8 pp.
- 1411 1951-05-10 *Rapport til Matematikmaskinutvalget av Norges Teknisk-Naturvitenskapelige Forskningsråd om utført forsøksarbeid med numerisk løsning av store lineære likningssystemer [Report to Matematikmaskinutvalget av Norges Teknisk-Naturvitenskapelige Forskningsråd about experimental work done on solving numerically large*

- linear equation systems*], Oslo, memo DE-UO, 3 pp.
- 1412 1951-05-23 *Numerisk løsnning av store lineære likningsssystemer [Solving numerically large linear equation systems]*, Oslo, memo DE-UO, 5 pp.
With Harold Hotelling. Copy of a letter of 17 March 1951 to Harold Hotelling from Ragnar Frisch and copy of a letter of 19 April 1951 from Harold Hotelling to Ragnar Frisch.
- 1413 1951-06-19 *Proporsjonalitetsforenklet kryssløpsberegning [A proportionally simplified input-output computation]*, Oslo, memo DE-UO, 8 pp.
- 1414 1952-02-17 *Lineær programmering - Referat av professor Ragnar Frisch's forelesning 15. februar 1952 [Linear programming - Report of Professor Ragnar Frisch's lecture February 15 1952]*, Oslo, memo DE-UO, 15 pp.
Notes by Leif Johansen.
- 1415 1952-12-22 *Jamføring mellom iterasjonsmetoden og eliminasjonsmetoden til løsnning av store lineære likningsssystemer [A comparison of the iterative method and the elimination method for solving large linear equation systems]*, Notat til medlemmene av Matematikkmaskinutvalget [Note to the members of Matematikkmaskinutvalget], Oslo, memo DE-UO, 10 pp.
- 1416 1953-01-14 *En to-parametrig monoton strekningstransformasjon for grafisk framstilling når den ene eller begge de variable kan anta meget store verdier [A two-parametric monotonous stretching transformation for graphic representation when one variable or both can have very large values]*, Oslo, memo DE-UO, 6 pp.
Assisted by Thor Johnsen. A stretching transformation means a transformation which - if it is one-sided and horisontal - reduces (visually) the steepness of the curve.
- 1417 1953-05-20 *Et plausibelt prinsipp for valg av inverse vektorer [A plausible principle for choice of inverse weights]*, Oslo, memo DE-UO, 2 pp.
- 1418 1953-10-15 *Matematisk teori for maksima og minima [Mathematical theory for maxima and minima]*, Oslo, memo DE-UO, 130 pp.
Assisted by Leif Johansen. Partly reports of and partly manuscripts for lectures given during the autumn term of 1953. A French reproduction (in collaboration with A. Nataf) was published as Frisch 1960d IDa, and an English translation (from the French issue) was published as Frisch 1966f IDb. See the annotations.
IDa:155, 1470 IDb:197, 1495
- 1419 1953-10-18 *Logaritmepotensialmetoden til løsnning av lineære programmeringsproblemer [The logarithmic potential method for solving linear programming problems]*, Oslo, memo DE-UO, 11 pp.
See the annotations to Frisch 1954-10-18 IDa for references to other works by Frisch on the logarithmic potential method. Pp 9-11 of the present memo is a supplement which in the main is reproduced from the *Econometrica*- article 1934a IDb, subsection 23, pp 430-435.
IDa:613, 1432 IDb:54, 1136
- 1420 1953-11-07 *Litt analytisk geometri i flere dimensjoner [Some multi-dimensional analytic geometry]*, Oslo, memo DE-UO, 13 pp.
- 1421 1953-11-13 *Substitutmalutforming av logaritmepotensialmetoden til løsnning av lineære programmeringsproblemer [Substitutmal formulation of the logarithmic potential method for solving linear programming problems]*, Oslo, memo DE-UO, 3 pp.
For references to works on the logarithmic potential methods, see the annotations to Frisch 1954-10-18 IDa.
IDa:613, 1432
- 1422 1953-12-15 *Konvergensskjerping ved gruppedannelser under enveis-iterasjonsløsning av lineære likningsssystemer [Speeding up the convergence by creating groups under one-way iterative solving of linear equation systems]*, Oslo, memo DE-UO, 3 pp.

- 1423 1954-01-14 *Notater i forbindelse med logaritmepotensialmetoden til løsning av lineære programmeringsproblemer [Notes in connection with the logarithmic potential method for solving linear programming problems]*, Oslo, memo DE-UO, 48 pp.
See the annotations to Frisch 1954-10-18 IDa for references to other works by Frisch in which the logarithmic potential method is dealt with.
Ida:613, 1432
- 1424 1954-03-07 *Finalhopp og substitumalfølging ved lineær programmering [Final jumps and moving along the substitumal in linear programming]*, Oslo, memo DE-UO, 8 pp.
The substitumal, a name coined by Frisch, means the same as the expansion curve in the theory of production.
- 1425 1954-03-29 *Trunkering som forberedelse til finalhopp ved lineær programmering [Truncation as a preparation for a final jump in linear programming]*, Oslo, memo DE-UO, 6 pp.
- 1426 1954-05-01 *Basis-variabelmetoden til løsning av lineære programmeringsproblemer [The basis-variable method for solving linear programming problems]*, Oslo, memo DE-UO, 21 pp.
- 1427 1954-05-05 *Simplex-metoden til løsning av lineære programmeringsproblemer [The simplex method for solving linear programming problems]*, Oslo, memo DE-UO, 14 pp.
- 1428 1954-05-07 *Generelle merknader om løsningsstrukturen ved det lineære programmeringsproblem [General remarks on the solution structure of the linear programming problem]*, Oslo, memo DE-UO, 12 pp.
- 1429 1954-06-21 *Methods of solving linear programming problems*, Oslo, memo DE-UO, 91 pp.
Synopsis of a lecture to be given at the International Seminar on Input-Output Analysis, Varenna (Lake Como) June - July 1954. The paper deals with both the simplex method and the logarithmic potential method. For references to other works on the logarithmic potential method, see the annotations to Frisch 1954-10-18 IDa.
Ida:613, 1432
- 1430 1954-08-13 *Nye notater i forbindelse med logaritmepotensialmetoden til løsning av lineære programmeringsproblemer [New notes in connection with the logarithmic potential method for solving linear programming problems]*, Oslo, memo DE-UO, 74 pp.
For references to works on the logarithmic potential method, see the annotations to Frisch 1954-10-18 IDa.
Ida:613, 1432
- 1431 1954-08-23 *Merknad om formuleringen av det lineære programmeringsproblem [A remark on the formulation of the linear programming problem]*, Oslo, memo DE-UO, 3 pp.
- 1432 1954-10-18 *Principles of linear programming. With particular reference to the double gradient form of the logarithmic potential method*, Oslo, memo DE-UO, 219 pp.
For works on the logarithmic potential method, see Frisch 1953-10-18 IDa, 1953-11-13 IDb, 1954-01-14 IDc, 1954-06-21 IDd, 1954-08-13 IDe, 1955-05-07 IDf, 1955-05-13 IDg, 1956-01-10 IDh and 1956f IDi.
Ida:585, 1419 IDb:587, 1421 IDc:593, 1423 IDd:604, 1429 IDe:606, 1430 IDf:631, 1436 IDg:632, 1211, 1437 IDh:638, 1216, 1445 IDi:141, 1443
- 1433 1955-03-29 *A labour saving method of performing freedom truncations in linear programming. Part I*, Oslo, memo DE-UO, 21 pp.
See Frisch 1955-04-15 IDa.
Ida:629, 1434

- 1434 1955-04-15 *A labour saving method of performing freedom truncations in linear programming. Part II*, Oslo, memo DE-UO, 8 pp.
See Frisch 1955-03-29 IDa.
IDA:626, 1433
- 1435 1955-05-05 *The elimination method for solving linear equations*, Oslo, memo DE-UO, 5 pp.
- 1436 1955-05-07 *The logarithmic potential method for solving linear programming problems*, Oslo, memo DE-UO, 16 pp.
Synopsis of an exposition to be made on 1 June 1955 in the seminar of Professor Rene Roy, Paris. For other references, see the annotations to Frisch 1954-10-18 IDa.
IDA:613, 1432
- 1437 1955-05-13 *The logarithmic potential method of convex programming. With particular application to the dynamics of planning for national development*, Oslo, memo DE-UO, 35 pp.
Synopsis of a communication to be presented at the international colloquium in Paris 23-28 May 1955. For other references, see the annotations to Frisch 1954-10-18 IDa.
IDA:613, 1432
- 1438 1955-05-25 *Linear and convex programming problems studied by means of the double gradient form of the logarithmic potential method*, Oslo, memo DE-UO, 16 pp.
Synopsis of a presentation to be given in the Seminar of Professor Allais, Paris 26 May 1955.
- 1439 1955-10-11 *Multiplex-metoden for løsnning av lineære programmeringsproblemer [The multiplex method for solving linear programming problems]*, Oslo, memo DE-UO, 31 pp.
- 1440 1955-10-17 *The multiplex method for linear programming*, Oslo, memo DE-UO, 49 pp.
An article in *Sankhyá*, Frisch 1957b IDa, is, except for some minor corrections, identical with the present memo. See the annotations. A memo Frisch 1958-09-12 IDb has the same title, but gives a different treatment of the subject, see the annotations.
IDA:142, 1450 IDb:683, 1461
- 1441 1956a Formulazione di un piano di sviluppo nazionale come problema di programmazione convessa (Il caso del piano indiano), *L'Industria*, 1956, 1-12.
- 1442 1956b *Macroeconomics and linear programming*, in *25 economic essays in honour of Erik Lindahl 21 November 1956*, *Ekonomisk Tidskrift*, 1956, 38-67.
The article describes the logarithmic potential method and also links it to the general problem of macroeconomic planning. It is fairly similar to Frisch 1956-01-10 IDa. The latter, however, contains more detailed discussions on several points. The article is reprinted (in Bjerkholt) as Frisch 1995u IDb. See the annotations to Frisch 1954-10-18 IDc for references to other works by Frisch in which the logarithmic potential method is dealt with.
IDA:638, 1216, 1445 IDb:269, 1370, 1499 IDc:613, 1432
- 1443 1956f *La résolution des problèmes de programme linéaire par la méthode du potentiel logarithmique*, in: *Cahiers du Séminaire D'Économétrie: No 4 - Programme linéaire - Agrégation et nombres indices*, 13 Quai Anatole-France Paris-7e, Centre National de la Recherche Scientifique, 1956, 7-23.
Published under the direction of René Roy, Membre de LiInstitut, Inspecteur Général des Ponts et Chaussées. An introduction by R. R. on p 7. A report of a discussion (with Ragnar Frisch and René Roy among the participants) on pp 20-23. The logarithmic potential method is described in Frisch 1956b IDa, where it moreover is linked to the general problem of macroeconomic planning, see the annotations for more references.
IDA:138, 1213, 1442
- 1444 1956-01-03 *The logarithmic potential method for linear programming formulated with a view to electronic computation*, Oslo, memo DE-UO, 5 pp.
Some remarks of how the method can be shaped to be amenable to electronic

- computation.
- 1445 1956-01-10 *Macroeconomics and linear programming*, Oslo, memo DE-UO, 48 pp.
The memo is fairly similar to Frisch 1956b IDa. It contains, however, more detailed discussions on several points. See the annotations to 1956b. For references to other works on the logarithmic potential method, see the annotations to Frisch 1954-10-18 IDb.
IDA:138, 1213, 1442 IDb:613, 1432
- 1446 1956-02-07 *Skrankemodifikasjoner ved lineær programmering [Modifications of constraints in linear programming]*, Oslo, memo DE-UO, 13 pp.
- 1447 1956-09-02 *Oppdelingsmetoden for beregning av den inverse av en gitt matris [The splitting-up method for computing the inverse of a given matrix]*, Oslo, memo DE-UO, 4 pp.
- 1448 1956-09-20 *Kontrollmetoder for matrisinvertering og overføring av lineære likninger til basisform [Checking methods for matrix inversion and transforming of linear equations into a basic form]*, Oslo, memo DE-UO, 12 pp.
- 1449 1956-10-18 *Condensed description of the multiplex method for linear programming*, Oslo, memo DE-UO, 20 pp.
- 1450 1957b *The multiplex method for linear programming*, *Sankhyá: The Indian Journal of Statistics*, Vol 18, 329-362.
The article is, except for minor corrections, identical with the memo from DE-UO, Frisch 1955-10-17 IDa. A reprint is issued (in Bjerkholt) as Frisch 1995æ IDb. A memo Frisch 1958-09-12 IDc has the same title, but gives a different treatment of the subject, see the annotations.
IDA:635, 1440 IDb:275, 1501 IDc:683, 1461
- 1451 1957-01-07 *Single step building up and building down of the inverse of a symmetric matrix*, Oslo, memo DE-UO, 28 pp.
- 1452 1957-01-21 *The multiplex method for linear and quadratic programming*, Oslo, memo DE-UO, 62 pp.
- 1453 1957-02-01 *The compact method for solving symmetric linear equations and inverting symmetric matrices*, Oslo, memo DE-UO, 22 pp.
Refer to Frisch 1957-11-07 IDa, 1958-09-30 IDb, and 1967-01-27 IDc.
IDA:663, 1457 IDb:686, 1462 IDc:809, 1497
- 1454 1957-02-05 *Normalized moments in the Oslo Median Model with explanations*, Oslo, memo DE-UO, 4 pp.
- 1455 1957-04-26 *The single step form of the multiplex method*, Oslo, memo DE-UO, 14 pp.
- 1456 1957-09-11 *Linear dependencies and a mechanized form of the multiplex method for linear programming*, Oslo, memo DE-UO, 20 pp.
- 1457 1957-11-07 *A numerical example illustrating the compact method for solving symmetric linear equations*, Oslo, memo DE-UO, 3 pp.
It is referred to Frisch 1957-02-01 IDa. See also Frisch 1958-09-30 and 1967-01-27.
IDA:656, 1453 IDb:686, 1462 IDc:809, 1497
- 1458 1957-11-27 *The compact method for solving linear equations and inverting matrices in the non symmetric case*, Cairo, Memorandum No 1 to the National Planning Committee, 20 pp.
- 1459 1957-12-20 *The first steps in Kernel planning. (With an explanation on the use of the multiplex method when the number of conditional equations is small)*, Cairo, Memorandum No 6 to the National Planning Committee, 15 pp.
- 1460 1958-01-10 *Numerical determination of a macroeconomic preference function*, Cairo, Memorandum No 11 to the National Planning Committee, 60 pp.

- 1461 1958-09-12 *The multiplex method for linear programming*, Oslo, memo DE-UO, 63 pp.
The memo has the same title as Frisch 1955-10-17 IDa, but gives a different presentation, reflecting what has been achieved through research since 1955, see the annotations to the 1955 memo and to Frisch 1957b IDb. An introductory note on p 1 reads: "This paper is a very condensed statement of a method whose theoretical foundation I have developed in a number of memoranda and notes from the University Institute of Economics, Oslo, during the last years."
IDa:635, 1440 IDb:142, 1450
- 1462 1958-09-30 *Solving linear equations and inverting matrices when an optimum elimination order is used*, Oslo, memo DE-UO, 20 pp.
Assisted by Sven Vigger. It is referred to Frisch 1957-02-01 IDa and the memorandum 1957-11-27 IDb to the National Planning Committee, Cairo. See also Frisch 1967-01-27 IDc.
IDa:656, 1453 IDb:666, 1230, 1458 IDc:809, 1497
- 1463 1958-10-01 *A numerical example of a linear programming problem*, Oslo, memo DE-UO, 3 pp.
- 1464 1959-04-23 *Flow chart for automatic computation according to the multiplex method*, Oslo, memo DE-UO, 2 p.
Note on the front page: "Based on the memorandum of 12 September 1958 from the University Institute of Economics and the report F-375, March 1959 by Mr. Ole-Johan Dahl, Norwegian Defence Research Establishment". Refer to Frisch 1958-09-12 IDa.
IDa:683, 1461
- 1465 1959-05-02 *Organization of multiplex work on desk machines*, Oslo, memo DE-UO, 5 pp.
- 1466 1959-05-03 *The admission preference method for finding a point in the admissible region and for modifying bounds in linear programming problems*, Oslo, memo DE-UO, 10 pp.
- 1467 1959-05-14 *A summary of the simplex method*, Oslo, memo DE-UO, 19 pp.
- 1468 1959-06-17 *A comparison between the multiplex method and the simplex method*, Oslo, memo DE-UO, 4 pp.
A note on the front page: "The basic ideas are given in my paper "The multiplex method for linear programming", Sankhyá, The Indian Journal of Statistics, September 1957." Refer to Frisch 1957b IDa.
IDa:142, 1450
- 1469 1959-09-27 *V. V. Novozhilov's method of process selection and its transformation into a linear programming problem*, Oslo, memo DE-UO, 4 pp.
- 1470 1960d *Maxima et minima. Théorie et applications économiques*, Paris, Dunod, Finance et économie appliquée volume VIII, 178 pp.
In collaboration with A. Nataf; translated from Norwegian by M. Gilliard. Reissued in English translation as 1966f IDa. Originally issued as Frisch 1953-10-15 IDb.
IDa:197, 1495 IDb:584, 1418
- 1471 1960h *Summary of the paper No.205: Quadratic programming by the multiplex method in the general case where the quadratic form may be singular*, Tokyo, 5 pp.
Refer to Frisch 1960-04-09 IDa and 1961k IDb.
IDa:741, 1473 IDb:165, 1478
- 1472 1960-01-13 *The double bounded simplex technique*, Cairo, Memorandum No 27 to the National Planning Committee, 23 pp.
- 1473 1960-04-09 *Quadratic programming by the multiplex method in the general case where the quadratic form may be singular*, Oslo, memo DE-UO, 64 pp.
Refer to Frisch 1960h IDa and 1961k IDb.
IDa:718, 1471 IDb:165, 1478
- 1474 1960-08-27a *Mixed linear and quadratic programming by the multiplex method*, Oslo,

- memo DE-UO, 33 pp.
Assisted by Eva-Karin Karlsen. Refer to Frisch 1860-08-27b IDa and 1960-11-07.
Ida:750, 1475 IDb:751, 1476
- 1475 1960-08-27b Mixed linear and quadratic programming by the multiplex method. Draft of contents, Oslo, memo DE-UO, 2 pp.
Assisted by Eva-Karin Karlsen and part 10 in cooperation with Ole-Johan Dahl. Refer to Frisch 1960-08-27a IDa.
Ida:749, 1474
- 1476 1960-11-07 *Mixed linear and quadratic programming by the multiplex method*, Oslo, memo DE-UO, 21 pp.
Frisch described (in a note on the front page of Frisch 1960-08-27a IDa) the present memo as a non-technical summary of the memo 1960-08-27a. The present memo was published in print in a Festschrift to Professor Johan Åkerman, Lund, Sweden, see Frisch 1961g IDb with annotations.
Ida:749, 1474 IDb:162, 1477
- 1477 1961g Mixed linear and quadratic programming by the multiplex method, in Hegeland, H. (ed): *Money, growth and methodology and other essays in economics*, Lund, CWK Gleerup, 373-392.
The volume is a Festschrift to Johan Åkerman, published as No 20 in the Lund Social Science Studies. The article is also published as memo from DE-UO 1960-11-07 IDa and as reprint No 12 from DE-UO. Memo DE-UO 1960-08-27a IDb (with the same title) gives detailed computing instructions on how to use the multiplex method for solving programming problems with linear bounds and a quadratic objective function whose quadratic form need not be non-singular. A reprint of Frisch 1961g is published (in Bjerkholt) as Frisch 1995x IDc.
Ida:751, 1476 IDb:749, 1474 IDc:272, 1500
- 1478 1961k Quadratic programming by the multiplex method in the general case where the quadratic form may be singular, *Bulletin of the International Statistical Institute*, Vol 38, 283-332.
Refer to Frisch 1960h IDa and 1960-04-09 IDb.
Ida:718, 1471 IDb:741, 1473
- 1479 1961-01-24 *The logic of electronic computers*, Oslo, memo DE-UO, 4 pp.
Reprint from *Statsøkonomisk Tidsskrift* of parts of a lecture at a seminar October 1960 in Norsk Utenrikspolitisk Institutt [The Norwegian Institute of International Affairs], Oslo.
- 1480 1961-04-28 Arbeidsnotat om programmering i refi-modellen [Working note on programming in the refi model], Oslo, note DE-UO, 1 p.
- 1481 1961-10-05 *Maksimering av en meget generell funksjon under meget generelle bibetingelser [Maximizing a very general function subject to very general side conditions]*, Oslo, memo DE-UO, 7 pp.
- 1482 1962-03-08 *Tentative formulation of the multiplex method for the case of a large number of basis variables*, Oslo, memo DE-UO, 8 pp.
- 1483 1962-07-29 *Parametric solution and programming of the Hicksian model*, Oslo, memo DE-UO, 40 pp.
Assisted by Ashok K. Parikh. Published in print as Frisch 1964f IDa, see the annotations.
Ida:184, 1487
- 1484 1963e The nonplex method in its subconditional form. Main points of the theory, *Economics of Planning*, Vol 3, 221-238.
Assisted by Håvard Alstadheim. First issued as a memorandum, Frisch 1963-11-14 IDa, see the annotations for further references. Reissued as reprint No 16 from DE-UO. Published (in Bjerkholt) as Frisch 1995ab IDb.
Ida:785, 1486 IDb:279, 1502
- 1485 1963-10-04 *Nonplex-metoden i dens rene basisform [The nonplex method in its pure basic form]*, Oslo, memo DE-UO, 49 pp.
With Kåre N. Edvardsen. Assisted by Håvard Alstadheim. In the *pure basic form* of the

nonplex method the primordial system of equational conditions is solved such that all the variables are expressed as single-valued functions of free variables (in Frisch's terminology "basic variables"). This form is discussed in considerable detail in the present memo. Flow charts for computations are also presented. The presentation is confined to the case where, in the basic form of the system, the dependant variables as well as the preference function are expressed as *quadratic functions* of the free variables and where no assumptions are made about the non-singularity or the positive or negative definiteness of the quadratic forms involved. This means that one can no longer say whether a local optimum is also a global one. See Frisch 1963-11-14 IDa for a discussion of the nonplex method in its *subconditional form*.

IDa:785, 1486

- 1486 1963-11-14 *The nonplex method in its subconditional form*, Oslo, memo DE-UO, 18 pp. Assisted by Håvard Alstadheim. The *pure basic form* of the nonplex method - as distinct from its *subconditional form* - is a form where all equational conditions are solved such that all the variables are expressed as single-valued functions of a number of "free variables" (in Frisch's terminology "basic variables"). This form is discussed in considerable detail in Frisch 1963-10-04 IDa (in Norwegian). In the *subconditional form* of the nonplex method, presented and discussed in the present memo, the primordial equation system is not reduced to a system of basic equations. The reasons for using the subconditional form are explained in the introductory section of the 4 October 1963 memorandum. The present version is published in print as Frisch 1963e IDb and reissued as reprint No 16 from DE-UO.
IDa:783, 1485 IDb:177, 1484
- 1487 1964f Parametric solution and programming of the Hicksian model, in *Essays on econometrics and planning - Presented to Professor P. C. Mahalanobis on the occasion of his 70th birthday*, Oxford, London, New York, Paris, Frankfurt, Calcutta, Pergamon Press, 45-82.
Assisted by Ashok K. Parikh. The present issue is the first printed one. Reprint: Frisch 1995ap IDa (in Bjerkholt). Originally issued as memo from DE-UO 1962-07-29 IDb. Also asreprint No 17 from DE-UO.
IDa:293, 1503 IDb:774, 1483
- 1488 1964-02-10 *Inseeking by the nonplex method in nonlinear programming*, Cairo, Memo. 104, The Institute of National Planning, 15 pp.
- 1489 1964-03 *A condensed description of the nonplex method for programming with strongly non-linear bounds and/or a strongly non-linear preference function*, Pittsburgh, Graduate School of Public and International Affairs (GSPIA), 25 pp.
- 1490 1964-03-25 *The nonplex method for programming with non-convex bounds and/or a non-concave preference function*, Presented at the Conference on National Economic Planning, University of Pittsburgh, March 25-26, 1964, DE-UO, 39 pp.
Revised edition, April 1964. Frisch's Pittsburgh papers (1964). Frisch points in the introduction at the difficulties caused by the infra-effect of investment: "... I believe that at the present stage, it is impossible to indicate a method that will *certainly* and in all cases lead to an optimum optimum in the general case. But pilot computations have shown that the non-plex method has a fair chance ... where nature has not been too shrewd" A few copies are available at UB Oslo (DE-UO); not for lending.
- 1491 1964-05-13 *The 13. May version of the chief move in the inseeking part of the nonplex method for programming with non-convex bounds and/or a non-concave preference function*, Oslo, memo DE-UO, 5 pp.
- 1492 1964-11-13 *The nonplex method for strongly nonlinear programming*, Oslo, memo DE-UO, 2522p.
Synopsis of a presentation to be given at the IBM Symposium on econometrics, Blaricum, Holland, 17-20 November 1964.
- 1493 1965-04-23 *The nonplex method for non convex programming*, Oslo, memo DE-UO, 11 pp.

Synopsis of a presentation to be given at the ESTÖ (Institut für europäische Studien) International Conference, Graz, Austria, 3-9 May 1965).

- 1494 1965-09-27 *On the solution of difference equations with constant coefficients and an arbitrary additional function of time*, Oslo, memo DE-UO, 22 pp.
An introductory note: "The present memorandum reproduces parts of the paper "Parametric Solution and Programming of the Hicksian Model" (printed in *Essays on Econometrics and Planning*, presented to Professor P. C. Mahalanobis on the occasion of his 70th birthday). A preliminary version was given in Memorandum of 27 July, 1962." Refer to Frisch 1964f IDa and 1962-07-29 IDb.
Ida:184, 1487 IDb:774, 1483
- 1495 1966f *Maxima and minima. Theory and economic applications*, Dordrecht-Holland, D. Reidel Publishing Company, 176 pp.
In collaboration with A. Nataf. Translated from 1960d IDa by Express Translation Service, London. Review in *Econometrica*: Allen 1968 IDb. Originally issued as Frisch 1953-10-15 IDc.
Ida:155, 1470 IDb:1967 IDc:584, 1418
- 1496 1967d The smoothing of an interreference table, in Henn, Rudolf (ed): *Operations Research-Verfahren - Methods of operations research III*, Meisenheim, Verlag Anton Hain, 181-191.
A reprint (in Bjerkholt): Frisch 1995bh IDa.
Ida:313, 1504
- 1497 1967-01-27 Arbeidsnotat om SERB metoden (SE = Selected elimination order, RB = Repeated back solution) for høy-nøyaktig løsning av lineære ligninger med minimale regneomkostninger [A working note on the SERB method (SE = Selected elimination order, RB = Repeated back solution) for high accuracy solving of linear equations with minimum computation costs], DE-UO, 8 pp.
It is referred to Frisch 1958-09-30 IDa. See also Frisch 1957-02-01 IDb and 1957-11-07 IDc. The present note was never distributed outside DE-UO. A few copies are available at UB Oslo (DE-UO); not for lending.
Ida:686, 1462 IDb:656, 1453 IDc:663, 1457
- 1498 1995d The characteristic solutions of a mixed difference and differential equation occurring in economic dynamics, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume I*, Aldershot UK, Brookfield US, Edward Elgar, 439-453.
With Harald Holme. A reprint of Frisch 1935b IDa.
Ida:59, 1387
- 1499 1995u Macroeconomics and linear programming, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*, Aldershot UK, Brokkfield US, Edward Elgar, 235-264.
A reprint of Frisch 1956b IDa, see the annotations.
Ida:138, 1213, 1442
- 1500 1995x Mixed linear and quadratic programming by the multiplex method, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*, Aldershot UK, Brookfield US, Edward Elgar, 307-326.
A reprint of Frisch 1961g IDa, see the annotations. Also published as memo from DE-UO 1960-11-07 IDb.
Ida:162, 1477 IDb:751, 1476
- 1501 1995æ The multiplex method for linear programming, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*, Aldershot UK, Brookfields US, Edward Elgar, 265-306.
A reprint of Frisch 1957b IDa, see the annotations.
Ida:142, 1450
- 1502 1995ab The nonplex method in its subconditional form. Main points of the theory, in Bjerkholt, Olav (ed): *Foundations og modern econometrics. The selected*

essays of Ragnar Frisch. Volume II, Aldershot UK, Brookfield US, Edward Elgar, 327-344.

Assisted by Håvard Alstadheim. A reprint of Frisch 1963e IDa.

IDA:177, 1484

1503 1995ap

Parametric solution and programming of the Hicksian model, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*, Aldershot UK, Brookfield US, Edward Elgar, 116-153.

Assisted by Ashok K. Parikh. A reprint of Frisch 1964f IDa, see the annotations.

IDA:184, 1487

1504 1995bh

The smoothing of an interpreference table, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume II*, Aldershot UK, Brookfield US, Edward Elgar, 222-232.

A reprint of Frisch 1967d IDa.

IDA:207, 1496

II.4

WORKS ON BEE-KEEPING

- 1505 1915 Fra en begynder [From a beginner], *Tidskrift for biskjøtsel*, Kristiania, Vol 31, 25-26.
A short report on practical matters.
- 1506 1916a Bør modellrammen være dypere? [Should the model frame be deeper?], *Tidskrift for Biskjøtsel*, Kristiania, Vol 32, 11-12 and 43-44.
An initial contribution by Frisch, remarks by the editor, a rejoinder by Frisch and a final remarks by the editor.
- 1507 1916b Honningemballasje - blikkspann [Honey packing - tin pails], *Tidskrift for Biskjøtsel*, Kristiania, Vol 32, 175-176.
- 1508 1916c Quadruple vinterkasser [Quadruple winter cases], *Tidskrift for Biskjøtsel*, Kristiania, Vol 32, 98-99.
- 1509 1916d Renselsesutflugt i et varmt rum om vinteren [Cleaning outing in a warm room in the winter], *Tidskrift for biskjøtsel*, Kristiania, Vol 32, 115-116.
- 1510 1916e Resultatet av overvintringen 1915-1916 [The result of the overwintering 1915-1916], *Tidskrift for Biskjøtsel*, Kristiania, Vol 32, 72-73.
Detailed account by Frisch, remarks by the editor.
- 1511 1916f Skyldes det store vintertap delvis "Isle-of-Wight"-syken? [Is the heavy winter loss partly due to the "Isle-of-Wight" illness?], *Tidskrift for Biskjøtsel*, Kristiania, Vol 32, 135-136.
- 1512 1917a Betragtninger over biaaret 1916 [Reflections on the bee year 1916], *Tidskrift for Biskjøtsel*, Kristiania, Vol 33, 34-38.
- 1513 1917b Bjerne inntil hovedtrekket [The (work on the) bees towards the main flight], *Tidskrift for Biskjøtsel*, Kristiania, Vol 33, 99-102.
- 1514 1917c Erfaringer om små og store kuber [Experiences of small and large hives], *Tidskrift for Biskjøtsel*, Kristiania, Vol 33, 162-165.
- 1515 1917d Herr C. Haakonsen [Mr. C. Haakonsen], *Tidskrift for Biskjøtsel*, Kristiania, Vol 33, 54-55.
An open letter of reply to an open letter from C. Haakonsen in the same issue of *Tidskrift for Biskjøtsel*.
- 1516 1917e Isle of Wight-syken [The Isle-of-Wight illness], *Tidskrift for Biskjøtsel*, Kristiania, Vol 33, 107-107.
- 1517 1917f Overvintringsproblemet [The overwintering problem], *Tidskrift for Biskjøtsel*, Kristiania, Vol 33, 115-117.
- 1518 1917g Overvintringsproblemet. II [The overwintering problem. II], *Tidskrift for Biskjøtsel*, Kristiania, Vol 33, 145-146.
- 1519 1917h Statistiske iakttagelser av biholdet i Norge [Statistical observations of the bee-keeping in Norway], *Tidskrift for Biskjøtsel*, Kristiania, Vol 33, 62-63 and 69-74.
- 1520 1918a Før dagbok for bigaarden! [Keep a diary for the bee garden], *Tidskrift for Biskjøtsel*, Kristiania, Vol 34, 51-55.

- 1521 1918b Litt bi-matematikk [Some mathematics on bees], *Tidsskrift for Biskjøtsel*, Kristiania, Vol 34, 23-30.
- 1522 1918c Litt om dronningskifte og dronninginnførsel [On exchange of queen bee and queen bee import], *Tidsskrift for Biskjøtsel*, Kristiania, Vol 34, 114-116.
- 1523 1918-09 De viktigste punkter vedrørende indvintringen [The main considerations with regard to the overwintering], *Tidsskrift for Biskjøtsel*, Vol 34, 129-134.
- 1524 1918-12 Overvintringen [The overwintering], *Tidsskrift for Biskjøtsel*, Vol 34, 180-183.
A reply to H. Knudsen Ytrehus who had made some objections in a previous issue of the journal to certain points in Frisch 1918-09 IDa.
Ida:1523
- 1525 1919a Framnæs bigård 1918 [The Framnæs bee garden 1918], *Tidsskrift for Biskjøtsel*, Kristiania, Vol 35, 3-4.
- 1526 1919b Honningprisene [The prices of honey], *Tidsskrift for Biskjøtsel*, Kristiania, Vol 35, 116-118.
A discussion of fair prices of honey delivered from the producers, and a suggestion of implementing a maximum price system instead of the prevailing praxis of fining producers who according to a more or less summary calculation are found to have charged unreasonably high prices.
- 1527 1919c Op med honningproduksjonen! [Speed up the honey production!], *Tidsskrift for Biskjøtsel*, Kristiania, Vol 35, 24-25.
- 1528 1919d Overvintringen [The overwintering], *Tidsskrift for Biskjøtsel*, Kristiania, Vol 35, 30-31.
A reply to Magnus Roen who had invited the members of Den norske Biavlforening [The Norwegian Bee-Keeping Association] to contribute in a discussion on common problems. The discussion is carried on in Frisch 1920e IDa.
Ida:1533
- 1529 1920a Bihus [Bee houses], *Tidsskrift for Biskjøtsel*, Kristiania, Vol 36, 8-11.
- 1530 1920b Hva honning er [What honey is], *Tidsskrift for Biskjøtsel*, Kristiania, Vol 36, 154-154.
- 1531 1920c Om trådning av rammer [On applying wires to strengthen the frames], *Tidsskrift for Biskjøtsel*, Kristiania, Vol 36, 51-55.
- 1532 1920d Overvintringen [The overwintering], *Tidsskrift for Biskjøtsel*, Kristiania, Vol 36, 184-185.
- 1533 1920e Overvintringsspørsmålet. Diskusjonen fortsættes [The overwintering question. The discussion is carried on], *Tidsskrift for Biskjøtsel*, Kristiania, Vol 36, 173-175.
The article consists of an open letter from Magnus Roen to R. A. Frisch (173-174), a reply by Frisch (174-175) and some concluding remarks by the editor. The discussion started in Frisch 1919d IDa.
Ida:1528
- 1534 1920f Vinterveranda [Winter veranda], *Tidsskrift for Biskjøtsel*, Kristiania, Vol 36, 2-3.
- 1535 1921a Forkvalitetens betydning for overvintringen [The importance of the quality of the fodder for the overwintering], *Tidsskrift for Biskjøtsel*, Kristiania, Vol 37, 10-10.
The editor has put two footnotes to Frisch's article, both on p 10.
- 1536 1921b Framnæs bigård 1920 [The Framnæs bee garden 1920], *Tidsskrift for Biskjøtsel*, Kristiania, Vol 37, 42-42.

- 1537 1921c En lettvindt vinterveranda for modellkuben [A handy winter veranda for the model hive], *Tidsskrift for Biskjøtsel*, Kristiania, Vol 37, 3-4.
- 1538 1921d Med blokk og blyant i franske bigårde [With notepad and pencil in French bee gardens], *Tidsskrift for Biskjøtsel*, Kristiania, Vol 37, 148-151.
- 1539 1921e Den talmæssige lov for et bifolks utvikling [The numerical law for the development of a bee population], *Tidsskrift for Biskjøtsel*, Kristiania, Vol 37, 121-124.
- 1540 1921f Vinterverandaen [The winter veranda], *Tidsskrift for Biskjøtsel*, Kristiania, Vol 37, 4-7.
- 1541 1921g Et åpent brev til Herr Magnus Roen! [An open letter to Mr. Magnus Roen!], *Tidsskrift for Biskjøtsel*, Kristiania, Vol 37, 78-78.
A contribution on the construction of the winter veranda.
- 1542 1921h Et åpent brev til Hr. R. Hutchinson [An open letter to Mr. R. Hutchinson], *Tidsskrift for Biskjøtsel*, Kristiania, Vol 37, 74-75.
The letter - written at the request of the editor - is a reply to an article by Mr. Hutchinson in the same issue of the journal. The point in focus: A statement by Frisch in his article 1921a IDa on the quality of the fodder during the overwintering.
IDA:1535
- 1543 1921-06 Fuktighet under overvintringen [Humidity during the overwintering] *Tidsskrift for Biskjøtsel*, Kristiania, Vol 37, 84-94.
A condensed translation into English, by John Beveridge, was issued as three articles in *The Bee World*, Frisch 1921-08a IDa, 1021-09 IDb and 1921-10a IDc
IDA:1544 IDb:1546 IDc:1547
- 1544 1921-08a Humidity in the hive, *The Bee World*, Vol 3, 72-73.
The present article together with Frisch 1921-09 IDa and 1921-10a IDb is a condensed translation of Frisch 1921-06 IDc (in *Tidsskrift for Biskjøtsel*). Condensed and translated by the Rev. John Beveridge, M.B.E.
IDA:1546 IDb:1547 IDc:1543
- 1545 1921-08b Statistiske iakttagelser av biavl i Norge [Statistical observations of the bee-keeping in Norway], *Tidsskrift for Biskjøtsel*, Kristiania, Vol 37, 141-142.
Prepared for Den norske Biavlforening [The Norwegian Bee-Keeping Association]. Frisch refers to his article 1917h IDa and announces further investigations to be reported in later issues. The next observation appears in the October issue, Frisch 1921-10b IDb.
IDA:1519 IDb:1548
- 1546 1921-09 Humidity in the hive - II, *The Bee World*, Vol 3, 97-98.
See the annotations to Frisch 1921-08a IDa.
IDA:1544
- 1547 1921-10a Humidity in the hive - III, *The Bee World*, Vol 3, 120-120.
See the annotations to Frisch 1921-08a IDa.
IDA:1544
- 1548 1921-10b Statistiske iakttagelser av biavl i Norge [Statistical observations of the bee-keeping in Norway], *Tidsskrift for Biskjøtsel*, Vol 37, 161-165.
Prepared for Den norske Biavlforening [The Norwegian Bee-Keeping Association]. Continues from Frisch 1921-08b IDa. Further continuation in 1921-11 IDb.
IDA:1545 IDb:1549
- 1549 1921-11 Statistiske iakttagelser av biavl i Norge [Statistical observations of the bee-keeping in Norway], *Tidsskrift for Biskjøtsel*, Vol 37, 184-189.
Prepared for Den norske Biavlforening [The Norwegian Bee-Keeping Association]. Continues from Frisch 1921-10b IDa. Further continuation in 1921-12 IDb.
IDA:1548 IDb:1550
- 1550 1921-12 Statistiske iakttagelser av biavl i Norge [Statistical observations of the

- bee-keeping in Norway], *Tidsskrift for Biskjøtsel*, Vol 37, 194-196.
Prepared for Den norske Biavlforening [The Norwegian Bee-Keeping Association].
Continues from Frisch 1921-11 IDa.
Ida:1549
- 1551 1922 *Dagbok for bigaarden [Diary for the bee garden]*, Porsgrund, H. Joh. Dyrings forlag, 61 pp.
With Ragnvald Lunde. Two short articles are included in the book: Erindringsliste for et aars biskjødsel [A memory list for the care work during a year] by Ragnar Frisch, and Litt teori og praksis i bimgaarden [A little theory and practice in the bee garden] by Ragnvald Lunde.
- 1552 1922-01 Statistiske iakttagelser av biavlten i Norge [Statistical observations of the bee-keeping in Norway], *Tidsskrift for Biskjøtsel*, Vol 38, 5-7.
Prepared for Den norske Biavlforening [The Norwegian Bee-Keeping Association].
Continues from Frisch 1921-12 IDa.
Ida:1550
- 1553 1922-02 Statistiske iakttagelser av biavlten i Norge [Statistical observations of the bee-keeping in Norway], *Tidsskrift for Biskjøtsel*, Vol 38, 23-28.
Prepared for Den norske Biavlforening [The Norwegian Bee-Keeping Association].
Continues from Frisch 1922-01 IDa.
Ida:1552
- 1554 1922-03 Statistiske iakttagelser av biavlten i Norge [Statistical observations of the bee-keeping in Norway], *Tidsskrift for Biskjøtsel*, Vol 38, 38-41.
Prepared for Den norske Biavlforening [The Norwegian Bee-Keeping Association].
Continues from Frisch 1922-02 IDa.
Ida:1553
- 1555 1922-06 Sukkerforing [Sugar feeding], *Tidsskrift for Biskjøtsel*, Vol 38, 88-89.
On the importance of sugar feeding for a successful overwintering.
- 1556 1922-08 Kom naturen i forkjøpet [Foretell nature], *Tidsskrift for Biskjøtsel*, Vol 38, 135-138.
- 1557 1922-09 Biskjøtselstatistik for Norge [Bee keeping statistics for Norway], *Tidsskrift for Biskjøtsel*, Vol 38, 145-146
An underheading reads (translated): "A useful and praiseworthy work is carried out. Mr. Frisch intends to continue." The Editor refers to the series of articles by Ragnar Frisch headed (translated) "Statistical observations of the bee-keeping in Norway". These articles have attracted attention, the editor writes, especially in the press abroad, which now advocates similar investigations in their respective countries.
- 1558 1922-11 Biskjøtselstatistik [Bee-keeping statistics], *Tidsskrift for Biskjøtsel*, Vol 38, 179-180.
Orientation on a forthcoming systematic collecting of statistics on the bee-keeping in Norway.
- 1559 1923d Svermfangstapparater [Hive catching devices], *Tidsskrift for Biskjødsel*, Kristiania, Vol 39, 27-29.
- 1560 1923e Vinterverandaer [Winter verandas], *Tidsskrift for Biskjøtsel*, Kristiania, Vol 39, 156-158.
The editor has added a note to Frisch's article reporting on testing of Frisch's veranda with promising results.
- 1561 1924c Tillempet opflytningsmetode [An adjusted moving up method] *Tidsskrift for Biskjøtsel*, Kristiania, Vol 40, 17-18.
After a lecture by Ragnar Frisch in Fet bi-lag [Fet bee association] 9 September 1923.
- 1562 1925-05 Sverming og yngel-opflytning [Swarming and moving-up brood], *Tidsskrift for Biskjødsel*, Vol 41 Nr 5, 71-80.
An article on how to avoid too frequent swarming.

- 1563 1926c De nye forseglingsbånd [The new sealing tapes], *Tidsskrift for Biskjøtsel*, Vol 42, 43-45.
The sealing tapes should be pasted to the honey packings as seals, and thus give the customers a sort of quality guarantee. In a second contribution in the same volume of the journal (81-82) - headed "Forseglingsbåndene" ["The sealing tapes"] - Frisch passes on information about the Danish arrangement with sealing tapes for honey packings.
- 1564 1926d Opflytningsmetoder [Moving up methods], *Tidsskrift for Biskjøtsel*, Vol 42, 178-182.
The article consists of two parts, One by Harald Hansen (178-180) and a rejoinder by Ragnar Frisch (180-182).
- 1565 1926e Opflytningsmetoder. Alexandermetoden og Frischmetoden [Moving up methods. The Alexander method and the Frisch method], *Tidsskrift for Biskjøtsel*, Vol 42, 99-100.
The article consists of two parts, one by Harald Hansen, and a rejoinder by Ragnar Frisch.
- 1566 1927-01 Opflytningsmetoder [Moving up methods], *Tidsskrift for biskjøtsel*, Vol 43, 6-12.
The article consists of two parts, one by Harald Hansen (6-9) and a rejoinder (9-12) by Ragnar Frisch.
- 1567 1937b Honningplanter i Norge [Honey plants in Norway], *Nytt Magasin for Naturvidenskapene*, Bind [Vol] 77, 93-98.
From the introductory remarks (translated): "I have as amateur taken an interest in bee-keeping, and have got the impression that it would be very useful if our botanists would concern themselves a bit with the honey flora: ..." Reprinted in *Birøkteren* 1938, Vol 54, 58-63.
- 1568 1938-05 Overvintringen [The overwintering], *Birøkteren*, Vol 54, 65-67.
- 1569 1938-12 Stopkassen [The stopping case], *Birøkteren*, Vol 54, 234-235.
A device attached to the hive to protect the bees from the great tit.
- 1570 1939-11 Noen erfaringer om vandring 1939 [Some experiences from wandering 1939], *Birøkteren*, Vol 55, 207-208.
A report of the results from an experimental placing of hives in the heather district in the county of Telemark.
- 1571 1942-02 Oppflytting og dronningavl [Moving up and queen rearing], *Birøkteren*, Vol 58, 18-21.
- 1572 1945a Frå dronningavlen. Standardisering av norsk parekubehøvelig for mengdefabrikasjon [From the queen rearing. Standardizing Norwegian mating hives suitable for mass production], *Birøkteren*, Vol 61, 65-70 and 217-221.
- 1573 1945-05 AKA-rugekammeret [The AKA hatching chamber], *Birøkteren*, Vol 61, 70-70.
AKA is an abbreviation of Agder kontrollstasjon for bier [Agder control station for bees].
- 1574 1946a AKA-dronninger 1946 [AKA-queens 1946], *Birøkteren*, Vol 62, 49-49.
AKA is an abbreviation of Agder kontrollstasjon for bier [Agder control station for bees].
- 1575 1946b AKA-rugekammeret [The AKA hatching chambre], *Birøkteren*, Vol 62, 30-32.
See the annotation to Frisch 1945-05 IDa.
IDa:1573
- 1576 1946e Mørk honning er blod-dannende [Dark honey is blood-creating], *Birøkteren*, Vol 62, 25-25.
- 1577 1946g Norsk dronningavlslags parekubehøvelig [The mating hive from Norwegian queen breeding association], *Birøkteren*, Vol 62, 32-33.
With Trygve Carlsen, Anders Lian and Odd Rosenberg.

- 1578 1946k Den riktige pakningstykkelse for overvintringen [The proper stuffing thickness for the overwintering], *Birøkteren*, Vol 62, 112-115.
- 1579 1946l Vinterpakningsformelen [The winter stuffing formula], *Birøkteren*, Vol 62, 182-184.
Frisch 1946k IDa inspired a Swedish bee-keeper, Mr. Ragnar Lanke, to write a contribution in the same vol of *Birøkteren*, 180-182, questioning some of the values in Frisch's winter stuffing formula. The present writing is a rejoinder to Ragnar Lanke.
IDA:1578
- 1580 1947æ Innesittingstiden i Norge og andre land [The length of time for keeping the bees "indoors" in Norway and other countries], *Birøkteren*, Vol 63, 83-84.
- 1581 1947ak Rapport fra AKA-stasjonen 1946 [Report from the AKA station 1946], *Birøkteren*, Vol 63, 98-?.
See the annotation to Frisch 1945-05 IDa.
IDA:1573
- 1582 1947al Rapport fra AKA-stasjonen for 1947 [Report from the AKA station for 1947], *Birøkteren*, Vol 63, 197-201.
A correction in *Birøkteren* for 1948, p 14.
- 1583 1948e Standardisering av et karaktersystem for dronninger [Standardizing a marking system for (bee) queens], *Birøkteren*, Vol 64, 120-120.
- 1584 1950b Bistyrkens maksimum [Maximum of the bee population], *Nordisk Bitidskrift*, Vol 2, 7-10.
- 1585 1951d Parefolk-stell ved AKA-stasjonen [Care of the mating population at the AKA station], *Birøkteren*, Vol 67, 95-97, 130-133 and 152-153.
- 1586 1952a Das Ausleseproblem in der Bienenzüchtung, *Zeitschrift für Bienenforschung*, Vol 1 No 7, 1-9.
An introductory remark: "Aus dem Englischen übersetzt von Helene Gontarski".
- 1587 1952b Dronningavl - den grunnleggende del av birøkten. Foredrag med demonstrasjon på Oslo og Akershus fylkesbirøkterlags stevne 6. juli 1952 [Queen rearing - the fundamental part of apiculture. Discourse with demonstration at the gathering of Oslo og Akershus birøkterlag [the society for apiculture in Oslo and Akershus] 6 July 1952], *Birøkteren*, Vol 68, 153-156 and 178-179.
- 1588 1952-04 Renavl ved hjelp av atskilte stammer [Cultivating by different breeds], *Birøkteren*, Vol 68, 49-52.
It is referred to Frisch 1952a IDa. See Frisch 1952-05 IDb.
IDA:1586 IDb:1589
- 1589 1952-05 Parestasjon for italienere opprettet ved Eidsvoll [Mating station for Italians established at Eidsvoll], *Birøkteren*, Vol 68 98-98.
A note announcing that a mating station will be run on the lines laid down in Frisch 1952-04 IDa.
IDA:1588
- 1590 1953a Basislinjene ved optimalavl på bier [The basic lines in optimum rearing of bees], *Nordisk Bitidskrift*, Vol 5, 54-56, 61 and 64.
- 1591 1953-02 Hvilke egenskaper ønsker vi at biene skal ha? [Which qualities do we want the bees to possess?], *Birøkteren*, Vol 69, 13-19.
A correction in Frisch 1953-03 IDa. See the annotations.
IDA:1592
- 1592 1953-03 Hvilke egenskaper ønsker vi at biene skal ha? [Which qualities do we want the bees to possess?], *Birøkteren*, Vol 69, 54-55.
A correction of a few phrases in Frisch 1953-02 IDa, and an announcement to bee-keepers who want to participate in an earlier proclaimed breeding process.

Ida:1591

- 1593 1953-04-14 Generelle prinsipper for seleksjonsarbeidet [General principles for the selection work], Oslo, A typewritten note, DE-UO, 6 pp.
A typewritten note available at DE-UO, for reading and copying.
- 1594 1953-04-16a 2. Vinterregenerasjonen [The winter regeneration], Oslo, A typewritten note, DE-UO, 14 pp.
A typewritten copy available at DE-UO, for reading and copying.
- 1595 1953-04-16b Pollenbalansen i bikroppen og bifolkenes utviklingshastighet [The pollen balance in the bee body and the speed of development of the bee populations], Oslo, A typewritten note, DE-UO, 6 pp.
A typewritten note available at DE-UO, for reading and copying.
- 1596 1956c Parefolk i små og middelstore bigårder [Mating populations in small and medium-sized bee gardens], *Birøkteren*, Vol 72, 58-60.
- 1597 1964-05 Honningcentralens betydning [The importance of the Honey Central Agency], *Birøkteren*, Vol 80, 69-71.
- 1598 1965i Stor vinterpakning eller sirkuskunster - (a) Første artikkel [Large winter packing or circus tricks - The first article], *Birøkteren*, Vol 81, 24-30.
- 1599 1965j Stor vinterpakning eller sirkuskunster - (b) Annen artikkel [Large winter packing or circus tricks - The second article], *Birøkteren*, Vol 81, 47-55.
- 1600 1968a Bruk ikke kjellerovervintring [Don't do overwintering in the cellar], *Birøkteren*, Vol 84, 68-70.
A note from the editor on p 95 correcting some fatal misprints in Frisch's article.
- 1601 1971g En vurdering av dronninggelé som menneskeføde [A consideration of Royal Jelly for human consumption], *Birøkteren*, Vol 87, 217-218.
- 1602 1973 Honningcentralens betydning [The importance of the Honey Central Agency], *Birøkteren*, Vol 89, 41-43.
A reprint of Frisch 1964-05 IDa. The editor has added an introductory note (translated):
"The following article by recently deceased Professor Ragnar Frisch, though written some years ago is still of present interest. In our opinion the article can stand as a worthy remembrance of his work as bee-keeper and contributor to our journal."

Ida:1597

II.5

CONTRIBUTIONS ON ECONOMICS IN NEWSPAPERS AND OTHER NON-SCIENTIFIC PUBLICATIONS

- 1603 1931-10-01 Blir den utenlandske gjeld uforandret selv om kronen synker? [Will the foreign debt remain unchanged even if the krone (the Norwegian currency) is declining?], *Tidens Tegn*, Oslo.
Frisch was interviewed by *Tidens Tegn*, and gave some explanations which *Tidens Tegn* found sensational: What counts in periods of depression is not the size of the gold reserves, but the degree of credit abroad. Moreover he explained how a pure paper currency can be accomplished whereby the hazard connected with the gold can be avoided.
- 1604 1931-10-05 Nu skal økonomikken bli en eksakt vitenskap [Economics shall now become an exact science], *Tidens Tegn*, Oslo.
Refer to Frisch 1932i IDa.
Ida:38
- 1605 1931-11-05 Plan eller kaos? [Plan or chaos?], *Tidens Tegn*, Oslo.
A feature article. Frisch maintains (translated): People are suffering from lack of the necessities of life while there are enormous stores of staple commodities, which would have been much larger if the world had utilized its mighty production power. Thus the present crisis is not a poverty crisis, it is an organization crisis. There are two different stands to the question of what should be done to bring the crisis to an end. One is that we should change to a communistic organisation of the production. Another that we want to retain our system of private enterprise, but let the society manipulate certain links in the machinery, the money-and credit policy among others, in order to lead the economy out of the present chaos into a plan designed from social considerations. Frisch takes the latter stand. But the matter is urgent! The worst alternative is to let things drift (newspaper cutting at DE-UO). Refer to Andvig 1986 IDa, paragraph 9.2, pp 286 and further.
Ida:2013
- 1606 1931-12-17 Et forslag til nasjonale sparekonti [A proposal for national saving accounts], *Dagbladet*, Oslo.
Frisch lays out a scheme for insurance of bank deposits in Norway. It might be his first explicit policy proposal. Three days before the article appeared, two of the three largest commercial banks in Norway received a three months moratorium; the danger of runs on the two banks was considered imminent. The main idea of Frisch's proposal: The public should be allowed to deposit money into a new type of accounts, "national saving accounts", whereby the customer would get a claim against the Bank of Norway (BoN), while the private bank in question would become indebted to BoN. Usually BoN would allow the private bank to lend the funds as if it had received an ordinary deposit, but if BoN considered the customer's shift to national accounts to be due to bad bank management, BoN would transfer the funds to other private banks. Frisch's proposal arouse considerable interest and discussion, see the contributions from IDa to IDb inclusive. Newspaper cuttings are available at DE-UO in a file labelled 'Et forslag til nasjonale sparekonti'. See also Andvig 1986 IDc pp 325 and further.
Ida:1749 IDb:1759 IDc:2013
- 1607 1931-12-22 Innskytterne og nasjonale sparekonti [The depositors and national saving accounts], *Dagbladet*, Oslo.
A reply to Sandberg 1931-12-21 IDa. See bankchef Sandberg's rejoinder 31-12-30 IDb and Frisch's final reply 1931-12-31 IDc. Refer to Frisch 1931-12-17 IDd.
Ida:1750 IDb:1758 IDc:1610 IDd:1606
- 1608 1931-12-30a Syv punkter om nasjonale sparekonti [Seven points on national saving accounts], *Aftenposten*, Oslo.

- Ref. to Frisch 1931-12-17 IDa.
IDA:1606
- 1609 1931-12-30b Teoretisk lettvinthet. Svar til dr. Keilhau [Theoretical superficiality. Reply to Dr. Keilhau], *Dagbladet*, Oslo.
Refer to Keilhau 1931-12-28 IDa and Frisch 1931-12-17 IDb.
IDA:1755 IDb:1606
- 1610 1931-12-31 Innskyterne og nasjonale sparekonti [The depositors and national saving accounts], *Dagbladet*, Oslo.
Frisch's final reply to Sandberg 1931-12-30 IDa.
IDA:1758
- 1611 1932-01-02 De nasjonale sparekonti. Tilleggsuttalelse fra Frisch og Keilhau. [The national saving accounts. Supplementary statement from Frisch and Keilhau], *Dagbladet*, Oslo.
Signed Ragnar Frisch, Wilhelm Keilhau. Refer to: Frisch 1931-12-17 IDa and 1931-12-30b IDb, Keilhau 1931-12-28 IDc.
IDA:1606 IDb:1609 IDc:1755
- 1612 1932-01-12 Nasjonale sparekonti. A propos direktør Ryggs innvendinger [National saving accounts. Apropos of director Rygg's objections], *Dagbladet*, Oslo.
Frisch (translated): Director Rygg's article of January 6 (1932-01-06 IDa) must be accepted as a consequent expression of a conventional attitude towards everything that concerns bank- and monetary matters. In my opinion the main considerations should be that we live in a time where economic upheavals occur overnight and where the societies of Western Europe and America undergo a financial organization crisis of hitherto unknown dimensions. That being so I see less reason to give emphasis to acquired "principles" and consider it more important to put one's ear to the ground and find out where we are.
IDA:1763
- 1613 1932-01-15 Forslag om nyordning av bankvesenet [Proposal for a reorganization of the banking system], in *Letter from the Assoziation of Norwegian Bank Functionaries to the Norwegian Storting and Government, Bank. Tidsskrift for norske bankfunksjonærer*, Oslo, No 1, 1932, 3-4.
The present proposal on how to reorganize the Norwegian banking system was a result of an initiative taken by Mr. Anders Sutterud, then an influential leader of Norske Bankfunktionærers Forbund [the Assoziation of Norwegian Bank Functionaries]. Mr. Sutterud (who shortly later changed his name to Anders Bergløff) moved Frisch to construct the present specification of the deposit insurance plan. The major change was the introduction of a new bank, the National Deposits Bank, that was to play a role similar to the role of the Bank of Norway in the original scheme (Frisch 1931-12-17 IDa). Frisch's new proposal was supported by Professor Oskar Jæger and actuary Henrik Palmstrøm. The whole story of the national deposits insurance is recapitulated and assessed by Jens Chr. Andvig in Andvig 1986 IDb, pp 325-343. A copy of the letter from Norske Bankfunktionærers Forbund (NBF 1932-01-15 IDc) is available at DE-UO, in a folder labelled 'Nasjonale sparekonti. Postsparekasser. 1932'. Not for lending.
IDA:1606 IDb:2013 IDc:1764
- 1614 1932-02-10 *Foredrag av professorene Frisch og Wedervang om det nye økonomiske forskningsinstitutt ved Universitetet. Med efterfølgende diskusjon [Speeches by the Professors Frisch and Wedervang on the new economic research institute at the University. With subsequent discussion]*, Møte i Statsøkonomisk Forening, Oslo, 49 pp.
Stenographic minutes from the meeting in Statsøkonomisk Forening where the recently founded Universitetets Økonomiske Institutt [The Economic Institute of the University] was presented to the public. The meeting was chaired by general manager Gunnar Jahn. Among those taking part in the succeeding discussion was general manager Throne Holst (executive member of Norsk Varekrigsforsikrings Fond [Norwegian Commercial War Insurance Fund]). A copy of the minutes is available at DE-UO in folder labelled "Opprettelsen av Universitetets Økonomiske Institutt (1932)"; not for lending. Enclosed in the folder is a printed note in English titled The new economic institute at the University of Oslo, by editor Thor Andersson, Stockholm, 5 pp, undated. See Bjerkholt

- 1999b IDa with annotations.
IDa:2107
- 1615 1932-04-13 Ingen avbetaling på statsgjelden i år [No part payments on the national debt this year], *Dagbladet*,
With Oskar Jæger, Wilhelm Keilhau and Ingvar Wedervang. The appeal from the Professors was sent to the Government and the Storting and reproduced in *Dagbladet* 1932-04-13. A main point of the Professors' suggestion was: A permanent rule for the State's loan policy should be to pay large effective part payments in periods of prosperity and small effective part payments - or none at all - in periods of depression. The financial arrangements of the State should not be decided exclusively from their effects upon the economy of the State, but also - maybe preferentially - from their indirect effects upon the entire economy of the country. If the originally stipulated nominal part payments are unchangeable, the effective ones can be reduced by raising short-term loans. The Professors' appeal was commented and discussed by a number of Norwegian newspapers, among others *Aftenposten* Oslo 1932-04-14.
- 1616 1932-05-14 Hvem vandrer i mørke? [Who is wandering in darkness?], *Aftenposten*, Oslo.
A rejoinder from Frisch to *Aftenposten* 1932-05-12 IDa on how to increase the general purchasing power. Frisch explains: The main point is not *per se* to increase the budget of the State, but to increase the total budget of the society. It is in this context that it is so important to find an appropriate covering for the budget of the State, because the covering itself can be credit-increasing or credit-decreasing dependent of how it is carried out. *Aftenposten* maintains its criticism in a "tail" to Frisch's article.
IDa:1765
- 1617 1933-03-08 Troen på nøkken [The belief in the river sprite], *Aftenposten*, Oslo,
Reprinted as Frisch 1995bp IDa (in *Troen på nøkken*.
IDa:321
- 1618 1934-05-03 Gullet er blitt et rudimentært organ [The gold has become a rudimentary remedy], *Samfundsliv*, Bergen.
Frisch claims: Why have not the countries long ago ceased to base their monetary system upon the gold? Because there has been a prevalent slowness in almost every country, often sheer superstition, when it comes to questions about money and the monetary system. They who have been in charge of the countries' monetary system have in stubborn conservatism continued to think and act according to purely monetary concepts, dogmas inherited from their predecessors. They seem to have lived behind drawn blinds, out of touch with the mighty process of change that has been under development in economics. They seem not to have discovered the heavy conflict between the ultramodern production technique and the centuries old monetary system which has become more and more unable to provide the turnover and the utilization of the real values. However, reforms in the monetary system will force themselves through. Then we will get a monetary system in which "the issue" is not decided from a gold fiction, but from the capacity of the production apparatus which the monetary system is there to serve.
- 1619 1934-11-01 Økonomiens teori og politikk [Economic theory and politics], *Tidens Tegn*, Oslo.
A review of a textbook by Dr. K. Schønheyder: Hovedpunktene i økonomiens teori og politikk [The main points of the theory and policy of economics] (Olaf Norli's Forlag, Oslo 1934). Frisch gives the book an honourable mention and a safe recommendation as textbook in the sixth-form college.
- 1620 1936-01-17 Om å velte byrder på etterkommerne [On shifting burdens on to the descendants] *Tidens Tegn*, Oslo,
A shortened reprint in Frisch 1995ah IDa.
IDa:285
- 1621 1936-01-20 Om å velte byrder på etterkommerne [On shifting burdens on to the descendants] *Tidens Tegn*, Oslo,
A shortened reprint in Frisch 1995ai IDa.
IDa:286
- 1622 1936-08-10 Lånepolitikk og konjunkturer [Borrowing policy and trade outlook], *Tidens*

Tegn, Oslo.

Frisch's replay to a question from Økonomisk Byrå 1936-07-31 IDa. As to the question of where in the trade cycle picture we may be at the time, Frisch answers that it depends on which of two counteracting waves has the stronger impact, one for the time rising wave of middle length (8-10 years) and an underlying very long wave which Frisch thinks will reach its bottom around the middle of the century. A careful judgement has brought Frisch to the conclusion that the right policy will still be to increase the state debt, at least for some years to come. Økonomisk Byrå's rejoinder: 1936-08-21 IDb.

IDA:1788 IDb:1789

- 1623 1939-04-20 Fører gullopsskrivning til inflasjon? "Gull byttet mot kanoner virker neppe på prisnivå eller valutakurser". Professor Frisch uttaler seg til Tidens Tegn [Will revaluation of the gold entail inflation? "Gold bartered for cannons will hardly effect neither the price level nor rates of exchange". Professor Frisch explains to Tidens Tegn], *Tidens Tegn, Oslo.*
Tidens Tegn to Frisch (translated): "What effect would an exchange of commodities, for example war material from abroad for gold from the Bank of Norway, have upon the price level and the exchange rates?" Frisch (translated): "Absolutely no effect. If we for example sent a part of the gold that is now kept in the Bank of Norway, to the United States in exchange for silver, and we put this silver down in the cellars of the Bank of Norway, all will remain as before apart from the fact that a part of the gold is now replaced with silver. The same will apply if we take cannons in exchange in stead of silver and put them down in the cellars of the Bank of Norway. And whether the cannons are kept there or in the fortresses will have no significance whatsoever neither for the exchange rates nor for the price level."
- 1624 1939-09-22 Grunnfeilen i vår pengepolitikk [The fundamental fault of our monetary policy], *Tidens Tegn, Oslo.*
- 1625 1939-10-02 Planøkonomi og markedsanalyser [Planned economy and market analyses], *Aftenposten, Oslo.*
 Referring to Brazil's partly unlucky experience of several cases of market regulations of production and export of coffee, Frisch gives some general reflections on problems connected to market regulations. He states that a necessary condition for carrying out market regulations is that one has provided reliable knowledge about the several expected important effects of the regulations. This applies also to Norway. Those who are responsible for our regulations in trade and production are in duty bound to invest much greater money means for elucidating the character of the markets in question. Organizing cooperation between people/sectors with knowledge of trades and people/sectors with knowledge of methods will be necessary in many cases.
- 1626 1940-02-12 Professor Frisch foreslår obligasjoner bundet av en prisindeks. Og gir sin tilslutning til Tidens Tegns kritikk av forslaget om gullcertifikater [Professor Frisch proposes bonds bound to a price index. And gives his approval to Tidens Tegn's criticism of the proposal of gold certificates], *Tidens Tegn, Oslo.*
- 1627 1940-02-22 Seddelutstedelse og gulldekning [Issue of notes and gold cover], *Tidens Tegn, Oslo.*
- 1628 1945-01-30 Kapitalproduksjon og nasjonalbudsjett. Første artikkel [Capital production and national budget - first article], *Aftenposten, Oslo.*
 Frisch discusses saving, in the private economy v in the national economy.
- 1629 1945-06-25 Aktivisering er nå viktigere enn sparing [Activating is now more important than saving], *Arbeiderbladet, Oslo.*
 Frisch argues against expressions of Minister of Finance Gunnar Jahn, who had claimed (in a speech delivered at a meeting in Statsøkonomisk Forening January 22 1945) that there is a great need for saving in order to provide the materials and the labour force necessary for the national reconstruction. Frisch alleges that uncritically working for increased saving can push the economy towards a dangerous depression; what he considers most important in the prevailing situation is to increase the level of economic activity, and next to re-allocate resources from low priority to high priority ends. These views of Frisch are discussed by *Farmand*. Editor 1945-06-30 IDa.

IDA:1816

- 1630 1945-07-11 To slags mottagelse [Two kinds of receipt], *Arbeiderbladet*, Oslo.
A popularized contribution in the debate on saving in the national economy.
- 1631 1945-08-30 Rasjonell lønnspolitikk [Rational wage policy], *Arbeiderbladet*, Oslo.
- 1632 1945-08-31 Rasjonell lønnspolitikk [Rational wage policy], *Arbeiderbladet*, Oslo.
- 1633 1945-10-03 Økonomisk opplysning - et grunnvilkår for demokratiet [Popular economic education - a basic condition for democracy], *Arbeiderbladet*, Oslo.
- 1634 1945-10-20a Valutakomiteens desavouerte innstilling. Professor Ragnar Frisch uttaler seg om innstillingens hensikt [The repudiated proposal from the Currency Committee. Professor Ragnar Frisch expresses his opinion on the intention of the proposal], *Morgenbladet*, Oslo.
Frisch answers questions put forward by *Morgenbladet*.
- 1635 1945-10-20b Valutakurs og reallønn [Rate of exchange and real income], *Friheten*, Oslo.
The newspaper *Friheten* of 18 October 1945 criticized the Currency Committee. In the present article Frisch repudiates the criticism.
- 1636 1945-10-29a Sparing og småsparing [Saving and small saving], *Arbeiderbladet*, Oslo.
It is referred to Frisch 1945-10-29b IDa.
IDA:1637
- 1637 1945-10-29b Valutakomiteen og sparerne [The Currency Committee and the savers], *Verdens Gang*, Oslo.
It is referred to Frisch 1945-10-29a IDa.
IDA:1636
- 1638 1945-12-07 Økonomisk forskning [Economic research], *Arbeiderbladet*, Oslo.
A reproduction of the second chapter of Frisch 1945c IDa, see the annotations.
IDA:90
- 1639 1946-01-05 Farmand og nazismen [Farmand and the Nazism], *Farmand*, Oslo.
In an editorial review of Aukrust, O. and P. J. Bjerve, 1945: *Hva krigen kostet Norge* [What the War cost Norway] in *Farmand* 1946-12-22, the journal had claimed that the economic politics recommended by the authors in fact deserved to be called a Nazi economic politics. The journal had, however, explicitly emphasized that the characterization applied exclusively to the recommended economic politics. In the present note Frisch opposed indignantly *Farmand's* use (he called it a misuse) of the word Nazi, claiming that the regulations suggested by Aukrust and Bjerve were to be executed within a democratic society, thus controlled by the people, while the economic politics in a Nazi regime is conceived in the head of the Nazi dictator and executed slavishly by a nazified bureaucracy, in a society where the popular will is entirely oppressed. In a "tail" to Frisch's note *Farmand* argues that for the tradesmen it is unimportant under which regime the regulations are conceived and executed. Frisch's replies: 1946-01-12 IDa and 1946-01-19 IDb.
IDA:1640 IDb:1641
- 1640 1946-01-12 Replik om nasismen [A reply on Nazism] *Farmand*, Oslo.
A reply to *Farmand's* "tail" to Frisch 1946-01-05 IDa, see the annotations. The discussion between *Farmand's* editor, D.Phil. Trygve Hoff, and Ragnar Frisch, was reproduced in the Oslo newspaper *Dagbladet* for 1946-01-46 (Frisch's contribution under the title Forretningsfolk og nazismen [Businesspeople and the Nazism]).
IDA:1639
- 1641 1946-01-19 Siste replikk om nasismen [A last reply on the Nazism], *Farmand*, Oslo.
Cfr. Frisch 1946-01-05 IDa and 1946-01-12 IDb.
IDA:1639 IDb:1640
- 1642 1946-01-30 Kapitalproduksjon og nasjonalbudsjett. Første artikkel [Production of capital goods and the national budget. The first article], *Aftenposten*, Oslo.
The present contribution is the first of three articles. The second and the third ones are

dated 1946-01-31 and 1946-02-26 respectively. See the annotations to 1946-01-31 IDa.
IDa:1643

- 1643 1946-01-31 Kapitalproduksjon og nasjonalbudjett. Annen artikkel [Production of capital goods and the national budget. The second article] *Aftenposten*, Oslo.
The second of three articles (the first one: 1946-01-30 IDa, the third one 1946-02-26 IDb) in which Frisch discusses thoroughly problems related to switching parts of the economy from consumer goods production to capital goods production without running into a severe depression. During this discussion he is led to stressing the distinction between real and nominal economics as well as between private and national economics. The line is drawn to the forthcoming preparation of a national budget in real values, which will, he claims, make clear a number of hitherto problematic concepts and distinctions.
IDa:1642 IDb:1644
- 1644 1946-02-26 Kapitalproduksjon og nasjonalbudjett. Tredje artikkel [Production of capital goods and the national budget. The third article], *Aftenposten*, Oslo.
See the annotations to Frisch 1946-01-31 IDa. At the end of the present article Frisch gives a reply to Schlytter 1946-02-15 IDb. Schlytter rejoins in 1946-03-06 IDc.
IDa:1643 IDb:1821 IDc:1822
- 1645 1946-05-11 Sparringstøv [Nonsense on saving], *Farmand*, Oslo.
Refer to Frisch 1945-01-30 IDa, 1945-06-25 IDb and 1945-10-29a IDc. The editor has put a note at the end of Frisch's contribution, in which he questions the degree of consistency in earlier contributions by Frisch.
IDa:1628 IDb:1629 IDc:1636
- 1646 1946-12-30 Mål og midler i økonomisk politikk i etterkrigstiden [Ends and means in economic policy in the post-war time], *Bergens Arbeiderblad*, Bergen.
From a lecture by Frisch on the radio, the Norwegian Broadcasting, December 11 1946. Frisch placed his manuscript at the disposal of *Bergens Arbeiderblad*, who published it in two parts, one in the issue of 1946-12-30 and the second one in the issue of 1947-01-02 IDa. Republished as Frisch 1947ad IDb.
IDa:1647 IDb:94
- 1647 1947-01-02 Mål og midler i økonomisk politikk i etterkrigstiden [Ends and means in economic policy in the post-war time], *Bergens Arbeiderblad*, Bergen.
See the annotations to Frisch 1946-12-30 IDa.
IDa:1646
- 1648 1947-02-01a Går vi mot en verdenskrise verre enn i 1929? Enorm produksjonsøkning absorberes av krigsskader og tomme lagre. Hva vil skje når de nærmeste behov er dekket? [Are we approaching a world crisis worse than in 1929? Enormous increase in production is absorbed by war damage and empty stores. What will happen when the most urgent needs are met?], *Arbeiderbladet*, Oslo.
Frisch in a conversation with NTB's New York correspondent.
- 1649 1947-02-01b Professor Frisch varslar økonomisk krise. Det vil skje verre ting enn i 1929-30 hvis det ikke blir gjort noe effektivt [Professor Frisch foreshadows economic crisis. Worse things will take place than what happened in 1929-32 unless something efficient is done], *Friheten*, Oslo.
The Oslo newspaper *Friheten* recapitulates from a conversation between Ragnar Frisch - recently appointed chairman of the United Nations Economic and Employment Commission, see *Aftenposten* 1947-01-21 IDa - and NTB's correspondent in New York. Frisch refers briefly to the task of the Commission, which first and foremost is to be a consultative body for the UN Economic and Social Council. Subcommittees are established as an aid to this end. The primary challenge is to analyse the world's economic tendency, in which connection Frisch claims that if sufficient positive precautions are not taken, there is a danger of a social catastrophe even worse than the one that struck the world under the years 1929-32.
IDa:2125
- 1650 1947-03-20 Hva folk sier at økonomene har sagt [What people say that the economists have said], *Morgenbladet*, Oslo.

- Professor Frisch polemizes against a number of assertions and opinions put forward in a feature article in the Oslo newspaper *Morgenbladet* of 1947-03-20 by Supreme Court Advocate C. M. Heber.
- 1651 1947-06-10 De tre stadier [The three stages], *Verdens Gang*, Oslo.
On the stages of resistance one has to cope with when trying to impel new ideas, new ways of thinking, especially within the subject area of social economics.
- 1652 1947-10-20 Lån og etterkommere. Svar på åpent brev fra hr. L. J. Sømme [Loan and decendants. A reply to an open letter from Mr. L. J. Sømme], *Morgenbladet*, Oslo.
A reply to Sømme 1947-10-16 IDa. Mr. Sømme referred to Frisch 1936-01-20 IDb.
IDA:1832 IDb:1621
- 1653 1947-12-29 Økonomi og sysselsetting [Economics and employment], *Aftenposten*, Oslo.
A short account of the work of the Sub-Commission on Employment and Economic Stability (United Nations) - cf. Frisch 1947-11-18 IDa - and a discussion of how to bring about an increase of the Norwegian export of real goods. Also some remarks of the importance of distinguishing between real and nominal economics.
IDA:414
- 1654 1948-01-16 Diskriminasjon i den internasjonale handel [Discrimination in the international trade], *Aftenposten*, Oslo.
Frisch takes up a specific point in the ITO Charter for international trade, viz. the point where the Charter requires that if a country for some reason or another is obliged to reduce her inport, she should do it non-discriminatively, thus pro rata. Frisch demonstrates that the pro rata requirement causes a stronger reduction of the world trade volume than what could be obtained if the pro rata requirement was not imposed. Frisch's article was reproduced as memo from DE-UO, Frisch 1955-04-14 IDa.
IDA:628
- 1655 1948-02-09 Handelens rasjonalisering [Rationalization of the retail trade], *Morgenbladet*, Oslo,
A reaction to a feature article by wholesaler Carl Bøyesen, chairman of Norges Handelsstands Forbund [Federation of Norwegian Commercial Associations], Bøyesen 1948-01-17 IDa. Mr. Bøyesen gave a rejoinder 1948-02-13 IDb. Both Mr. Bøyesen and Frisch expressed critical remarks to statements in the national budget for 1947. Frisch also criticized some of the passages in Bøyesen's first article.
IDA:1839 IDb:1840
- 1656 1948-12-14 Hvorfor saklighet? [Why objectivity?], *Arbeiderbladet*, Oslo.
A strong argumentation in favour of applying objectivity and logic in the life and death fight for the third alternative: to drag the ordinary citizen into taking responsibility, not only the Chief of Secret Service, or the rich one, or the scholar, or the super intellectual. This alternative raises a gigantic problem, of preserving, rejuvenating and creating organs which can really reveal the welfare interests of the different interest groups and ballance them carefully.
- 1657 1949-01-06 Et vitenskapelig falsum [A scientific forgery], *Morgenbladet*, Oslo.
A reply to *Morgenbladet* Editor 1949-01-04 IDa. Frisch explains here shortly in plain words some main points of the study 1948-10-21 IDb.
IDA:1853 IDb:446
- 1658 1949-01-08 En sluttrepplikk om det "vitenskapelige" falsum [A final reply on the "scientific" forgery], *Morgenbladet*, Oslo.
A reply to *Morgenbladet* Editor 1949-01-06 IDa. Frisch quotes some passages from 1948-10-21 IDb (p 29) to show that both positive and negative items were properly included in the calculations.
IDA:1854 IDb:446
- 1659 1949-01-17 Prisutviklingen: Inntektstap og likviditetstap. Første artikkel [The price movement: Income loss and liquidity loss. First article], *Arbeiderbladet*, Oslo.
First Frisch points out that the exposition from The Research Institute of Industrial Economics by its Director Morten Tuveng suffers from severe misapprehensions.

Considering how the debate has evolved he finds it sensible to go through the entire question from the bottom and explain in plain words what the problem is about. In the present article he explains the concepts income and liquidity. The second article: 1949-01-18 IDa.

IDa:1660

- 1660 1949-01-18 Prisetviklingen: Inntektstap og likviditetstap. Annen artikkel [The price movement: Income loss and liquidity loss. Second article], *Arbeiderbladet*, Oslo.
Frisch explains how the price movement can influence both the income and the liquidity of a firm as well as of a country. Further he explains how the problem is stated, and gives finally some comments on the solution and on the discussion that has taken place in the newspapers. Frisch's first article: 1949-01-17 IDa.
IDa:1659
- 1661 1949-01-24 Prisetviklingen. En sammenfatning [The price movement. A recapitulation], *Aftenposten*, Oslo.
Partly a correction of Tuveng 1949-01-20 IDa and Bang 1949-01-18 IDb, and partly a discussion of the calculated liquidity loss, cfr. Frisch 1949-01-17 IDc, 1949-01-18 IDd and 1948-10-21 IDE. Also published in *Arbeiderbladet* and in *Norges Handels- og Sjøfartstidende* on the same date.
IDa:1860 IDb:1858 IDc:1659 IDd:1660 IDE:446
- 1662 1949-01-26a Prisetviklingen. Svar på spørsmål [The price movement. Answer to questions], *Arbeiderbladet*, Oslo.
Reply to Professor Erling Petersen 1949-01-24 IDa.
IDa:1862
- 1663 1949-01-26b Voldtekt på sakligheten [A rape on the factuality], *Drammens Tidende Buskeruds Blad*, Drammen.
A reply to *Drammens Tidende Buskeruds Blad* Editor 1949-01-19 IDa, who presents a new critical contribution 1949-01-26 IDb in the same issue of the newspaper.
IDa:1859 IDb:1863
- 1664 1949-02-02 Saklighet. En sluttrepikk om prisetviklingen [Factuality. A last reply on the price movement], *Drammens Tidende Buskeruds Blad*, Drammen.
A rejoinder to *Drammens Tidende Buskeruds Blad*'s editorials 1949-01-19 IDa and 1949-01-26 IDb.
IDa:1859 IDb:1863
- 1665 1949-02-17 Jernrammen [The iron frame], *Morgenbladet*, Oslo.
Frisch describes the liquidity problem in after-war Norway: The desperate need for and the poor supply of liquid means has forced Norway into a tight iron frame, which has been utterly tightened by the international price movement.
- 1666 1949-04-15 Kommaflytning og sunt vett [Point moving and horse sense], *Norges Grossisttidende*, Oslo.
Frisch's reply to the contribution by *Norges Grossisttidende* 1949-02-15 IDa.
IDa:1867
- 1667 1949-05-06 Professor Frisch gjorde opprør i FN komiteen. "Bare alminneligheter i rapporten fra underkomiteen for sysselsetting. Det var helt utenkelig for meg å underskrive" [Professor Frisch revolted in the UN Commission. "Sheer trivialities in the report from the Sub-Commission on Employment and Economic Stability. Quite out of the question for me to put my name to"], *Bergens Tidende*, Bergen.
Professor Frisch in conversation with the newspaper *Bergens Tidende* on his arrival from New York.
- 1668 1949-05-09 Frisch lager bølger i FN. Er misfornøyd med "Underkommisjonen for sysselsetting og økonomisk stabilitet"s arbeidsmetoder og legger fram særvotum [Frisch causes quite a flutter in UN]. He is dissatisfied with the working methods of the Sub-Commission on Employment and Economic Stability, and puts forward a special vote] *Verdens Gang*, Oslo.

- Professor Frisch in conversation with the newspaper *Verdens Gang* after his arrival from New York. He had refused to sign a report from the Sub-Commission on Employment and Economic Stability, maintaining that it contained nothing but sheer trivialities. Instead he had produced a voluminous special report in which he calls to account the opinion of other representatives. Moreover he had put forward a proposal to a new organizing of the Sub-Commission. He explains to the newspaper in which way the work of the Sub-Commission has been unsatisfactory and how it ought to be reorganized. See Frisch 1949-05-06 IDa.
IDA:1667
- 1669 1949-12-20 På avveie? [Be astray?], *Verdens Gang*, Oslo.
Frisch's response to the Editor of *Verdens Gang* 1949-12-14 IDa.
IDA:1871
- 1670 1951-04-02 Prisansettelse og teori [Fixing of prices and theory], *Arbeiderbladet*, Oslo.
Frisch refers to a contribution in the same newspaper by Professor Wilhelm Keilhau, who had maintained that the Price Directorate should base solely on replacement costs when fixing retail prices, not on historical acquisition prices. Frisch claims that a broad clarification is necessary to elucidate the correct theoretical basis for the pricing policy. And when it comes to the practical task of fixing the factual prices, even more circumstances have to be taken into consideration.
- 1671 1955-11-05 Langsom takt i Vest, raskere i Øst. [Slow pace in the West, faster in the East], *Arbeiderbladet*, Oslo.
The article is a resumé made by *Arbeiderbladet* of a contribution in *Aftenposten*, in which Frisch had published some "heretical opinions on free trade". Frisch (translated): The West has to develop flexible and sophisticated forms of economic planning and regulation, so that we can utilize the resources and at the same time retain democratic freedom. It is my firm belief that if the West continues to cling to a wave of sentiment that has nothing more to offer than a liberalization which gives the free market economy, the speculation element and the financial power concentrations free reign, the West will eventually lose the race against Eastern Europe and China.
- 1672 1956-10-12 Farlige forenklingstendenser i den økonomiske politikken, [Dangerous tendencies of simplification in economic policy], *Arbeiderbladet*, Oslo.
The article throws light on Frisch's view of free competition. Frisch: Both those who manage and those who are managed are now progressively more inclined to switch from direct regulations to old, well-known, more or less "automatic" means in economic policy: First of all influencing the amount of credit through interest changes and budgetary measures. Next opening up for competition in the old-fashioned sense, for example by prohibiting supply-side stipulated prices, whether they are binding or only guiding. Of course there are cases where such simplifications, considered in isolation, seem favourable. Especially when compared with old imperfect forms of regulation. A wise comparison, however, includes making clear what one has to give up under a free competition régime. One has i.a. to renounce a number of objectives. There are in principle new and rational forms of planning that ought to be submitted to open-minded discussion. Critical comments: Thon 1956-10-17 IDa, Colbjørnsen 1956-10-19 IDb, Tveite 1956-10-24 IDc. See also Frisch 1959-11-03 IDd. Cuttings are available at DE-UO.
IDA:1912 IDb:1913 IDc:1914 IDd:1678
- 1673 1957a Mot en økonomisk varslings-tjeneste [Towards an economic warning service], *Forskningssnytt*, Oslo, Universitetsforlagets tidsskriftavdeling, Vol 2, 2-3.
- 1674 1957-10-04 Pågangsmotet og veksten må bli holdt ved like [The go-ahead spirit and the growth must be maintained], *Arbeiderbladet*, Oslo.
Frisch writes on inflation and inflation pressure: In a period of inflation pressure the responsible government will take the necessary steps to prevent the pressure from becoming too strong. But not by using means which lead to stagnation and unemployment. It is an easy task to create an atmosphere of depression strong enough to brake the inflation pressure, by using appropriate politico-financial means. Such a "solution" will, however, have disastrous consequences for farmers, fishermen, small and medium-sized firms and workers. We must by all means avoid recreating the unhappy state of the interwar period. It is, however, impossible to maintain the go-ahead spirit and the expansion courage while keeping the inflation pressure under control if one is not

willing to apply other means than the ortodox politico-financial ones. Some kinds of regulations there must be.

- 1675 1957-10-07 Hva er et budsjett-overskudd? [What is a budget surplus?], *Arbeiderbladet*, Oslo.
- 1676 1957-10-26 Professor Frisch, Nusse og Besk lager Oslo-modeller [Professor Frisch, Nusse and Besk make Oslo models], *Dagbladet*, Oslo.
The article is a report of an interview with Frisch by the signature Li- in *Dagbladet*. The occasion was that the Department of Economics had been granted a quarter of a million Norwegian kroner from the Rockefeller Foundation. The money will be spent on developing a Refi Model (Re stands for real and fi for financial), Frisch explained. He gives a number of examples of the kind of analyses that can be done with such a model. For those specially interested he refers to the memo from DE-UO Frisch 1957-06-04 IDa, which gives an overview of the work done so far on the Oslo models: the Sub Model, the Median Model and the Refi Model. (Nusse and Besk are two electronic computers.)
Ida:661, 1228
- 1677 1959-04-11 Svingningsløshet og gjennomsnittsvest [No oscillations and average growth], *Farmand*, Oslo.
Ragnar Frisch responds to an article in *Farmand* 1959-03-24 by an outside contributor Mr. Christian Rand. Frisch agrees with Mr. Rands statement on the basic principles for regulation of physical systems and on the analogy that exists between physical and economic problems of regulation. He gives a brief discussion with several examples and ends up mentioning a specific economic problem, that of reducing the heaviest oscillations while maintaining a greatest possible average growth rate.
- 1678 1959-11-03 Kjetterske meninger om frihandel [Heretical opinions on free trade], *Aftenposten*, Oslo.
Frisch outlines his view on the free market economy: It has a built-in tendency: After a time with satisfactory expansion there will always be built up a braking effect which will prevent the countries from utilizing their productive resources and technical knowledge. If the western democracies persist in basing on the free market, they will soon be ousted by the eastern countries who now prepare themselves for an expansion under full utilization of a rational and flexible economic planning. Frisch's article provoked responses in a number of Norwegian newspapers: *Aftenposten* 1959-11-03, *Arbeiderbladet* 1959-11-05, *Norges Handels- og Sjøfartstidende* 1959-11-06, *Verdens Gang* 1959-11-05 and 1959-11-07, *Morgenposten* 1959-11-12, *Friheten* 1959-11-14 and 1959-11-16, *Farmand* 1959-11-14, *Hamar Arbeiderblad* 1960-01-06. Also de Lange 1959-11-06 IDa and Flaatten 1959-11-06 IDb. Cuttings are available at DE-UO. Frisch dealt with his view on free competition in 1956-10-12 IDc, see the annotations.
Ida:1920 IDb:1921 IDc:1672
- 1679 1959-11-11 Forskning og økonomisk istid [Research and economic ice age], *Arbeiderbladet*, Oslo.
- 1680 1961-02-18 Litt Münchhausen-økonomi [A little Münchhausen economics], *Farmand*, Oslo.
An open letter addressed to *Farmand's* Editor Trygve Hoff in person. *Farmand* replies in a "tail" to Frisch's letter.
- 1681 1961-12-12 Planøkonomi? [Planned economy?], *Arbeiderbladet*, Oslo.
Frisch comments on an editorial article in *Arbeiderbladet* (1961-12-01) in which the editor claims that economic planning is gaining ground in West-European countries. The editor had referred to an article in *U.S. News and World Report*. Frisch presents a number of citations from the same American article and concludes that *Arbeiderbladet* would have done the Norwegian workers a great favour by including in the article the same citations, to let the workers see what kind of economic planning *U.S. News and World Report* is actually going in for.
- 1682 1963-03-15 Prosentuell helhetsløsning [A comprehensive negotiated solution where the payments are fixed in percentages], *Arbeiderbladet*, Oslo.
Suggestions on how to carry out tariff negotiations without creating inflation.

II.6

NON-ECONOMIC CONTRIBUTIONS IN NEWSPAPERS AND OTHER NON-SCIENTIFIC PUBLICATIONS

- 1683 1923a *Projet de'veveloppement du nombre classificateur décimal. 31 Statistique, Présenté à l'Institut International de Bibliographie de Bruxelles, Brussels, 31 pp.*
Typed with handwritten corrections. A single copy available at UB Oslo (DE-UO), not for lending.
- 1684 1939-12-19 Hjelp til finnene [Assistance to the Finns], *Aftenposten*, Oslo.
- 1685 1940-03-16 Norden som festning [The Nordic Countries as a fortress], *Arbeiderbladet*, Oslo.
- 1686 1945-05-22 Isfront [Ice front], *Dagbladet*, Oslo.
- 1687 1945-10-22 Omkring rettsoppgjøret [About the prosecuting settlement after the war], *Arbeiderbladet*, Oslo.
Frisch presents some points of disagreement with Professor Johs. Andenæs.
- 1688 1946f Norges Birøkerlag - Honningsentralen. Åpent brev til styret for Norges Birøkerlag [Bee-keepers' Association of Norway - the Honey Central Agency. Open letter to the Executive Committee for Bee-keepers' Association of Norway], *Birøkeren*, Vol 62, 24-25.
The article is a contribution to a discussion on the general settlement after the war. Frisch made his stand very clear: Nobody should be allowed to possess important leading positions unless their attitude to the national and democratic questions of principle is crystal clear. The fight against the Nazism has to continue. The values at stake lie on an entirely different plane than material benefits and personal conveniences. If necessary we must give up every material benefit, par example abandon the entire Honey Centrale Agency and make a new start from scratch. Ruud 1946 IDa gave a response, which provoked Frish to write a rejoinder, Frisch 1946m IDb.
IDA:1820 IDb:1689
- 1689 1946m Vivere non est necesse - Å leve er ikke nødvendig [Vivere non est necesse - to live is not necessary], *Birøkeren*, Vol 62, 72-73 and 80-80.
A rejoinder to the provocative reply by Ruud 1946 IDa to Frisch's article 1946f IDb, see the annotations.
IDA:1820 IDb:1688
- 1690 1946-09-10 Redelighet og demokrati [Integrity and democracy] *Universitas*, Oslo, Vol 1 No 10.
- 1691 1948-01-10 I Henrik Wergelands ånd [In the spirit of Henrik Wergeland], *Friheten*, Oslo.
Frisch was inspired with an article in *Arbeiderbladet* by Ole Øysang, who had written (translated): "Socialism means organized co-operation in order to meet peoples' material and cultural needs. ... The political and economic democracy presupposes a high standard of general education and a highly developed moral ... of the working people." Frisch expresses enthusiastically his agreement (translated): "Everyone who reads Øysang's article must be deeply moved, feeling that this is the essential thing which any noble labour movement must base on. ... Essentially this is nothing but the immortal vision of Henrik Wergeland. ... Consider his recommandation of vegetable gardening and reading. At first sight a curious combination; yet how it conveys the crux of the matter!" Frisch was strongly opposed both from the left (Rønnow 1948-01-12 IDa) and from the right (*Farmand* 1948-01-17 IDb).
IDA:1837 IDb:1838

- 1692 1951-08-30 Stengte eller åpne studier? [Limited or free entry to university studies?], *Universitas*, Oslo.
- 1693 1953-11-10 Overklassementaliteten lever [The upper class mentality is alive], *Arbeiderbladet*, Oslo.
Frisch tells of an incident on his way home, an unpleasant confrontation with a rider who, according to Frisch, almost insisted on riding on the narrow sidewalk, thus forcing the pedestrians out in the street. Frisch, however, did not give way; he ordered the rider off the sidewalk, seized the reins and lead the horse firmly into the street. Reactions to Frisch's story: *Farmand* Editor 1953-11-14 IDa and Qvale 1953-11-16 IDb.
IDA:1898 IDb:1899
- 1694 1961d Forord [Preface], in Johansen, Leif: *Norge og Fellesmarkedet. En kritisk oversikt og et standpunkt*, Oslo, (s. n.) 5-12.
Frisch's first contribution in the EEC-membership controversy. The preface is dated 1961-10-16.
- 1695 1961e Hva er demokrati? - En ganske liten nyttårsbetraktning [What is democracy? - A small new-year reflection], *Sosialøkonomen*, Vol 15 No 1, 14-14.
- 1696 1961h Noen lekmannsbetraktninger omkring Havnås-saken [Some lay considerations on the Havnås case], in: *Rett og høyesterett. 6 innlegg om Havnåssaken*, Oslo, Folkereising mot krig og sivilarbeidernes hovedsekretariat, 13-20.
Refer to *Dagbladet* 1961-03-06 IDa.
IDA:1930
- 1697 1961m Det uopplyste pengevelde [The unenlightened financialism], *Sosialøkonomen*, Vol 15 No 7, 2-3.
At the request of *Sosialøkonomen* to inform the readers of his view on the Common Market, Frisch refers to his article 1961-08-19 IDa in *Orientering*. The present writing is a reproduction of that article.
IDA:1701
- 1698 1961-01-06 Om vitenskapelige plagiater [On scientific plagiarisms], *Arbeiderbladet*, Oslo.
- 1699 1961-05-27 Feltrinelli-prisen [The Feltrinelli prize], *Farmand*, Oslo.
Frisch offers thanks to *Farmand* for many pleasant words of congratulations (in *Farmand* 1961-05-27) after Frisch had been awarded the prestigious Feltrinelli Prize. "However, I cannot refrain from thinking that it would have been even more enjoyable if the Editor had omitted the perfidious attempt to get the readers think that these Feltrinelli Prizes are presumably just a sort of reward for a communist attitude" (Translated).
- 1700 1961-06-15 Tenkningens slave, ikke dens herre. Kringkastingsforedrag 8. juni 1961 om elektroniske regnemaskiner i samfunnsøkonomien [The slave of thinking, not its master. A broadcasting talk made June 8 1961 on the use of electronic computers in economics], *Aftenposten*, Oslo.
Frisch's broadcasting talk reproduced, with Frisch's permission, as feature article in *Aftenposten*. Also issued as memo from DE-UO 1961-06-08 IDa.
IDA:764
- 1701 1961-08-19 Det uopplyste pengevelde [The unenlightened financialism], *Orientering*, Oslo.
The present contribution is made at *Orientering*'s request. It is commented and reproduced by *Dagbladet* 1961-08-18 IDa and by *Sosialøkonomen* 1961m IDb, the latter in the form of a short interview.
IDA:1931 IDb:1697
- 1702 1961-09 Fellesmarkedet - det uopplyste pengevelde [The Common Market - the unenlightened financialism], *Norgesavisen Det Nye Samfundsliv*, Oslo.
Most of the article is a reproduction of an article in the Oslo newspaper *Orientering*. Frisch: The present attempts at establishing a Western European common market is based on a daydream, that the Western European countries can solve their common basic problem by bringing back to life the unenlightened financialism. ... The real challenge for

the Western European countries is how to establish an economic and political system in which the freedom and the ethical dignity of the individual hold the center of the stage at the same time as it opens up for utilizing the material resources in a true rational way. This can only be achieved by an advanced form of economic planning.

- 1703 1961-09-02 Den forsømte visdom [The neglected wisdom], *Orientering*, Oslo.
- 1704 1961-10a *Det vest-europeiske fellesmarkedet [The Western European Common Market]*, Oslo, Aksjonen mot medlemskap i Fellesmarkedet, 20 pp.
A pamphlet in which Frisch presents a number of arguments against Norwegian membership in the Common Market. Reprinted as a huge newspaper article 1961-11-09 IDa. A copy of an English translation 1961-10b IDb is kept at DE-UO, see the annotations.
IDA:1706 IDb:1705
- 1705 1961-10b The Western European Common Market, Oslo, memo DE-UO, 22 pp.
A translation of Frisch 1961-10a IDa. There might have been produced and circulated privately a small number; only one copy is left; available (for reading and copying, not for lending) at DE-UO in folder labelled DET VEST-EUROPEISKE FELLESMARKED + Engelsk oversettelse 1961. The present memo seems to have been the source of the *Tribune* article 1962-03-16 IDb as well as of the Swedish article Norra Skåne 1962-04-07 IDc. (There is some doubt as to whether it is *Tribune's* source, since *Tribune* refers to "a ... pamphlet "The Western European Common Market"; such a pamphlet in English is, however, not found.)
IDA:1704 IDb:1938 IDc:1939
- 1706 1961-11-09 Det vest-europeiske fellesmarkedet [The Western European Common Market], *Dagbladet*, Oslo,
Also as reprint distributed privately by Ragnar Frisch 1961-10a IDa. Republished in Frisch 1995bq IDb (*Troen på nøkken*) as Frisch 1995bd IDc (under the title "Roma-traktaten. Det uopplyste pengevelde" ["The Treaty of Rome. The unenlightened financialism"]). An English translation Frisch 1961-10b IDd is available at DE-UO, see the annotations.
IDA:1704 IDb:322 IDc:1740 IDd:1705
- 1707 1961-11-13 Forvirring [Confusion], *Arbeiderbladet*, Oslo.
Frisch refers to a feature article in *Arbeiderbladet* 10 November in which the editor complains of the alledged confusion created by the experts in the debate on EEC, in particular on the permissibility of price control and of nationalizations under the Treaty of Rome. Frisch claims that both are absolutely inconsistent with the philosophy of the Treaty. *Arbeiderbladet* argues (in a "tail" to Frisch's article) quite to the contrary.
- 1708 1961-11-24 Dagdrømmer om planøkonomi [Daydreams on economic planning], *Arbeiderbladet*, Oslo.
The present article is a reprint of section 1 of Frisch 1961-11-09 IDa. Frisch: Real economic planning will never be accepted under the Treaty of Rome.
IDA:1706
- 1709 1961-11-30 Feilrepresentasjon? [Wrong representation?], *Arbeiderbladet*, Oslo.
In a debate in the Norwegian Broadcasting's Store Studio [Large Studio] November 23 1961 on Norway's choice of relation to the Common Market, the participants who wanted to contribute to the debate were asked to put their names beforehand on a list, each under one of the alternatives A for stay out, B for association and C for full membership. The number of debaters had, however, to be smaller than the sum total announced, and the numbers under A, B and C were to be reduced accordingly. In the subsequent debate there seemed, however, to be an overrepresentation of alternative A, which many of the participants found rather suspicious. In the present long article Frisch gives a thorough discussion of the case.
- 1710 1962-02-14 Samfunnsorientert eller storfinansorientert planøkonomi? [Socially orientated or high finance orientated economic planning?], *Dagbladet*, Oslo.
Frisch gives (1) a general view of how the expressions 'socially oriented economic planning' and 'high finance oriented economic planning' should be understood, (2) a short classification of possible means in macroeconomic planning, (3) hints on the technology

of macroeconomic planning (constructing mathematical models - among others - that can provide links between means and ends). He then discusses problems which arise when the set of available means is strongly restricted, especially how such restrictions in his opinion necessarily will benefit the high finance in general. He concludes that socially oriented economic planning is completely impossible in the Community. (5) Finally he gives some remarks on what he calls perverted use of the term planned economy. Published also as 'Opplysningsbrev nr. 5 fra Aksjonen mot medlemskap i Fellesmarkedet'. Reactions to Frisch's article: Byråsjef Egil Bakke 1962-02-21 IDa and siviløkonom Hjalmar Hegge 1962-02-22 IDb. Frisch's reply to Egil Bakke: 1962-02-23 IDc. See also Johansen 1962-03-07 IDd.

IDa:1935 IDb:1936 IDc:1711 IDd:1937

- 1711 1962-02-23 Planøkonomi i Fellesskapet. Svar til byråsjef Egil Bakke [Planned economy in the Community. Reply to assistant secretary Egil Bakke], *Dagbladet*, Oslo.
Reply to Bakke 1962-02-21 IDa. See Leif Johansen's apropos to Frisch/Bakke, 1962-03-07 IDb.
IDa:1935 IDb:1937
- 1712 1962-03-07 Jordan kan ikke være rund [The earth cannot be round], *Arbeiderbladet*, Oslo.
Reflections on specific ways of arguing which - in Frisch's opinion - are often used in the political debate, not least when the subject is what kind of community EEC will develop into.
- 1713 1962-03-24 Skjebnetime [Hour of destiny], *Arbeiderbladet*, Oslo.
Frisch asks: Why is it that the leadership of the Labour movement is about to loose control of the ordinary members? He gives three reasons: 1. The top leaders are more and more inclined to manage dictatorially; 2. they are more and more inclined to use methods that are neither fact-founded nor fair; 3. their objectives are more and more changed towards the very opposite of what once gave the contents proper to the Labour movement. He then gives an example to substantiate his accusations. Frisch's article was reprinted and commented in other newspapers, particularly in *Dagbladet* (Oslo) 1962-03-26.
- 1714 1962-04-13 Norges stilling nå [Norway's position now], *Nationen*, Oslo.
The first part of a long article. Frisch: The Treaty of Rome is a large-scale attempt to revive the free market economy. Only in rare exceptional cases, specified in the Treaty, can deviation from free competition be accepted. The means necessary to accomplish a true welfare state are absolutely forbidden in the Treaty. The system will give the high finance a carte blanche. The big international concerns will get a unique opportunity to exploit our national resources for their own profit purposes, in the best colonialism style. It is pure daydreaming to beleive that the high finance can be effectively controlled. There has been a widespread panic thinking: We cannot remain outside, we must enter whether we like it or not. Frisch makes great efforts to substantiate that Norway can do quite well, and through wise planning considerably better in a free position outside the Common Market than inside. The second part of the article came in *Nationen* 1962-04-14b IDa.
IDa:1716
- 1715 1962-04-14a Norges stilling [Norway's position], in Opplysningsbrev nr. 6 [Information letter no. 6] from *Aksjonen mot medlemskap i Fellesmarkedet* [the Action against membership in the Common Market], *Nationen*, Oslo.
- 1716 1962-04-14b Norges stilling nå [Norway's position now], *Nationen*, Oslo.
The second and final part of a long article. Frisch discusses first what rate of economic growth can be expected for Norway inside v outside EEC. Next he discusses the political consequences. He argues strongly against the proposed procedure that Norway should take up negotiations with EEC on the terms of full membership, only in order to see what conditions it can obtain, and then decide whether to go for full membership or for a looser connection. He applauds that a referendum shall be held before the decisive choice, but is strongly against not holding the referendum before the negotiations are taken up. He claims that the negotiations themselves will to a considerable degree bind Norway up and thus make the final choice less free. The first part of the article came in *Nationen* 1962-04-13 IDa.
IDa:1714
- 1717 1962-04-18 Roma-traktat og skjødesløshet [Treaty of Rome and carelessness],

Arbeiderbladet, Oslo.

Frisch has several times pointed out - and seriously criticized - that there has been made a mistake in the official translation of the Treaty of Rome's article 3 f from French into Norwegian, where according to Frisch the French word *fausseeé* is incorrectly translated. He claims this to be a point of paramount importance, as it is clearly expressed in the French text that free competition is to be applied as an absolute principle which can be departed from only in cases that are explicitly specified in the Treaty. The Norwegian text does not have this unconditional character. The same point is treated in Frisch 1962-04-13 IDa, section 2.

IDa:1714

- 1718 1962-04-24 66-79-88, *Arbeiderbladet*, Oslo.
The three numbers are the respective number of votes cast against full membership in EEC in three different polls.
- 1719 1962-05-01 Dyster 1. mai - eller håp? [Gloomy May Day - or hope?], *Orientering*, Oslo.
An urgent appeal to The Labour Party to restore the high ideals of the old days, thus letting the fair democratic rules be taken into favour again. The touchstone will be the Labour Party's stand to the Common Market.
- 1720 1962-05-23 Det fulle medlemskap [The full membership], *Arbeiderbladet*, Oslo.
Frisch: The fundamental choice is the choice between full membership on the one side and all other conceivable forms of intercourse with EEC on the other. Refer to Frisch 1962-05-24 IDa.
IDa:1721
- 1721 1962-05-24 Forvanskninger [Distortions], *Arbeiderbladet*, Oslo.
Frisch: What has united the resistance movement all the time is the fight against the full membership. Only the distortion manoeuvres of our adversaries has made some people believe something else. Refer to Frisch 1962-05-23 IDa and 1962-06-09a IDb.
IDa:1720 IDb:1722
- 1722 1962-06-09a Forvanskninger [Distortions], *Farmand*, Oslo.
The same matter as Frisch 1962-05-24 IDa.
IDa:1721
- 1723 1962-06-09b Sosialismens gjenreisning. Svar til lege Anne-Marie Auestad [Restoration of the Socialism. A reply to doctor Anne-Marie Auestad], *Uke-avisa Orientering*, Vol 10 No 21.
A reply to doctor Anne Marie Auestad's open letter to Professor Ragnar Frisch in *Uke-avisa Orientering* 2 June 1962.
- 1724 1962-06-30 På denne måten [In this way], *Arbeiderbladet*, Oslo.
Frisch points out an error in the Ministry of Foreign Affairs' edition of the Treaty of Rome and claims that this error has led the Ministry as well as *Arbeiderbladet* to draw wrong conclusions. In a "tale" to Frisch's article *Arbeiderbladet* "fights back".
- 1725 1962-07-06 Tre spørsmål til utenriksministeren [three questions to the Minister for Foreign Affairs], *Nationen*, Oslo.
- 1726 1962-08-31 Logikk og lojalitet til Brussel-bruk [Logic and loyalty for use in Brussels], *Dagbladet*, Oslo, Vol 94.
Frisch criticizes both the Prime Minister Einar Gerhardsen and the Foreign Secretary Halvard Lange for having made pronouncements liable to give the world press the impression of a strong majority in Norway in favour of EEC membership. Frisch claims there being evidence to the contrary, a clear and increasing majority against membership. Moreover he criticizes the Government for having substantially understated - notably in the lately surrendered declaration to the EEC authorities - the special ever-lasting difficulties some of the Norwegian industries (esp. agriculture, forestry and fishing) would have to face within EEC, which they could cope with only if they were granted ever-lasting favorable conditions. A reply from Lange 1962-09-01 IDa and a rejoinder from Frisch 1962-09-08 IDb. The contributions by Frisch and Lange were reprinted in a number of Norwegian newspapers.
IDa:1942 IDb:1727

- 1727 1962-09-08 Mer logikk og lojalitet til Brussel-bruk [More logic and loyalty for use in Brussels], *Dagbladet*, Oslo, Vol 94.
A rejoinder to Lange 1962-09-01 IDa. See the annotations to Frisch 1962-08-31 IDb.
IDA:1942 IDb:1726
- 1728 1962-09-14 My ten reasons for rejecting the Common Market, *Tribune*,
Part of a text of a speech delivered at an anti-Common Market meeting in Trafalgar Square September 9 1962.
- 1729 1962-11-28b Riksrett? [Impeachment?], *Arbeiderbladet*, Oslo.
Frisch accuses the Government, in particular the Foreign Minister, of intending to delude the Norwegian public into accepting full membership in EEC. He concludes: As I see it, there is now morally as well as legally a case for impeachment. The editor of *Arbeiderbladet* argues against Frisch's accusations in the same issue of the newspaper, 1962-11-28 IDa.
IDA:1948
- 1730 1963a Hva saken gjelder [What the matter is about], in *Hva saken gjelder - a booklet issued by The 100 organized representatives in cooperation with the 143 against full membership in the Common Market*, Oslo, 10-64.
An argumentation against Norwegian membership in EEC.
- 1731 1963g Uttalelse fra Arbeidsutvalget mot norsk medlemskap i Fellesmarkedet [A statement from the Working Committee against Norwegian membership in the European Economic Community], in: *Uttalelse fra Nasjonalkonferansen mot medlemskap i Fellesmarkedet [Report from the National Conference against membership in the European Economic Community]*, Oslo, Arbeidsutvalget mot norsk medlemskap i Fellesmarkedet, 138-139.
- 1732 1963h Økonomiske alternativer til fullt medlemskap [Economic alternatives to full membership], in report from *Nasjonalkonferansen mot medlemskap i Fellesmarkedet [the National Conference against membership in the European Economic Community]*, Oslo, Arbeidsutvalget mot norsk medlemskap i Fellesmarkedet, 110-115.
- 1733 1963-08-17 Fem grunner [Five reasons], *Orientering*, Oslo.
An open letter to Finn Gustavsen (member of the Storting and leader of the left-wing political party Sosialistisk Folkeparti) in which Frisch gives five reasons for his conclusion: to secure the Norwegian Labour movement and its future *the Government must be toppled*. (The Government was in a precarious position and the two members from Sosialistisk Folkeparti had the power to tip the scales.)
- 1734 1965a Domine, da quod jubes - - *Sosialøkonomen*, Vol 19 No 3, 28-31.
A speech made by Ragnar Frisch on his 70th birthday. About the heading Frisch explains (translated): The holy Augustin has said: Domine, da quod jubes et jube quod vis. "Lord God! Give me what You require, then clame what You want".
- 1735 1965e *Politikk i pakt med fremtiden [Politics in harmony with the future]*, A/L Orientering, Oslo, 87 pp.
- 1736 1966d Komplikania. En beretning fra virkeligheten [Komplikania. A tale of real life], *Fritt kjøpmannskap*, No 19.
A reprint of an article "lately published in *Aftenposten*".
- 1737 1967-04 Nå maser de igjen - de kortsynte pengetenkere [Now they worry again - the short-sighted money-thinkers], *Orientering*, Oslo.
- 1738 1967-05-23 Uberettiget hastverk [Unjustified haste], *Aftenposten*, Oslo.
With Leif Johansen. The keenly debated question of whether Norway should apply for membership in EEC had been brought up again. In the present article the authors argue against a rapid treatment, claiming that the opinion needs time to absorb and work through a number of problems, and that a hasty (and therefore undemocratic) treatment will necessarily have effect upon the outcome of the process.

- 1739 1967-05-31 Uberettiget hastverk. Svar til professor Erling Petersen fra Ragnar Frisch og Leif Johansen [Unjustified haste. Reply to Professor Erling Petersen from Ragnar Frisch and Leif Johansen], *Aftenposten*, Oslo.
Refer to Frisch (and Johansen) 1967-05-23 IDa and to Petersen 1967-05-24 IDb.
IDa:1738 IDb:1966
- 1740 1995bd Roma-traktaten. Det uopplyste pengevelde [The Treaty of Rome. The unenlightened financialism], in Frisch, Ragnar: *Troen på nøkken*, Oslo, Det Blå Bibliotek, UF, 208-227.
A Reprint of an article in the Oslo newspaper *Dagbladet*, Frisch 1961-11-09 IDa, under the title "Det vest-europeiske fellesmarkedet" [The Western European common market].
IDa:1706

PART III

CONTRIBUTIONS RELATED TO RAGNAR FRISCH AND TO HIS AUTHORSHIP

III.1

WRITINGS RELATED TO RAGNAR FRISCH'S AUTHORSHIP

- 1741 1922 Fisher, Irving: *The making of index numbers*, Boston and New York, Houghton Mifflin Company.
See the annotations to Frisch 1930c IDa.
IDa:23, 812
- 1742 1923 Knudsen, E. C.: Dagbok for Bigaarden, av Ragnar A. Frisch og Ragnvald Lunde [Diary for the bee garden, by Ragnar A. Frisch and Ragnvald Lunde], *Tidskrift for Biskjøtsel*, Kristiania, Vol 39, 59-60.
The author gives a strong recommendation of the diary for the bee garden by Frisch and Lunde, Frisch 1922 IDa, and suggests every bee keeper to acquire and use "this useful little diary" (translated).
IDa:1551
- 1743 1927 Haberler, Gottfried: *Der Sinn der Indexzahlen. Eine Untersuchung über den Begriff des Preisniveaus und die Methoden seiner Messung*, Tübingen, Verlag von J. C. B. Mohr (Paul Siebeck),
Haberler developed two inequality conditions for the cost-of-living index relative to the Laspeyre and Paasche price indices. In case of homothetic preferences the two inequalities reduce to one double inequality. The homothetic preferences assumption was only implicit in the present work, but was made explicit in Haberler 1929 IDa. See Frisch 1936a IDb and Chipman 1998 IDc.
IDa:1745 IDb:63, 819 IDc:2091
- 1744 1927 Working, Elmer J.: What do statistical 'demand curves' show? *Quarterly Journal of Economics*, Vol 41, 212-235.
Chipman 1998 IDa gives the following description (p 79): "Working ... showed by simple geometric arguments that "statistical demand curves" were fitted to intersections of shifting demand and supply curves, and that they could be legitimately interpreted as demand curves only if supply curves shifted much more than demand curves over the sample period." Working's article became important for the development of methods of estimating demand and supply curves. Refer to Frisch 1933g IDb.
IDa:2091 IDb:49, 1024
- 1745 1929 Haberler, Gottfried: Der volkswirtschaftliche Geldwert und die Preisindexziffern. Eine Erwiderung. *Weltwirtschaftliches Archiv*, Vol 30, 6**.-14**.
Refer to Haberler 1927 IDa and Frisch 1936a IDb.
IDa:1743 IDb:63, 819
- 1746 1929 Leontief, Wassily W.: Ein Versuch zur statistischen Analyse von Angebot und Nachfrage, *Weltwirtschaftliches Archiv*, Vol 30, 1-53.
This article provoked Frisch into writing his "Pitfalls" monograph 1933g IDa.
IDa:49, 1024
- 1747 1930 Pigou, Arthur C.: The statistical derivation of demand curves, *Economic Journal*, Vol 40, 384-400.
Refer to Frisch 1933g IDa.
IDa:49, 1024
- 1748 1931 Clark, J. Maurice: Capital production and consumer-taking - a reply, *The Journal of Political Economy*, Vol 39, 814-816.
Reply to Frisch 1931b IDa. Frisch gave a rejoinder 1932a IDb, Clark a further word 1932 IDc and Frisch a final word 1932b IDd.
IDa:25, 959 IDb:30, 963 IDc:1761 IDd:31, 964

- 1749 1931-12-19 Jæger, Oskar: Avvergelse av banksammenbrudd [Warding off bank collapses], *Aftenposten*, Oslo.
Refer to Frisch 1931-12-17 IDa.
IDA:1606
- 1750 1931-12-21 Bankchef Sandberg: Innskyterne må sikres. "En håpløs konkurranse for privatbankene" [The depositors must be secured. "A hopeless competition for the private banks"], *Dagbladet*, Oslo.
Refer to Frisch 1931-12-17 IDa. Frisch's reply 1931-12-22 IDb, Sandberg's rejoinder 1931-12-30 IDc and Frisch's final reply 1931-12-31 IDd.
IDA:1606 IDb:1607 IDc:1758 IDd:1610
- 1751 1931-12-22 Schønheyder, K.: Sikkerhet og likviditet [Security and liquidity], *Aftenposten*, Oslo.
Ref. to Frisch 1931-12-17 IDa.
IDA:1606
- 1752 1931-12-23 Advokat Brøgger: Nasjonale sparekonti [National saving accounts], *Dagbladet*, Oslo.
Ref. to Frisch 1931-12-17 IDa.
IDA:1606
- 1753 1931-12-24 *Aftenposten*: Sikkerhet [Security], *Aftenposten*, Oslo.
Ref. to Frisch 1931-12-17 IDa.
IDA:1606
- 1754 1931-12-24 Direktør W. Thagaard: Solidarisering av bankvesenet [Solidarizing of the banking organization], *Dagbladet*, Oslo.
Ref. to Frisch 1931-12-17 IDa.
IDA:1606
- 1755 1931-12-28 Dr. Keilhau: De nasjonale sparekonti [The national saving accounts], *Dagbladet*, Oslo.
Ref. to Frisch 1931-12-17 IDa.
IDA:1606
- 1756 1931-12-29 *Arbeiderbladet*: De norske sparere [The Norwegian depositors], *Arbeiderbladet*, Oslo.
Ref. to Frisch 1931-12-17 IDa.
IDA:1606
- 1757 1931-12-29 Advokat: Innskudd og sikkerhet [Deposits and security], *Dagbladet*, Oslo.
Ref. to Frisch 1931-12-17 IDa.
IDA:1606
- 1758 1931-12-30 Bankchef Sandberg: Innskyterne og nasjonale sparekonti [The depositors and national saving accounts], *Dagbladet*, Oslo.
Ref. to Frisch 1931-12-17 IDa and 1931-12-30a IDb.
IDA:1606 IDb:1608
- 1759 1931-29-12 *Dagbladet*: Tillit [Confidence], *Dagbladet*, Oslo.
Ref. to Frisch 1931-12-17 IDa.
IDA:1606
- 1760 1932 Bowley, A. L.: Review of Ragnar Frisch: *New methods of measuring marginal utility*, *The Economic Journal*, Vol 42, 252-256.
A review of Frisch 1932g IDa.
IDA:37, 815, 1020
- 1761 1932 Clark, J. Maurice: Capital production and consumer-taking: A further word, *The Journal of Political Economy*, Vol 40, 691-693.
Reply to Frisch's rejoinder 1932a IDa.
IDA:30, 963

- 1762 1932-01-05 Palmstrøm, Henrik: Banker og panikk [Banks and panic], *Tidens Tegn*, Oslo.
A thorough discussion in support of Frisch's proposal 1931-12-17 IDa.
IDA:1606
- 1763 1932-01-06 Rygg, N.: Nasjonale sparekonti [National saving accounts], *Dagbladet*, Oslo.
A summary discussion in which the author at every point advises against Frisch's proposal 1931-12-17 IDa. Frisch's reply 1932-01-12 IDb.
IDA:1606 IDb:1612
- 1764 1932-01-15 NBF: Forslag til nyordning av bankvesenet [Proposal for reorganization of the banking system], in: *Letter from NBF (Norske Bankfunktionærers Forbund) to the Norwegian Storting and Government*. Oslo.
Norske Bankfunktionærers Forbund (NBF) [The Association of Norwegian Bank Functionaries (ANBF)] was not completely satisfied with details of Frisch's proposal in Frisch 1932-01-15 IDa and suggested some minor changes. In some way they went further than Frisch in constructing the scheme such that bankruptcy would be practically impossible. Frisch preferred to have that option open to keep the bank managers alert. The main outlines of Frisch's proposal were, however, supported whole-heartedly by ANBF. See Andvig 1986 IDb, footnote 2, p 335.
IDA:1613 IDb:2013
- 1765 1932-05-12 *Aftenposten*: En videnskap i mørke [A science in darkness], *Aftenposten*, Oslo,
A contribution on how (not) to increase the general purchasing power. Frisch gives a rejoinder in 1932-05-14 IDa.
IDA:1616
- 1766 1933 Allen, R. G. D.: On the marginal utility of money and its application, *Economica*, Vol 13, 186-209.
Ostensibly a review of Frisch 1932h IDa (*New methods ...*). Gives a forceful criticism of parts of Frisch's work. For a short elucidation of basic points of the discussion of utility measurement, see Chipman 1998 IDb, pp 59-67.
IDA:37, 815, 1020 IDb:2091
- 1767 1933 Bilimovic, Alexander: Ein neuer Versuch der Bemessung des Grenznutzens, *Zeitschrift für Nationalökonomie*, Vol 4, 161-187.
Refer to Frisch 1932h IDa.
IDA:37, 815, 1020
- 1768 1933 Schultz, H.: Frisch on the measurement of utility, *The Journal of Political Economy*, Vol 41, 95-116.
A review of Frisch 1932h IDa (*New methods ...*).
IDA:37, 815, 1020
- 1769 1933 Vinci, F.: L'Utilita della minetae l'imposta progressiva, *Rivista italiana di statistica, economia e finanza*, Vol 5, 209-242.
Criticism of Frisch's methods and results presented in 1932h IDa (*New methods ...*), pp 222-242.
IDA:37, 815, 1020
- 1770 1933 Åkerman, Johan: Depressionens problem [The problem of the depression], *Statsøkonomisk Tidsskrift*, Vol 47, 54-76.
Åkerman expressed disagreement with Frisch on the role of private saving under a deep depression, cf. Frisch 1933i IDa (originally three newspaper articles in *Dagbladet*, Oslo, January 1933). Frisch's rejoinder to Åkerman: 1933b IDb.
IDA:53 IDb:44
- 1771 1933-02-28 Colbjørnsen, Ole: Ragnar Frisch: Sparing og sirkulasjonsregulering [Ragnar Frisch: Saving and circulation regulation], *Arbeiderbladet*, Oslo.
A critical review of Frisch' pamphlet on saving and circulation regulation, 1933i IDa. See Andvig 1986 IDb pp 345 and further, and Munthe 1996 IDc p 279.
IDA:53 IDb:2013 IDc:2071
- 1772 1934 Det norske Arbeiderparti: *Det norske Arbeiderpartis kriseplan for 1934* [The

- Norwegian Labour Party's crisis plan for 1934*], Oslo, Stortingsforhandlinger 1934, Del 5, Dokument nr 2, 43-102.
The Norwegian Labour Party's crises plan for 1934 is found in Stortingsforhandlinger 1934, Del 5 (Dokumenter), Dokument nr. 2, pp. 43-102.
- 1773 1934a Leontief, Wassily W.: More pitfalls ... - A final word, *Quarterly Journal of Economics*, Vol 48, 755-759.
Leontief's final response in the "pitfalls debate", see Frisch 1933f IDa and 1934c IDb, and Leontief 1934b IDc. Reproduced as Leontief 1995a IDd.
IDa:49, 1024 IDb:55, 1025 IDc:1774 IDd:2067
- 1774 1934b Leontief, Wassily W.: Pitfalls in the construction of demand and supply curves: A reply, *Quarterly Journal of Economics*, Vol 48, 355-361.
Leontief's response to Frisch's criticism in Frisch 1933f IDa (see the annotations). Frisch replied in 1934c IDb (see the annotations) and Leontief gave a "final word" in 1934a IDc. Reproduced as Leontief 1995b IDd.
IDa:49, 1024 IDb:55, 1025 IDc:1773 IDd:2068
- 1775 1934 Marschak, J.: More pitfalls in demand and supply curve analysis: Some comments, *Quarterly Journal of Economics*, Vol 48, 759-766.
Selected parts of the article are reprinted in Hendry and Morgan 1995 IDa. See the annotations to Frisch 1933f IDb.
IDa:2064 IDb:49, 1024
- 1776 1934 Subramanian, S.: On a certain conclusion of Frisch's, *Journal of the American Statistical Association*, Vol 29, 316-317.
A comment on Frisch 1930c IDa (... the form of an index number ...). Frisch's reply in the same issue of the journal, 1934d IDb.
IDa:23, 812 IDb:56, 816
- 1777 1934-03-03 *Dagbladet*: Ekspertene plukker i stykker Arbeiderpartiets kriseplan [The experts tear the Labour Party's crises plan to pieces], *Dagbladet*, Oslo.
The article reproduces the pronouncement of the Monetary Committee [den pengetekniske komité] on the Labour Party's crises plan for 1934. The committee judges the plan *inter alia* to be incoherent, self-contradictory and poorly laid; further that it implies risk of inflation, fall in the value of the Norwegian currency, and transfer of the burdens to the State. The pronouncement of the Monetary Committee on the Labour Party's crises plan for 1934 is found in Stortingsforhandlinger 1934, Del 2, Stortingsmelding nr. 19, Bilag 1, pp. 1-22. The plan itself, see the annotations to Det norske Arbeiderparti 1934 IDa.
IDa:1772
- 1778 1934-03-20 *Arbeiderbladet*: Regjeringens "eksperter" begår citatmisbruk. J. M. Keynes uttaler seg til fordel for Arbeiderpartiets kriseplan. Han hevder et helt annet synspunkt enn regjeringens pengekommité tillegger ham [The Government's "experts" commit citation abuse. J. M. Keynes makes a statement in favour of the Labour Party's crises plan. He maintains a view quite different from what the Government's Monetary Committee ascribes to him], *Arbeiderbladet*, Oslo.
The Government's Monetary Committee (see the annotation to Gunnar Jahn 1934-03-23 IDa) had in an opinion of 24 February 1934 on the Labour Party's crises plan 1934, given a number of scruples and arguments against the credit expansion which was an important element of the plan. In particular the Committee warned against the risk of causing inflation. The Committee intended to rely upon a passage of J. M. Keynes' *The Treatise of Money*, which (as understood by the Committee) claims that to avoid inflation, the value of the new real investments attained by the credit expansion must not exceed the public's current net saving. Frisch interpreted the Monetary Committee to mean that a credit expansion will lead to inflation unless it is based on a *previous* increase in public net saving. In a letter to the Norwegian Storting (reproduced in the present article) he suggested that the Committee had misinterpreted Keynes, a suggestion confirmed by Keynes himself. A reply against Frisch from the Monetary Committee was reproduced in *Arbeiderbladet* 1934-03-22 IDb.
IDa:1781 IDb:1780
- 1779 1934-03-21 Jahn, Gunnar: Brev til Stortinget [Letter to the Storting], from *Komiteen til*

Utredning av Økonomiske og Pengepolitiske Spørsmål [the Monetary Committee], Oslo, Central Bureau of Statistics of Norway,

A reply to the letter from Frisch to the Storting, dated 1934-03-20, (which includes the letter from Professor J. M. Keynes to Frisch). See the annotations to *Arbeiderbladet* 1934-03-20 IDa and 1934-03-22 IDb. A copy of the present letter is available at DE-UO in a file labelled 'Finansielle Foranstaltninger ...', not for lending.

IDA:1778 IDb:1780

- 1780 1934-03-22 *Arbeiderbladet*: Grunnlaget svikter for angrepet på Arbeiderpartiets kriseplan. Pengekomiteen fremlegger selv beviset for at dens innstilling ikke kan brukes som argument mot planen [The foundation for the attack on the Labour Party's crises plan fails. The Monetary Committee presents itself the piece of evidence that the committee's report can not be used as argument against the plan], *Arbeiderbladet*, Oslo.
The article contains a letter from the chairman of the Monetary Committee, Gunnar Jahn, to the Norwegian Storting [the Parliament], in which Jahn claims that Professor Frisch had misunderstood a crucial passage in the Monetary Committee's opinion and that, for the same reason, the comments given by Keynes in his letter to Frisch (see *Arbeiderbladet* 1934-03-20 IDa) are irrelevant. The article also presents Frisch's rejoinder to Jahn's letter. Munthe recapitulates in 1995 IDb essential parts of the debate and strife that took place in Norway in the years 1933-1935.
IDA:1778 IDb:2071
- 1781 1934-03-23 Jahn, Gunnar: Pengekomiteens svar til professor Frisch [The Monetary Committee's reply to Professor Frisch], *Aftenposten*, Oslo.
'Pengekomiteen' ['The Monetary Committee'] is short for 'Komiteen til utredning av økonomiske og pengepolitiske spørsmål' ['the Committee for Clarification of Economic and Money-Political Questions'].
- 1782 1934-06-05 *Aftenposten*: Kredittutvidelse uten inflasjon [Expansion of credit without inflation], *Aftenposten*, Oslo.
It is referred to a statement from the chairman of the Monetary Committee, Gunnar Jahn, on the Labour Party's crisis plan, see Gunnar Jahn 1934-03-23 IDa.
IDA:1781
- 1783 1935 Riegel, E. C.: *Irving Fisher's world authorities on the meaning of money*, Compiled and reviewed by E. C. Riegel, President of Consumers Guild of America, Inc., New York, Empire Books, 183 pp.
A questionnaire was sent to a number of authorities named by Professor Irving Fisher on the request of Mr. E. C. Riegel, President of the association called Consumers Guild of America, Inc. The final result, the present book, is a symposium of the responses from those who accepted to participate, among them Ragnar Frisch. See Frisch 1935f IDa.
IDA:60
- 1784 1935 Tinbergen, J.: Annual survey: Suggestions on quantitative business cycle theory, *Econometrica*, Vol 3, 241-308.
Traces "the recent theories", among them the mathematical theories of Frisch, Kalecki and others.
- 1785 1935 Waugh, Frederick V.: The marginal utility of money in the United States from 1917 to 1921 and from 1922 to 1932, *Econometrica*, Vol 3, 376-397.
Waugh (p 376) on utility: "In spite of the obvious importance of this subject, economists until recently have made little progress in clarifying ideas about utility and in estimating the degree of utility derived by consumers from different goods and services at different periods. The recent theoretical researches of Irving Fischer of the Yale University and the theoretical and statistical researches of Ragnar Frisch of the University of Norway have, however, made great advances in this field."
- 1786 1936 Burk, A.: Real income, expenditure proportionality, and Frisch's "New methods of measuring marginal utility", *The Review of Economic Studies*, Vol 4, 33-52.
See the annotations to Frisch 1932h IDa (*New methods ...*).
IDA:37, 815, 1020

- 1787 1936 McIntyre, Francis: *Statistical confluence analysis by means of complete regression system*, by Ragnar Frisch, *Journal of the American Statistical Association*, Vol 31, 619-620.
A review of Frisch 1934f IDa.
IDA:58, 1026
- 1788 1936-07-31 Økonomisk Byrå: Et spørsmål til professor Frisch [A question to Professor Frisch], *Tidens Tegn*, Oslo.
Økonomisk Byrå refers to a broadcasting discussion on counter-cyclical interventions in the banking business, in which Frisch had maintained that in a period of recession the state budget should be set up with a deficit, i.e. the budget balance should be provided partly through raising of loans, while the opposite should be done in boom periods. He had assessed the problem of estimating the state of the market to be practicable. Økonomisk Byrå then asks Frisch to tell where on the trade cycle he thinks we are for the time being, and in case he thinks we are in a boom, will he make his influence felt in order to get the budget ballanced with a surplus and that a considerable part of the state dept will be paid off. Frisch's reply 1936-08-10 IDa.
IDA:1622
- 1789 1936-08-21 Økonomisk Byrå: Konjunktur og lånepolitikk [Trade cycle and lending-borrowing policy], *Tidens Tegn*, Oslo.
Økonomisk Byrå gives a long, detailed and strongly critical discussion of Frisch's proposal made in 1936-08-10 IDa, where he claimed that the ruling forces come from two different waves, one rising wave of 8-10 years length and another very long declining wave; further that a careful judgement has led him to conclude that the resultant picture is that of a recession, consequently that the right policy should be to increase the state dept, at least for a few years to come. Økonomisk Byrå seems well acquainted with both the prevailing theory and the stand taken by wellknown business cycle researchers. The Byrå's investigations have shown that every of the economists (except Frisch) who beleives in the possibility of smoothing out the trade cycles by means of fiscal policy, has considered only the usual wave of 8-10 years. The Byrå concludes that Frisch's proposal is as fantastic as unique.
IDA:1622
- 1790 1936-10-16 *Aftenposten*: Skal vi få et økonomiens laboratorium? [Are we going to get an economic laboratory?], *Aftenposten*, Oslo.
A newspaper article to inform about and discuss general manager Throne-Holst's important speech in Norges Industriforbund's autumn conference on October 15, in which Throne-Holst put forward his grand plan for a research institute of economics at the University of Oslo. See Throne-Holst 1936-10-16 IDa.
IDA:1792
- 1791 1936-10-16 *Arbeiderbladet*: En ny politisk bremsekloss under dekke av objektiv økonomisk forskning? [A new political brake pad under cover of objective economic research?], *Arbeiderbladet*, Oslo.
A report of the lively debate after Throne-Holst's remarkable speech in Norges Industriforbund's autumn meeting, in which he launched his grand plan for an economic research institute at the University of Oslo (see Throne-Holst 1936-10-16 IDa). Among the participants: Johan Throne-Holst, Wilhelm Keilhau and journalist Ole Colbjørnsen.
IDA:1792
- 1792 1936-10-16 Throne Holst, Johan: Økonomisk orientering og videnskapelig forskning [Economic orientation and scientific research], *Tidens Tegn*, Oslo.
General manager Throne Holst's speech in Norges Industriforbund's autumn conference, in which he launched his great plan for an institute of economics at the University of Oslo. His final appeal (translated): Now we - the men of the industries - appeal to the science to be our guide also in social and economic questions. And our appeal goes first and foremost to the young scientists, they who are animated with the true spirit of inquiry. I subscribe to the belief that the only thing we have to put up against truth-destorting demogagy and truth-veiling polemic is scientific research.
- 1793 1937 Koopmans, T. C.: *Linneare regression analysis of economic time series*, Haarlem, De Erven F. Bohn N. V.

- 1794 1937 Slutzky, Eugen E.: The summation of random causes as the source of cyclic processes, *Econometrica*, Vol 5, 105-146.
Professor Eugen Slutzky published in 1927 his research findings on this problem in an article in Russian (with a brief English summary). At the request of Frisch in the capacity of Editor of *Econometrica* Professor Slutzky prepared the present revised English version in which he had incorporated also a number of important results obtained after 1927. See the editorial footnote to Slutzky's article on page 105.
- 1795 1937 Staehle, Hans: Report of the fifth European meeting of The Econometric Society. *Econometrica*, Vol 5, 87-102.
From pp 95-96: "Frisch delivered a paper on "Recent developments in the measurement of money flexibility" He refers to the measurements made and presented in his Sur un problème article 1926h IDa, and also to his confluence analysis 1934f IDb. In connection with Frisch's presentation Marschak drew attention to certain restrictions which Frisch's consumption surfaces are subject to (p 96).
IDa:12, 811, 1008 IDb:58, 1026
- 1796 1938 Bowley, A. L.: Note on Professor Frisch's "The problem of index numbers", *Econometrica*, Vol 6, 83-84.
Frisch has, as editor, put a footnote at the end of Bowley's note referring to his own article 1938a IDa.
IDa:74, 824
- 1797 1938 Fagan, Elmer D.: Recent and contemporary theories of progressive taxation, *The Journal of Political Economy*, Vol 46, 457-498.
Fagan gives (on pp 91-95) a thorough and critical discussion of Frisch's attempts (in his *New methods* - Frisch 1932h IDa) to determine the slope of the curve of diminishing marginal utility of money income.
IDa:37, 815, 1020
- 1798 1938 Haavelmo, Trygve: The method of supplementary confluent relations, illustrated by a study of stock prices, *Econometrica*, Vol 6, 203-218.
Refer to Frisch 1934f IDa.
IDa:58, 1026
- 1799 1938 Mendershausen, Horst: The definition of "equal well-being" in Frisch's double expenditure method, *Econometrica*, Vol 6, 285-286.
Comment to Frisch's index number article 1936a IDa. Frisch has - as editor - put a footnote at the end of the note.
IDa:63, 819
- 1800 1939a Hotelling, Harold: A final note, *Econometrica*, Vol 7, 158-160.
See Frisch 1939a IDa and Hotelling 1939b IDb.
IDa:78, 898 IDb:1801
- 1801 1939b Hotelling, Harold: The relation of prices to marginal costs in an optimum system, *Econometrica*, Vol 7, 151-155.
Response to Frisch 1939a IDa. See also Frisch 1939b IDb and Hotelling 1939a IDc.
IDa:78, 898 IDb:79, 899 IDc:1800
- 1802 1939 Konüs, A. A.: The problem of the true index of the cost of living, *Econometrica*, Vol 7, 10-29.
First published in 1924 in Russian; translated into English by Jacques Bronfenbrenner. Refer to Schultz, Henry 1939: A misunderstanding in index-number theory: The true Konüs condition on cost-of-living index numbers and its limitations, *Econometrica*, Vol 7, 1-9.
- 1803 1939 Wald, A: A new formula for the index of cost of living, *Econometrica*, Vol 7, 319-331.
- 1804 1940 Haavelmo, Trygve: The inadequacy of testing dynamic theory by comparing theoretical solutions and observed cycles, *Econometrica*, Vol 8, 312-321.
- 1805 1940 Reiersøl, O.: A method for recurrent computation of all the principal minors of a determinant, and its application in confluence analysis, *The Annals of*

- Mathematical Statistics*, Vol 11, 193-198.
Also issued as Publikasjon nr. 11 from DE-UO. Refer to Frisch 1934f IDa .
IDa:58, 1026
- 1806 1940 Wald, Abraham: The fitting of straight lines if both variables are subject to error, *Annals of Mathematical Statistics*, Vol 11, 284-300.
Frisch's formulation of the regression model in terms of errors in variables led to a number of contributions, among them the present one (Chipman 1998 IDa pp 86-88 and Frisch 1929a IDb and 1934f IDc).
IDa:2091 IDb:17, 1012 IDc:58, 1026
- 1807 1941 Hoff, Trygve J. B.: Brevveksling med Ragnar Frisch 1941 [Correspondence with Ragnar Frisch 1941], in Hoff, Trygve J. B. 1975: *Tanker og idéer. Utvalg og forord ved professor Arvid Brodersen [Thoughts and ideas. Selection and foreword by Professor Arvid Brodersen]* Oslo, H. Aschehoug & Co. (W. Nygaard), 49-65.
Hoff's first letter to Frisch 4 November 1941 (49-53). Frisch's rejoinder 10 November 1941 (53-55). Hoff's second letter 22 November 1941 (56-64). Frisch's last words 18 December 1941 (64-65).
- 1808 1941 Reiersøl, Olav: Confluence analysis by means of lag moments and other methods of confluence analysis, *Econometrica*, Vol 9, 1-24.
Also issued as Publikasjon nr. 17 from DE-UO. Refer to Frisch 1934f IDa.
IDa:58, 1026
- 1809 1941 Wold, Knut Getz: Kosthold og levestandard. En økonomisk undersøkelse [Nutrition and standard of living. An economic investigation], Publikasjon fra *Økonomisk strukturoversikt for Norge*, Oslo, Fabritius & Sønners Forlag.
Frisch supervised the investigation and wrote the preface and the introduction chapter (see Frisch 1941a IDa). Wold's work made a partial result of the comprehensive Plan for an Economic Structural Survey of Norway, see Frisch et al 1936e IDb.
IDa:84 IDb:66, 1137
- 1810 1942 Johnsen, Stein: *Koordinerte regnskaper for skipsaksjeselskaper [Co-ordinated accounts for shipping companies]*, Oslo, DE-UO, Koordineringsavdelingen [the Coordinating Department], 21-147.
The work is the result of a special investigation of Oslo's shipping companies during the years 1934, 1935, 1936 and 1937, carried out in co-operation between the Statistical Office of Oslo and the Coordinating Department (under the leadership of Professor Ragnar Frisch). The work is a partial result of the comprehensive Plan for an Economic Structural Survey of Norway (see Frisch 1936e IDa). Stein Johnsen (later Stein Rossen), by then assistant at the Co-ordinating Department, was mainly responsible for the investigation.
IDa:66, 1137
- 1811 1944 Bjerve, P. J.: Økosirkssystemet og realsirkulasjonen i The General Theory of Employment, Interest and Money [The ecocirc system and the real circulation in The General Theory of Employment, Interest and Money], *Statsøkonomisk Tidsskrift*, Vol 58, 1-25.
Reprinted in Samfunnsøkonomiske Studier 59, Statistisk Sentralbyrå [Statistics Norway], Oslo 1985.
- 1812 1944 Haavelmo, Trygve: The probability approach in econometrics, *Econometrica - Supplement*, Vol 12, viii+118.
From the preface, p v: "The idea of undertaking this study developed during my work as an assistant to Professor Ragnar Frisch at the Oslo Institute of Economics. The reader will recognize many of Frisch's ideas in the following, and indirectly his influence can be traced in the formulation of problems and the methods of analysis adopted. ..."
- 1813 1944 Vogt, Johan: Om metodene for undersøkelse av den økonomiske sirkulasjon og for oppstilling av nasjonalregnskap [On the methods of studying the economic circulation and of working out national accounts], *Statsøkonomisk Tidsskrift*, ?? ??
While the present paper is heavily influenced by the Institute work on the subject, and in

all essentials uses the Institute symbolism and terminology, it goes further, setting the problem in long-range historical perspective and also giving independent contributions to the development of several concepts and collating essential figures.

- 1814 1945a Reiersøl, O.: Confluence analysis by means of instrumental sets of variables, *Arkiv för matematik, astronomi och fysik*, 1945, 119 pp.
Reiersøl's doctoral thesis. Also issued as Publikasjon nr. 15 from DE-UO. Refer to Frisch 1934f IDa. Reiersøl is considered to be the originator of the method of instrumental variables.
IDA:58, 1026
- 1815 1945b Reiersøl, O.: Residual variables in regression and confluence analysis, *Skandinavisk Aktuarietidskrift*, Vol 28, 201-217.
A generalization of the main theorem of the paper of Frisch and Waugh, 1933e IDa. The generalized theorem is then applied to facilitate some computations in confluence analysis, refer to Frisch 1934f IDb (publikasjon nr. 5 from DE-UO). Also as Publikasjon nr. 25 from DE-UO. An extract from the article is issued in Hendry and Morgan, Reiersøl 1995 IDc.
IDA:48, 1023 IDb:58, 1026 IDc:2074
- 1816 1945-06-30 *Farmand*. Editor: Sparing og aktivisering [Saving and activating], *Farmand*, Oslo.
Farmand discusses statements made by Frisch in his contribution 1945-06-25 IDa, where he alleged that uncritically working for increased saving can have harmful effects; see the annotations.
IDA:1629
- 1817 1945-07-21 Johansen, Hj. E.: Sparing [Saving], *Arbeiderbladet*, Oslo.
A reply to Frisch 1945-06-25 IDa.
IDA:1629
- 1818 1945-10-29 *Dagbladet*. Editor: Renten må ned! Professor Ragnar Frisch om Quisling-lånene [The rate of interest must down! Professor Ragnar Frisch on the Quisling loans], *Dagbladet*, Oslo.
- 1819 1946 Ruist, Erik: Standard errors of the tilling coefficients used in confluence analysis, *Econometrica*, Vol 14, 235-241.
Ruist states that the "tilling coefficients" are subject to sampling errors. The object of his study is to find these sampling errors in the special case when the (observable) variables are normally distributed. The study was done under the guidance of Frisch (who formulated the problem) during the author's stay at DE-UO.
- 1820 1946 Ruud, Anders: Åpent brev til professor Ragnar Frisch [An open letter to Professor Ragnar Frisch], *Birøkteren*, Vol 62, 72-72.
A reply to Frisch 1946f IDa, see the annotations. This contribution provoked Frisch to write a rejoinder 1946m IDb.
IDA:1688 IDb:1689
- 1821 1946-02-15 Schlytter, Thomas: Kapitalproduksjon og nasjonalbudsjett. Bemerkninger til professor Ragnar Frisch [Capital production and national budget. Remarks to Professor Ragnar Frisch], *Aftenposten*, Oslo.
Schlytter's article is full of indignant criticism of Frisch's articles 1946-01-30 IDa and 1946-01-31 IDb, claiming that Frisch is endeavouring to establish a permanent regulation economy (which Schlytter calls a coercive economy). Frisch gives a reply in 1946-02-26 IDc.
IDA:1642 IDb:1643 IDc:1644
- 1822 1946-03-06 Schlytter, Thomas: Nasjonalinntekt og produksjon. Svar til professor Ragnar Frisch [National income and production. A rejoinder to Professor Ragnar Frisch], *Aftenposten*, Oslo.
A rejoinder to Frisch 1946-02-26 IDa.
IDA:1644
- 1823 1947 Rao, Radhakrishna C.: Note on a problem of Ragnar Frisch, *Econometrica*,

- Vol 15, 245-249.
A note on Frisch 1936a IDa. See Rao 1949 IDb, a correction ...
IDA:63, 819 IDb:1852
- 1824 1947-02-21 *Aftenposten*: Professor Frisch på vei hjem fra FN. Hans plan om internasjonal budsjettering har vakt stor interesse [Professor Frisch on his way home from UN. His plan on international budgeting has aroused great interest]
Aftenposten, Oslo.
Aftenposten: Frisch's plan was well received. The well-known scientist Professor Buchanan has suggested a collaboration aiming at writing a common treatise on the matter. Frisch has, under his stay in USA, studied the large electronic calculators at the universities of Harvard, Chicago and elsewhere. He advocates the same sort of investment in Norway.
- 1825 1947-02-26a Aukrust, Odd: Professor Frisch's verdensbudsjett [Professor Frisch's world budget], *Verdens Gang*, Oslo.
Mr. Aukrust welcomes enthusiastically Frisch's proposal for an inter-economic budget analysis (refer to Frisch 1947-01-21 IDa). Aukrust (translated): The announcement opens overwhelming perspectives. If Frisch's idea becomes a reality, it might open up for an international cooperation beyond everything experienced so far.
IDA:402, 1140
- 1826 1947-02-26b Aukrust, Odd: Professor Frisch's verdensbudsjett [Professor Frisch's world budget], *Verdens Gang*, Oslo.
- 1827 1947-04-08 Schlytter, Thomas: Sosialøkonomene og planøkonomi [The economists and a planned economy], *Morgenbladet*, Oslo.
A rhetorical article dealing primarily with writings of Ragnar Frisch and what Mr. Schlytter supposes to be Frisch's intentions and ideas.
- 1828 1947-06-02 The Representative of UK: *Memorandum on international employment policy*, UN, Economic and Employment Commission, Second Session, UN Document E/CN.1/35, 9 pp.
Introductory note: "This Memorandum was submitted in connection with Item 6 of the Provisional Agenda (document E/CN.1/32) for the Second Session of the Economic and Employment Commission." A handwritten remark by Ragnar Frisch on the front page (translated): "There is much good in this memorandum, But it is not carried through sufficiently consistent. If consistently carried through, it will come close to my "Trade matrix" point of view." A copy of the document is available at UB Oslo (DE-UO); not for lending.
- 1829 1947-06-03 The Representative of US: *Memorandum on international action to maintain world full employment and economic stability*, UN, Economic and Employment Commission, Second Session, UN Document E/CN.1/36, 5 pp.
Introductory note: "This Memorandum was submitted in connection with Item 6 of the Provisional Agenda (document E/CN.1/32) for the Second Session of the Economic and Employment Commission.
- 1830 1947-08-06 Kalecki, Michal: Letter from Secretary of the Sub-Commission on employment and Economic Stability, M. Kalecki, to Professor Ragnar Frisch, United Nations, the Subcommission on Employment and Economic Stability
Mr. M. Kalecki is welcoming Ragnar Frisch as a Member of the Sub-Commission on Employment and Economic Stability, and is sending him some documents in order to enable him to familiarize himself concerning the work of the Sub-Commission. A supplementing letter dated 18 August 1947 informs of the major items which the Secretariat believes the Subcommission will wish to discuss. A letter of 22 September 1947 brings enclosed a copy of the Provisional Agenda for the first Session of the Sub-Commission. The Sub-Commission was called to meet on 17 November 1947. Copies of the letters are available at DE-UO; not for lending.
- 1831 1947-08-23 *Farmand*. Editor: Konjunkturproblemer [Business cycle problems], *Farmand*, Oslo.
A review of Frisch 1947ae IDa.
IDA:95, 830, 974

- 1832 1947-10-16 Sømme, L. J.: Lån og etterkommere. Et åpent brev til hr. professor Frisch [Loan and descendants. An open letter to Mr. Professor Frisch], *Morgenbladet*, Oslo.
Sømme refers to Frisch 1936-01-20 IDa. Frisch's reply to Sømme's open letter: 1947-10-20 IDb.
IDA:1621 IDb:1652
- 1833 1948 Hinshaw, Randall: Professor Frisch on discrimination and multilateral trade, *The Review of Economics and Statistics*, Vol 30, 271-275.
Hinshaw's contribution consists largely in an exposition of Frisch 1947ai IDa. In addition he gives critical comments on Frisch 1948c IDb. Chipman 1998 IDc (p 99) comments shortly on Hinshaw's paper.
IDA:96, 1139 IDb:101, 1143 IDc:2091
- 1834 1948 Meier, Gerald M.: The trade matrix: A further comment on Professor Frisch's paper, *The American Economic Review*, Vol 38 II, 624-626.
A critical comment on Frisch 1947ai IDa. Chipman 1998 IDb (p 98) comments shortly on Meier's objection.
IDA:96, 1139 IDb:2091
- 1835 1948 Polak, J. J.: Balancing international trade: A comment on Professor Frisch's paper, *The American Economic Review*, Vol 38 I, 139-142.
Critical comments on Frisch 1947ai IDa. Chipman 1998 IDb (p 98) gives a condensed account of Polak's objections.
IDA:96, 1139 IDb:2091
- 1836 1948-01-10 *Farmand*. Editor: Symptomer og dypere årsaker [Symptoms and deeper causalities], *Farmand*, Oslo.
The Editor argues against some points of view in an article by Frisch in *Aftenposten* 1947-12-29, in which Frisch gives an account of the work of the United Nations Sub-Commission on Employment and Economic Stability (see Frisch IDa). There are, Frisch claims, two basic views prevailing in the Sub-Commission, the one being a strongly monetary view and the other (Frisch's own view) which directs the attention towards the underlying real-economic conditions. The Editor of *Farmand* considers Frisch's explanation an argumentation in favour of a strongly detailed-planned economy, of which the Editor proclaims himself a keen adversary.
IDA:414
- 1837 1948-01-12 Rønnow, Tom: I Henrik Wergelands ånd - Svar til prof. Ragnar Frisch [In the spirit of Henrik Wergeland - Reply to Professor Ragnar Frisch], *Friheten*, Oslo.
A reply to Frisch 1948-01-10 IDa. (Translated): It is not surprising that Ole Øysang has invented a definition of socialism that makes it easier for a labour government to consolidate the capitalist society. Some of us might, however, have expected that a Professor of economics shouldn't be ignorant of the fact that socialism has something to do with the right of ownership of the means of production. Both Øysang's definition and Frisch's reflections are good for nothing but to divert the labour classes from fighting, from making a real revolt.
IDA:1691
- 1838 1948-01-17 *Farmand*. Editor: Wishful thinking, *Farmand*, Oslo.
A reply to Øysang's article in *Arbeiderbladet* and Frisch's enthusiastic support 1948-01-10 IDa. The Editor writes (Translated): "We are ... obliged to hold on to that Øysang's definition of socialism bungles the concepts. It is bad that a socialistic editor does it. Even worse, however, when the culprit is an econometrician and a Professor of economics."
Refer also to Rønnow 1948-01-12 IDb.
IDA:1691 IDb:1837
- 1839 1948-01-17 Bøyesen, Carl: Om rasjonalisering [On rationalization], *Morgenbladet*, Oslo.
Bøyesen puts forward critical remarks about some passages in the national budget for 1947, where in his opinion unjustified conclusions had been drawn about the efficiency of the private retail trade compared with the efficiency of the co-operative retailers. See reaction from Frisch 1948-02-09 IDa and Bøyesen's rejoinder 1948-02-13 IDb.

Ida:1655 IDb:1840

- 1840 1948-02-13 Bøyesen, Carl: Usaklig argumentasjon i Nasjonalbudsjettet [Factually untrue argumentation in the National Budget], *Morgenbladet*, Oslo.
A rejoinder to Frisch 1948-02-09 IDa, see the annotations.
Ida:1655
- 1841 1948-03-04 *Dagbladet*. Editor: Universitetet åpner for Oslo-borgerne. "Livsviktig å spre solid økonomisk opplysning", sier prof. Frisch [The University opens for the citizens of Oslo. "Vital to spread reliable economic information and understanding", Prof. Frisch says], *Dagbladet*, Oslo.
From the notice in *Dagbladet* (translated): "Tomorrow evening the University opens its gates to the general public of Oslo. In the University's Old Ceremonial Hall Professor Ragnar Frisch will give a lecture on "Money economy and real economy". It is the first lecture of a series of ten which will be given (by the staff members of the Department of Economics) within the next few months. The arrangement is a result of a co-operation between the University and Sentralkomiteen for økt arbeidseffektivitet [the Central Committee for Increased Labour Efficiency]. It is something quite new in Norway, and it is safe to assume that it is the first attempt (in this country) towards establishing a people's university."
- 1842 1948-03-06 *Aftenposten*. Ed: En milliard kronersedler til - gir oss ikke ett brød mer å dele [One billion more bank notes - will not give us a single more piece of bread to share], *Aftenposten*, Oslo.
The first lecture of a series called The Oslo University's popular economics lectures. From *Aftenposten*'s report: Professor Frisch's lecture took the form of an introduction to economics thought - and he made it easily accessible with clear examples taken from every-day life. We don't want - he proclaimed - neither expert rule nor dictatorship. It is of vital importance for democracy that people have an understanding of economic problems. We must have a clear realization of the distinction between real economics and monetary economics. He also dealt with concepts like pressure on prices, saving and real investments, etc.
- 1843 1948-06-29 Edwards, Corwin D.: *The problem of maintaining competition*, Oslo, memo DE-UO, 13 pp.
From a talk given in Statsøkonomisk Forening, Oslo, 20 May 1948. Frisch's comment (translated): It is a rare thing to find such a lucid, well arranged and academical presentation of problems attached to imposing controlling devices in a country's economy.
- 1844 1948-09-16 Bjerve, P. J.: *Utskrift av brev fra Petter Jakob Bjerve av 6.9.1948 til Ragnar Frisch [Transcript of a letter from Petter Jakob Bjerve of June 9 1948 to Ragnar Frisch]*, Oslo, memo DE-UO, 5 pp.
Comments to Frisch's article "Den optimale arbeidsinnsats [The optimum employment]" 1948a IDa.
Ida:99
- 1845 1948-09-17 Bowley, A. L.: *Reproduction of parts of letter with tables from Professor Arthur L. Bowley, Marley Hill, Haslemere, England*, Oslo, memo DE-UO, 4 pp.
Comments to Frisch 1948-03-08 IDa (*A system of concepts describing the economic circulation and production process*).
Ida:434, 936
- 1846 1948-10-02 Tinbergen, J.: *J. Tinbergen on employment policy*, Oslo, memo DE-UO, 3 pp.
Excerpts from a letter of September 30 1948 from J. Tinbergen to Ragnar Frisch in answer to the request in Frisch's circular letter of May 20 1948, regarding the work of the UN Subcommission on Employment and Economic Stability. The letter is a contribution by Tinbergen in a debate with Frisch on the possible usefulness of making new models versus to present a summary of "present knowledge (including that derived from models) and combine it intuitively in order to arrive at practical prescriptions for employment policy" (Tinbergen). Frisch announces a later attempt "to give reasons for a more optimistic view of the usefulness of models".
- 1847 1948-11-06 Haavelmo, T.: The autonomy of an economic relation, in Ragnar Frisch et al:

- Autonomy of economic relations*, Oslo, memo DE-UO, 25-38.
A reproduction of section 8, Chapter II in Haavelmo 1944 IDa. One of the main contributions in the autonomy debate, see Frisch 1948-11-06a IDb.
IDA:1812 IDb:448, 1048
- 1848 1948-11-06 Koopmans, T. C.: Identification problems in economic model constructions, in Ragnar Frisch et al: *Autonomy of economic relations*, Oslo, memo DE-UO, 42-59.
A reproduction of a work published in Cowles Commission Discussion Papers, Statistics: 316. July 19, 1948. (Later published in *Econometrica*, 1949, pp 125-144, with a few clarifying changes.) One of the main contributions in the autonomy debate, see Frisch 1948-11-06a IDa.
IDA:448, 1048
- 1849 1948-11-06 Tinbergen, J.: League of Nations. Mr. Tinbergen's reply to Professor Frisch's note on "Statistical versus theoretical relations in economic macrodynamics", in Ragnar Frisch et al: *Autonomy of economic relations*, Oslo, memo DE-UO, 20-25.
J. Tinbergen's reply to Frisch 1938-07-17 IDa, see the annotations. The parts II, III and IV are reproduced in print as Tinbergen 1995 IDb (in Hendry and Morgan).
IDA:355, 1034 IDb:2075
- 1850 1948-12-11 Ottestad, Per: *Brev til Ragnar Frisch om Frisch 1948-11-21: "Noen prinsipielle og terminologiske merknader til den matematiske statistikk" [A letter to Ragnar Frisch on Frisch 1948-11-21: "Some fundamental and terminological remarks on mathematical statistics"]*, Oslo, memo DE-UO, 2 pp.
Cf Frisch 1948-11-21 IDa.
IDA:452, 1052
- 1851 1948-12-13 *Aftenposten*. Ed: Prisstigningen har kostet landet et valutatap på 1.7 milliard. 70 prosent av 3 års betalingsunderskudd skyldes uheldig prisutvikling [The price increase has cost the country a foreign currency loss of 1.7 billions. 70 percent of 3 years' payment deficit is due to unfavourable price movement], *Aftenposten*, Oslo.
A report of the study by Frisch presented in the memo from DE-UO dated 1948-10-21 IDa. Similar reports appeared in a number of other Norwegian newspapers, among others, 1948-12-13: *Dagbladet, Morgenposten, Vårt Land, Friheten*, 1948-12-14: *Arbeiderbladet, Nationen, Verdens Gang, Ukens Nytt, Bergens Arbeiderblad, Moss Avis, Nybrott Larvik*, 1948-12-22: *Eidsvoll Arbeiderblad*, and 1948-12-23: *Nordlands Framtid*.
IDA:446
- 1852 1949 Rao, Radhakrishna C.: A correction to "Note on a problem of Ragnar Frisch", *Econometrica*, Vol 17, 212-212.
See Rao 1947 IDa.
IDA:1823
- 1853 1949-01-04 *Morgenbladet*. Ed.: Et vitenskapelig falsum [A scientific forgery], *Morgenbladet*, Oslo.
A grim criticism of Frisch 1948-10-21 IDa, considering the task of computing the conjunctural monetary and real losses as completely impossible. A simple rationality check would, according to the Editor, tell us that the numerical solutions presented by Frisch are totally unreasonable. We are in fact, the Editor claims, facing a misuse of public funds as they are used in a dubious undertaking for a dubious purpose. Frisch replied in *Morgenbladet* 1949-01-06 IDb.
IDA:446 IDb:1657
- 1854 1949-01-06 *Morgenbladet*. Ed.: Professor Frisch' beregninger [Professor Frisch's computations], *Morgenbladet*, Oslo.
A rejoinder to Frisch 1949-01-06 IDa. The Editor accuses Frisch of putting more stress on the unfavourable parts of the trade cycles, less on the favourable parts. We should not permit ourselves to forget the positive side and depict the entire economic result of the post-war time in a staggering minus. Frisch gave a final word on the "scientific" forgery in 1949-01-08 IDb.

IDA:1657 IDb:1658

- 1855 1949-01-08 *Farmand*. Editor: Gravsten over mislykket politikk [A gravestone over unsuccessful politics], *Farmand*, Oslo.
The Editor comments on Frisch's analysis 1948-10-21 IDa. The numbers, the Editor claims, are in fact a sad monument over the unsuccessful politics conducted by the Labour Party.
IDA:446
- 1856 1949-01-13a *Morgenbladet*. Ed.: Professor Frisch og mumien i British Museum [Professor Frisch and the mummy in British Museum], *Morgenbladet*, Oslo.
The Editor claims (translated): "*Morgenbladet* has only pointed out the untenability of "scientific" computations on such a vague and uncertain basis as those made by Professor Frisch and his disciples. The Research Institute of Industrial Economics (RIIE) has found the case so aggravating that it has made a closer analysis, and has established in a very unbiased report that Professor Frisch has given a distorted picture of the case. *Morgenbladet* shares fully the view of RIIE, and wants to emphasize the untenability of computations from the Frischian institute that are floating so completely in the air and are liable of creating a misleading picture of the state of affairs. Everybody who is competent to judge and who finds Frisch' school unrealistic and harmful is entitled to require that our tax money is used for better purposes." Refer to *Morgenbladet*. Ed. 1949-01-13b IDa.
IDA:1857
- 1857 1949-01-13b *Morgenbladet*. Ed.: Det vitenskapelige falsum i sin rette belysning. Næringsøkonomisk Forskningsinstitutt angir "tapet" på prisstigningen til ca. 500 mill. kroner [The scientific forgery in its proper light. The Research Institute of Industrial Economics has estimated "the loss" caused by the price increase to approximately 500 mill. kroner], *Morgenbladet*, Oslo.
The Research Institute of Industrial Economics (RIIE) by its Director Morten Tuveng had presented an exposition and a judgement of the computations made at the University's Institute of Economics of conjunctural losses brought upon Norway from July 1945 to June 1948 inclusive. RIIE's conclusion: As far as there has been any loss at all caused by price increase the loss can at the very most amount to approx. 500 mill. kroner. *Morgenbladet* presents in the present editorial a detailed report of the exposition, seemingly considering it trustworthy. Refer to *Morgenbladet*. Ed. 1949-01-13a IDa.
IDA:1856
- 1858 1949-01-18 Bang, Thor: Norges "tap" ved de internasjonale prisendringer etter krigen [Norway's "loss" caused by the international price changes after the war], *Norges Handels- og Sjøfartstidende*, Oslo.
- 1859 1949-01-19 *Drammens Tidende, Buskeruds Blad*. Ed: Prognosenes fallitt [The failure of the prognoses], *Drammens Tidende Buskeruds Blad*, Drammen.
Criticism of Frisch 1948-10-21 IDa. Exposes a clear misapprehension. Frisch's reply 1949-01-26b IDb.
IDA:446 IDb:1663
- 1860 1949-01-20 Tuveng, Morten: Norges tap på den internasjonale prisutvikling. Svar til professor Frisch fra Næringsøkonomisk Forskningsinstitutt [Norway's loss caused by changes in the international price structure. Replay to Professor Frisch from The Research Institute of Industrial Economics], *Aftenposten*, Oslo.
Morten Tuveng, Director of the Research Institute of Industrial Economics, seems to stick to his original stands. See the annotations to *Morgenbladet* Ed. 1949-01-13a IDa and 1949-01-13b IDb, and Frisch 1949-01-17 IDc,
IDA:1856 IDb:1857 IDc:1659
- 1861 1949-01-21 Schønheyder, K.: Et lite spørsmål til Næringsøkonomisk Forskningsinstitutt [A simple question to The Research Institute of Industrial Economics], *Morgenbladet*, Oslo.
A contribution on the reaction to Frisch 1948-10-21 IDa on measuring national disadvantages caused by the international price movements. Refer to Tuveng 1949-01-20 IDa and Frisch 1948-10-21 IDb, 1949-01-17 IDc and 1949-01-18 IDd. .
IDA:1860 IDb:446 IDc:1659 IDd:1660

- 1862 1949-01-24 Petersen, Erling: Noen spørsmål til professor Frisch [Some questions to Professor Frisch] *Arbeiderbladet*, Oslo.
Professor Erling Petersen puts a number of questions, which are all related to a slip - almost a misprint - in the Norwegian translation of some points of the summary of Frisch 1948-10-21 IDa. Frisch's reply 1949-01-26a IDb.
Ida:446 IDb:1662
- 1863 1949-01-26 *Drammens Tidende, Buskeruds Blad*. Ed: Den tapte rikdom [The lost wealth], *Drammens Tidende Buskeruds Blad*, Drammen.
An editorial replay to Frisch 1949-01-26b IDa.
Ida:1663
- 1864 1949-01-29 Petersen, Erling: Prisutviklingen [The price movement], *Aftenposten*, Oslo.
A replay to Frisch 1949-01-26a IDa.
Ida:1662
- 1865 1949-02-05 *Farmand*. Editor: Vanstell [Mismanagement], *Farmand*, Oslo.
The Editor claims that Frisch's analysis (IDa) of national disadvantages caused by the after-war international price movement has been construed by the Labour Party press as indicating that the after-war economic troubles in Norway are mostly caused by factors outside the Government's control. The Editor finds this interpretation totally inadmissible. The Norwegian economy, he insists, would have been much better off if economic planners had not been substituted for experienced exporters. The main reason for the poor results is the governmental economic planning with price regulations and governmentally regulated two-sided barter trade. A number of examples are presented.
Ida:446
- 1866 1949-02-12 Wedervang, Frøystein: *Et brev til professor Frisch om økosirkfigurene presentert i Frisch (et al) 1948-03-08 [A letter to Professor Frisch on the ecocirc figures presented in Frisch (et al) 1948-03-08]*, Oslo, memo DE-UO, 3 pp.
Refer to Frisch 1948-03-08 IDa.
Ida:434, 936
- 1867 1949-02-15 Norges Grossisttidende: Norges tap på Frisch - overflødig arbeide. Megen lærdom og stor forvirring [Norway's loss on Frisch - a superfluous work. Much erudition and great confusion], *Norges Grossisttidende*, Oslo.
A sarcastic criticism of Frisch 1948-10-21 IDa. The contribution seems to suffer from severe misconceptions. Frisch replies in 1949-04-15 IDb.
Ida:446 IDb:1666
- 1868 1949-02-19 *Farmand*. Editor: De innrammede [The framed ones], *Farmand*, Oslo.
A protest against Frisch's use of the expression "Jernrammen" ["the iron frame"] in his article 1949-02-17 IDa.
Ida:1665
- 1869 1949-03-02 *Morgenbladet*. Ed.: Universitetet og professor Frisch [The University and Professor Frisch], *Morgenbladet*, Oslo.
The newspaper discussion on Norway's loss of income and liquidity caused by the international price movement has made the Editor of *Morgenbladet* concerned about the way Professor Frisch carries on his profession as a leader of the Institute of Economics. Translated: "We ask for a committee which factually and formally should be responsible for the institute's public behaviour. ... Alternatively we suggest that the institute changes its name, for example to Frisch's Institute of Economics, which then should become a pure private affair."
- 1870 1949-10-22 *Farmand*. Editor: Ureel eller uærlig? [Unrealistic or dishonest?], *Farmand*, Oslo.
The Editor comments on a discussion in Statsøkonomisk Forening of the lately effected devaluation of the Norwegian currency. Although two Professors of Economics from the University of Oslo had characterized the devaluation a concession resp. a capitulation to the price mechanism, the conclusion was not, according to the Editor, drawn sufficiently clear. He accuses Professor Frisch of having treated the price mechanism as if it were a

- small and unimportant case, thus having caused that a great number of graduates in economics had been sent out from the University of Oslo with a tiny if any understanding of the importance of the formation of prices in a free market.
- 1871 1949-12-14 *Verdens Gang*. Ed: Økonomisk vitenskap på avveie? [Economic science gone astray?], *Verdens Gang*, Oslo.
A young economist had been strongly concerned about some written material he had got hold of at the Institute of Economics, a letter on mathematical statistics and a tutorial working paper (Frisch 1949-11-12 IDa) presenting the solution of a simple Sub-Model when chosen values were given to the exogeneous variables. On the request of this worried young economist the Editor of *Verdens Gang* puts a couple of questions to Professor Ragnar Frisch: What is going on at the Institute of Economics? Also other newspapers produced critical editorials on the matter. Frisch responded in 1949-12-20 IDb.
IDA:486, 1166 IDb:1669
- 1872 1950 Haavelmo, Trygve: Remarks on Frisch's confluence analysis and its use in econometrics, in Tjalling C. Koopmans (ed): *Statistical inference in dynamic economic models*, New York, John Wiley & Sons, Inc., 258-265.
Refer to Frisch 1934f IDa.
IDA:58, 1026
- 1873 1950 Koopmans, T. C., and O. Reiersøl: The identification of structural characteristics, *The Annals of Mathematical Statistics*, Vol XXI, 165-181.
- 1874 1950-01-12 Knutsen, Reidar: *Ang. "Desisjonsmodellen"* [Regarding "the Decision model"] Oslo, memo DE-UO, 2 pp.
- 1875 1950-02-04 Amundsen, Arne, and Thor Johnsen: *De statistiske øvelser. (1. avdeling). Eksempler og oppgaver. Hefte 1* [The statistical exercises. (Division one). Examples and problems. Instalment 1], Oslo, memo DE-UO, 11 pp.
In consultation with Ragnar Frisch.
- 1876 1950-02-14 Amundsen, Arne, and Thor Johnsen: *De statistiske øvelser. (1. avdeling). Eksempler og oppgaver. Hefte 2* [The statistical exercises. (Division one). Examples and problems. Instalment 2], Oslo, memo DE-UO, 11 pp.
In consultation with Ragnar Frisch.
- 1877 1950-02-21 Amundsen, Arne, and Thor Johnsen: *De statistiske øvelser. (1. avdeling). Eksempler og oppgaver. Hefte 3* [The statistical exercises. (Division one). Examples and problems. Instalment 3], Oslo, memo DE-UO, 14 pp.
In consultation with Ragnar Frisch.
- 1878 1950-02-25 *Farmand*. Editor: Psykologiske faktorer og desisjonsmodeller [Psychological factors and decision models], *Farmand*, Oslo.
A discussion of a memorandum by Frisch on decision models, Frisch 1950-02-03 IDa. A further discussion is given in *Farmand*. Editor 1950-03-11 IDb.
IDA:496, 1174 IDb:1880
- 1879 1950-03-03 Amundsen, Arne, and Thor Johnsen: *De statistiske øvelser. (1. avdeling). Eksempler og oppgaver. Hefte 4* [The statistical exercises. (Division one). Examples and problems. Instalment 4], Oslo, memo DE-UO, 5 pp.
In consultation with Ragnar Frisch.
- 1880 1950-03-11 *Farmand*. Editor: Desisjonsmodeller og matematiske økonomer [Decision models and mathematical economists], *Farmand*, Oslo.
A further discussion on a memorandum by Frisch on decision models, Frisch 1950-02-03 IDa. The fore-going discussion: *Farmand*. Editor 1950-02-25 IDb.
IDA:496, 1174 IDb:1878
- 1881 1950-03-15 Amundsen, Arne, and Thor Johnsen: *De statistiske øvelser. (1. avdeling). Eksempler og oppgaver. Hefte 5* [The statistical exercises. (Division one). Examples and problems. Instalment 5], Oslo, memo DE-UO, 10 pp.
In consultation with Ragnar Frisch.

- 1882 1950-03-23 Amundsen, Arne, and Thor Johnsen: *De statistiske øvelser. (1. avdeling). Eksempler og oppgaver. Hefte 6 [The statistical exercises. (Division one). Examples and problems. Instalment 6]*, Oslo, memo DE-UO, 6 pp.
In consultation with Ragnar Frisch.
- 1883 1950-03-29 Amundsen, Arne, and Thor Johnsen: *De statistiske øvelser. (1. avdeling). Eksempler og oppgaver. Hefte 7 [The statistical exercises. (Division one). Examples and problems. Instalment 7]*, Oslo, memo DE-UO, 3 pp.
In consultation with Ragner Frisch.
- 1884 1950-04-13 Amundsen, Arne, and Thor Johnsen: *De statistiske øvelser. (1. avdeling). Eksempler og oppgaver. Hefte 8 [The statistical exercises. (Division one). Examples and problems. Instalment 8]*, Oslo, memo DE-UO, 10 pp.
In consultation with Ragnar Frisch.
- 1885 1950-04-21 Amundsen, Arne, and Thor Johnsen: *De statistiske øvelser. (1. avdeling). Eksempler og oppgaver. Hefte 9 [The statistical exercises. (Division one). Examples and problems. Instalment 9]*, Oslo, memo DE-UO, 9 pp.
In consultation with Ragnar Frisch.
- 1886 1950-04-26 Nevjen Svendsen, Kjell: *Avskrift av brev av 20.03.1950 fra stud. oecon. Kjell Nevjen Svendsen til professor Ragnar Frisch [Transcript of a letter of 1950-03-20 from stud. oecon. Kjell Nevjen Svendsen to Professor Ragnar Frisch]*, Oslo, memo DE-UO, 3 pp.
Nevjen Svendsen gives - at Frisch's request - an information on the Finnish landowner and agriculture chief officer Gustaf Rosenquist's new working principle (a profit share system) applied on his farm. Mr. Rosenquist was a collaborator of the Nobel Prize winner Professor A. I. Virtanen during the period of time when Professor Virtanen worked out the A.I.V.-method. Mr. Rosenquist carried out the practical experiments on his farm and travelled later around the world adapting the method, for which effort he was appointed agriculture chief officer.
- 1887 1950-05-02 Amundsen, Arne, and Thor Johnsen: *De statistiske øvelser. (1. avdeling). Eksempler og oppgaver. Hefte 10 [The statistical exercises. (Division one). Examples and problems. Instalment 10]*, Oslo, memo DE-UO, 8 pp.
In consultation with Ragnar Frisch.
- 1888 1950-05-05 Amundsen, Arne, and Thor Johnsen: *De statistiske øvelser. (1. avdeling). Eksempler og oppgaver. Hefte 11 [The statistical exercises. (Division one). Examples and problems. Instalment 11]*, Oslo, memo DE-UO, 10 pp.
In consultation with Ragnar Frisch.
- 1889 1950-05-12 Amundsen, Arne, and Thor Johnsen: *De statistiske øvelser. (1. avdeling). Eksempler og oppgaver. Hefte 12 [The statistical exercises. (Division one). Examples and problems. Instalment 12]*, Oslo, memo DE-UO, 4 pp.
In consultation with Ragnar Frisch.
- 1890 1950-09-11 Amundsen, Arne, and Thor Johnsen: *De statistiske øvelser. 12 hefter med eksempler og oppgaver for studerende til 1. avdeling av Økonomisk Embetseksamen [The statistical exercises. 12 instalments with examples and problems for students in division one of the final University degree in economics]*, Oslo, memo DE-UO, 103 pp.
In consultation with Ragnar Frisch.
- 1891 1950-09-28 : Letter to Professor Frisch from David Weintraub, Secretary of UN Economic, Employment and Development Commission, United Nations, 2 pp.
Mr. Weintraub informed Frisch of decisions taken by the UN's Economic and Social Council on comprehensive reorganizations of the work that up to date had been performed by the Economic and Employment Commission and its Sub-Commission on Employment and Economic Stability. Of special personal importance for Frisch was the Council's decision to abolish the Sub-Commission on Employment and Economic Stability. In a letter of reply to Mr. Weintraub (dated 9 January 1951) Frisch wrote inter alia: "I think that was the only sensible thing which could be done." (Copies of the letters are available

- at DE-UO; not for lending. Kopies are also kept at the University of Oslo Library.)
- 1892 1951 Næss, A.: Vitenskap og vurdering [Science and judgement], *Stimulator*, Vol 5 No 7, 5-6.
Comments to Frisch 1951a IDa. Frisch's rejoinder 1952e IDb.
IDA:113 IDb:121
- 1893 1951-02-16 Haavelmo, Trygve, and Hans Staehle: *The elements of Frisch's confluence analysis*, Oslo, memo DE-UO, 36 pp.
From a stensiled memorandum used in a seminar at Harvard University in 1941. Refer to Frisch 1934f IDa.
IDA:58, 1026
- 1894 1951-08-03 Johansen, Leif: *Notater i forbindelse med medianmodellen [Notes in connection with the Median Model]*, Oslo, memo DE-UO, 17 pp.
Read through and to some extent corrected by Ragnar Frisch. The notes deal chiefly with results achieved in working conferences by Ragnar Frisch, Hans Heli and Leif Johansen. Primarily the following sectors are treated: Foreign countries, storage, private households, production sectors, and consumption objects. In one of the paragraphs the problems of aggregating Engel elasticities and the introduction of such elasticities into the input-output model are discussed.
- 1895 1952-02-09 Johansen, Leif: *Merknader til Frisch's beleggfalltest [Remarks on Frisch's occurrence test]*, Oslo, memo DE-UO, 6 pp.
The work intends to point at possible applications of the hypothesis testing method developed in Frisch 1951-06-09 IDa.
IDA:545, 1075
- 1896 1953 Ohlsson, Ingvar: *On national accounting*, Stockholm, National Institute of Economic Research, Konjunkturinstitutet, 354 pp.
Refer to Frisch et al 1948-03-08 IDa.
IDA:434, 936
- 1897 1953-06-20 *Farmand*. Editor: Våre klareere [Our see-ers], *Farmand*, Oslo.
Reflections on Frisch's ability to construct relevant economic models, and on his impact on a number of age groups of economists.
- 1898 1953-11-14 *Farmand*. Editor: Ned med overklassen! [Down with the upper class!], *Farman*, Oslo.
A response evoked by Frisch 1953-11-10 IDa.
IDA:1693
- 1899 1953-11-16 Qvale, Knut: Klassementaliteten lever. Tilsvaer til professor Ragnar Frisch's innlegg i *Arbeiderbladet* 10. november 1953 [The class mentality is alive. A reply to Professor Ragnar Frisch's contribution in *Arbeiderbladet* November 10 1953], *Arbeiderbladet*, Oslo.
A critical reaction to Frisch 1953-11-10 IDa.
IDA:1693
- 1900 1954-06-16 Mukherjee, M.: *A scheme for collecting and utilizing data on the Indian economy*, Oslo, memo DE-UO, 18 pp.
With a foreword by Ragnar Frisch, see Frisch 1954-06-16 IDa. Mr Mukherjee gives some remarks on the possibility as well as the advantage of working by means of "A model of the Oslo-type". Next he presents two different macroeconomic decision models for India, a submodel and a median model. Both construction were presumably meant to serve as illustrations more than as tools for factual macroeconomic planning, although he expresses that the submodel "could be used for working out numerical solutions at a not too distant future; certainly before the next five year plan ... comes into operation in 1957-58".
IDA:603, 1192
- 1901 1954-08-16 Kreyberg, Hans Jacob: *Investeringsvarekrysløpet 1948 [Investment goods input-output 1948]*, Oslo, memo DE-UO, 11 pp.
The work is made in close connection with Heli 1955-12-02 IDa, see the annotations.
IDA:1908

- 1902 1955 Aukrust, Odd: *Nasjonalregnskap - Teoretiske prinsipper [National accounts - Theoretical principles]*, Oslo, Central Bureau of Statistics of Norway, 123 pp.
The work presents the theoretical principles upon which the Norwegian system of national accounts is based. Ragnar Frisch is referred to as one of the great contributors to the development of the theory. There are a number of references to Frisch, particularly in connection with presentations and discussions of the ecocirc system, cf. Frisch 1948-03-08 IDa and 1943c IDb with annotations.
IDa:434, 936 IDb:88, 934
- 1903 1955-01-28 Reiersøl, Olav: *A reconsideration of confluence analysis*, Oslo, memo DE-UO, 54 pp.
- 1904 1955-02-01 Bergan, Asbjørn: *Makroøkonomiske grunnbegreper. Økosirkssystemet [Basic macroeconomic concepts. The ecocirc system]*, Oslo, memo DE-UO, 77 pp.
A careful presentation of the principal basic concepts and relations used in macroeconomics and in Frisch's ecocirc system. Refer to Frisch et al 1948-03-08 IDa.
IDa:434, 936
- 1905 1955-03-03 Heli, Hans: Om arbeidet med samgripingsanalysen [On the work on the analysis of interaction], in Gratulasjon fra medarbeidere ved DE-UO [Congratulation from fellow workers at DE-UO]: *Tretten artikler til Ragnar Frisch på 60års dagen [Thirteen articles to Ragnar Frisch on his 60th anniversary]*, Oslo, memo DE-UO, III.1-III.7.
From the introductory paragraph (translated): "The present work deals with some issues which have come to the front in the research at the Department of Economics in the last few years, the analysis of interaction. The concept "analysis of interaction" should be taken to mean analysis based on input-output models extended with behavioral relations."
- 1906 1955-04-26 *Dagbladet*: Middelaldersk tankegang over årets finansdebatt! [Medieval way of thinking in the finance debate of the year!], *Dagbladet*, Oslo.
Reflections around some pronouncements made by Frisch in a lecture given in Sosialøkonomisk Samfunn on the current economic policy in Norway. See also *Vårt Land* 1955-04-27 IDa.
IDa:1907
- 1907 1955-04-27 *Vårt Land*. Editor: Frisk Frisch fra India [Provocative Frisch from India], *Vårt Land*, Oslo.
Further reflections in connection with *Dagbladet* 1955-04-26 IDa.
IDa:1906
- 1908 1955-12-02 Heli, Hans: *Det statistiske grunnlag for kryssløpsanalyse med sammenknytting av produksjonssektorer og forbrukergrupper i Norge [The statistical basis for input-output analysis where production sectors and receiver groups are connected]*, Oslo, memo DE-UO, 99 pp.
The main final work on the Median Model. The model version presented here embraces 30 production sectors, 8 income forms, 9 consumer groups, 30 investment sectors and 6 balancing sectors. It consists of a large number of equality and inequality conditions. It is eventually applied to the Norwegian economy of the year 1948, which means that for every defined relation the value(s) of the coefficient(s) and the constants (if any) are estimated from 1948 statistics of Norway, and further that the recorded 1948 economic values for Norway are properly divided and put into an extended input-output datum table with production sectors, consumer groups, sectors for gross investments in fixed real capital, several income forms, and finally some balancing sectors. Works closely connected with the present one are: Kreyberg 1954-08-16 IDa, Serck-Hanssen 1955-12-10 IDb and Rødseth 1956-01-04 IDc. The work on the Median Model has been in progress for several years, under Frisch's active leadership. A number of co-workers (listed in the memorandum) have been involved.
IDa:1901 IDb:1909 IDc:1911
- 1909 1955-12-10 Serck-Hanssen, Jan: *Beregning av norske husholds inntekter [Computation of the incomes of Norwegian households]*, Oslo, memo DE-UO, 34 pp.
The work is made in close connection with Heli 1955-12-02 IDa, see the annotations.

IDA:1908

- 1910 1956 Ezekiel, Hannan: Ragnar Frisch on the factor cost concept of national income, *Sankhyá: The Indian Journal of Statistics*, Vol 17, 245-245.
Comment to Frisch 1955e IDa. Frisch's rejoinder 1956e IDb.
IDA:133, 950 IDb:140, 951
- 1911 1956-01-04 Rødseth, Tor: *Beregning av norske husholds konsum [Computation of the consumption of Norwegian households]*, OSLO, memo DE_UO, 49 pp.
The work is made in close connection with Heli 1955-12-02 IDa, see the annotations.
IDA:1908
- 1912 1956-10-17 Thon, Sverre: Farlige forenklingstendenser [Dangerous tendencies of simplification], *Arbeiderbladet*, Oslo.
Critical comments on Frisch 1956-10-12 IDa.
IDA:1672
- 1913 1956-10-19 Colbjørnsen, Ole: Liberalisering og pengepolitikk [Liberalization and monetary policy], *Arbeiderbladet*, Oslo.
Argues against Frisch 1956-10-12 IDa.
IDA:1672
- 1914 1956-10-24 Tveite, Per Sivle: Forenklingstendensene og utenriksøkonomien [The tendencies of simplification and the foreign economy], *Arbeiderbladet*, Oslo.
Partly critical argumentation against Frisch 1956-10-12 IDa.
IDA:1672
- 1915 1956-11-15a : Formuesforøkelse som fradragspost [Property enhancement as tax-deductible item], *Arbeiderbladet*, Oslo.
Frisch is interviewed by *Arbeiderbladet* on a radical change of the tax régime, from income based to consumption based taxation. Frisch declares himself much in favour of a thorough-going discussion of such a change.
- 1916 1957-03-18 *Dagbladet*: Prof. Erling Petersen vil ikke anerkjenne Frisch [Prof. Erling Petersen is not willing to recognise Frisch], *Dagbladet*, Oslo.
Dagbladet (translated): Professor Petersen attracts attention at the university by a ridiculously surly article in a well-known encyclopaedia, printed the year after Frisch received the economists highest international distinction (Schumpeter's Memorial Prize). None of the impressive number of posts and marks of distinction received by Frisch are mentioned, and from Frisch's extensive written production only two rather unimportant contributions are reported. The readers of Petersen's article were in fact served with an awkward and reluctant piece of writing with an obvious tone of political antipathy. (Professor Petersen's article is reproduced in *Dagbladet*.)
- 1917 1957-10-05 Tuveng, Morten: Professor Frisch' enten - eller [Professor Frisch's either - or], *Aftenposten*, Oslo.
Critical reaction against Frisch 1957-10-04 IDa.
IDA:1674
- 1918 1958-08-01 Amundsen, Arne: *Den symmetrisk stabiliserte regresjon; generalisering til fire statistiske variable [The symmetrically stabilized regression; a generalization to four statistical variables]*, Oslo, memo DE-UO, 14 pp.
"The symmetrically stabilized regression" was defined by Ragnar Frisch in 1958-03-12 IDa.
IDA:676, 1098
- 1919 1959 Teghem, J.: L'analyse de la confluence, *Cahiers du Centre d'Etudes de Recherche Opérationnelle*, Vol 1 No 3, 5-34.
The article gives a complete account (in French) of the method of using bunch maps (developed by Frisch in his work on confluence analysis, 1934f IDa).
IDA:58, 1026
- 1920 1959-11-06 de Lange, Trygve: Kjetterske meninger om frihandel. Svar til professor Ragnar Frisch [Heretical opinions on free trade. A replay to Professor Ragnar Frisch], *Aftenposten*, Oslo.

- A reply to Ragnar Frisch 1959-11-03 IDa.
IDA:1678
- 1921 1959-11-06 Flaatten, Eivind: Et uærbødig angrep på professor Frisch [A disrespectful attack on Professor Frisch], *Aftenposten*, Oslo.
Editor Flaatten's attack on Professor Frisch was a reaction to Frisch's article 1959-11-03 IDa.
IDA:1678
- 1922 1960a Arrow, Kenneth J.: Ragnar Frisch's innsats i økonometrisk forskning [Ragnar Frisch's achievement in econometric research], *Statsøkonomisk Tidsskrift*, Oslo, Vol 74, 89-105.
A translation into Norwegian of Arrow 1960b IDa.
IDA:1923
- 1923 1960b Arrow, Kenneth J.: The work of Ragnar Frisch, econometrician, *Econometrica*, Vol 28, 175-192.
A translation into Norwegian published as Arrow 1960a IDa.
IDA:1922
- 1924 1960 Dhondt, André: Sur une généralisation d'un théorème de R. Frisch en analyse de la confluence, *Cahiers du Centre d'Etudes de Recherche Opérationnelle*, Bruxelles, Vol 2 No 1, 37-46.
Refer to Frisch's original publication on statistical confluence analysis 1934f IDa. See the annotations.
IDA:58, 1026
- 1925 1960 Johansen, Leif: *A multisectoral study of economic growth*, Amsterdam, North-Holland Publishing Company, IIX+177.
From the preface: "My indebtedness to the milieu of economic research created at the University of Oslo by my teachers, Professors Ragnar Frisch and Trygve Haavelmo, will be evident to anyone who is familiar with that background." Moreover, the treatise contains a number of references to contributions by Ragnar Frisch.
- 1926 1960-02-19 Schreiner, Per: *Aggregat-Refi-modeller. Del III [Aggregate Refi models. Part III]*, Oslo, memo DE-UO, 53 pp.
In cooperation with Ragnar Frisch and assisted by Eva-Karin Karlsen. Note on the front page (translated here): "Professor Frisch has not had any opportunity to control this memo before it was published."
- 1927 1961-01-10 Heli, Hans: En undersøkelse av investeringene i norsk økonomi [An investigation of the real investments in the Norwegian economy], Memo DE-UO, 181+3 pp.
The present memo and the memo by Arne Dag Johansen, 1961-01-15 IDa, are examples of works made in the intermediate period after the development of the Oslo Median Model and the RE-FI Model (Frisch 1956-01-02 IDb). Now it seems that Frisch and his co-workers have changed the focus towards how to construct a model which would deal properly with the real investments? In this way the works by Heli and Johansen can be considered preparatory to the construction of the Oslo Channel Model (Frisch 1961-05-13 IDc).
IDA:1929 IDb:636, 1215 IDc:763, 1301
- 1928 1961-01-15 Heli, Hans: Forord [Foreword], in Johansen 1961-01-15 *Investeringskryssløpet i norsk økonomi [The real investment input-output in the Norwegian economy]*, Oslo, memo DE-UO, I-V.
Foreword in Johansen 1961-01-15 IDa.
IDA:1929
- 1929 1961-01-15 Johansen, Arne Dag: *Investeringskryssløpet i norsk økonomi [The real investment input-output in the Norwegian economy]*, Oslo, memo DE-UO, 79 pp.
The memo includes a foreword by Hans Heli 1961-01-15 IDa. The entire work is a part of the planning model building programme at the Department of Economics, see the annotations to Heli 1961-01-10 IDb.

IDa:1928 IDb:1927

- 1930 1961-03-06 *Dagbladet*: Uredeligheten brer seg også i samfunnslivet. Professor Frisch krever sterkere etisk og moralsk opplæring i SKOLEN [The unfairness spreads also in civic life. Professor Frisch demands stronger ethic and moral training in SCHOOL], *Dagbladet*, Oslo.
Dagbladet gives an account of a remarkable contribution by Frisch in a debate in Oslo Arbeidersamfunn on "the labour movement and the school". Frisch had levelled a strong attack on the committee recommendation on indexed loans (refer to Frisch 1961n IDa) and on what he called the Government's breach of promise in the Havnås case (refer to Frisch 1961h IDb).
IDa:167 IDb:1696
- 1931 1961-08-18 *Dagbladet*: Fellesmarkedet - det uopplyste pengevelde. Professor Frisch voldsomt til felts mot norsk medlemskap [The Common Market - the unenlightened financialism. Professor Frisch takes violently the field against Norwegian membership], *Dagbladet*, Oslo.
 Partly report and partly reproduction of an article by Frisch in the newspaper *Orientering*, Oslo. Refer to Frisch 1961-08-19 IDa.
IDa:1701
- 1932 1961-09-09 Schreiner, Per: *Tidsformen for investeringers kapasitetsvirkning [The time configuration for the capacity effect of investments]*, Oslo, memo DE-UO, 41 pp.
 In cooperation with Ragnar Frisch.
- 1933 1962 Robinson, J.: Speech on 18 July 1962 at the Britain-Commonwealth-EFTA Conference in London, in *Draft of a multilateral trade clearing agency*, Oslo, memo 1962-07-20, DE-UO, 1-2.
 An explanation of the content of Frisch's address delivered the previous day, to "those people who have not been put through the process of taking examinations in academic economics" and therefore "might have not quite twigged what his point was." See Frisch 1962a IDa with annotations.
IDa:168, 1305
- 1934 1962-02-17 *Farmand*. Editor: Frisch og inflasjonen [Frisch and the inflation], *Farmand*, Oslo.
Farmand's Editor (signature H) gives a critical discussion of Frisch's article 1961n IDa on indexed loans.
IDa:167
- 1935 1962-02-21 Bakke, Egil: Planøkonomi i Fellesskapet. En merknad til professor Frisch [Economic planning in the Community. A remark to Professor Frisch], *Dagbladet*. Oslo.
 A remark to Frisch 1962-02-14 IDa. Frisch's reply 1962-02-23 IDb. See also Leif Johansen's apropos to Frisch/Bakke, 1962-03-07 IDc.
IDa:1710 IDb:1711 IDc:1937
- 1936 1962-02-22 Hegge, Hjalmar: Frisch, planøkonomien og Fellesmarkedet [Frisch, the planned economy and the Common Market], *Dagbladet*, Oslo.
 Critical remarks to Frisch 1962-02-14 IDa.
IDa:1710
- 1937 1962-03-07 Johansen, Leif: Tollmuren omkring Fellesmarkedet - og et à propos til Ragnar Frisch/Egil Bakke [The tariff barrier around the Common Market - and an apropos to Ragnar Frisch/Egil Bakke], *Dagbladet*, Oslo.
 An apropos to Bakke 1962-02-21 IDa and Frisch 1962-02-23b IDb.
IDa:1935 IDb:1711
- 1938 1962-03-16 *Tribune*. Ed.: Facts about the Common Market, *Tribune*, London.
 From the introduction: "Ragnar Frisch, Professor of economics and statistics..., has made several powerful contributions to this debate (about whether or not entering the Common Market). His most recent one is a devastating pamphlet, "The Western European Common Market", in which he provides answers to many of the questions that have been raised in

- the British debate. ..." Frisch 1961-10b IDa seems to have been *Tribune's* source.
IDA:1705
- 1939 1962-04-07 *Norra Skåne*: Norsk professor: Romavtalet är en strävan att återuppliva det oupplysta penningväldet [Norwegian Professor: The Treaty of Rome is an endeavour to revive the unenlightened financialism], *Norra Skåne*, Helsingborg.
The article is signed Gabriel. Frisch 1961-10b IDa seems to have been the source.
IDA:1705
- 1940 1962-06-02 Auestad, Anne-Marie: Åpent brev til professor Ragnar Frisch [An open letter to Professor Ragnar Frisch], *Orientering*, Oslo.
- 1941 1962-08-31 *Stavanger Aftenblad*, Editor: Logikk eller morsomhet [Logic or a joke], *Stavanger Aftenblad*, Stavanger.
An editorial note referring to Frisch 1962-08-31 IDa.
IDA:1726
- 1942 1962-09-01 Lange, Halvard: Svar til professor Ragnar Frisch. Fra utenriksminister Halvard Lange [Reply to Professor Ragnar Frisch. From the Foreign Secretary Halvard Lange], *Dagbladet*, Oslo, Vol 94.
Lange's reply to Frisch 1962-08-31 IDa. Frisch gives a rejoinder in Frisch 1962-09-08 IDb. The present article by Lange as well as Frisch's contributions were reprinted in a number of Norwegian newspapers.
IDA:1726 IDb:1727
- 1943 1962-09-03 *Adresseavisen*. Ed: Det store vi [The great we], *Adresseavisen*, Trondheim.
An editorial contribution dealing with Frisch 1962-08-31 IDa.
IDA:1726
- 1944 1962-09-03 *Verdens Gang*. Ed: Ragnar Frisch retter grov beskyldning mot Halvard Lange - Enda han på forhånd måtte vite den ikke var riktig [Ragnar Frisch brings a rude accusation against Halvard Lange. Although he surely knew it was not true], *Verdens Gang*, Oslo,
An editorial recrimination against Ragnar Frisch. Refer to Frisch 1962-08-31 IDa. The contribution was printed as an editorial in several newspapers.
IDA:1726
- 1945 1962-09-04 *Stavangeren*, Editor: Arrogant profet [An arrogant prophet], *Stavangeren*, Stavanger.
A spiteful criticism of Frisch after his dispute with the Foreign Secretary Halvard Lange, refer to Frisch 1962-08-31 IDa and 1962-09-08 IDb.
IDA:1726 IDb:1727
- 1946 1962-09-05 Lange, Halvard: Norge foran Fellesmarkedet [Norway before the Common Market], *Dagbladet*, Oslo.
The article is a Norwegian translation (from French by *Dagbladet* at the suggestion of the the author) of an article by the Foreign Secretary Halvard Lange in *Courrier Socialiste Européen* (while Frisch in 1962-08-31 IDa referred to the same article in *German* published in *Sozialistische Europa-Korrespondenz* No 12, 1962). Frisch 1962-08-31 IDa accused Lange for having presented in the present article and elsewhere a picture liable to make the world press believe that a majority of the Norwegian population was in favour of Norwegian membership in EEC, while several Gallup polls indicated, at least as judged by the opponents, a clear and growing majority *against* Norwegian membership. Refer also to Lange's reply 1962-09-01 IDb and to Frisch's rejoinder 1962-09-08 IDc.
IDA:1726 IDb:1942 IDc:1727
- 1947 1962-09-10 *Morgenbladet*, Editor: Frisch og Gallup [Frisch and Gallup poll], *Morgenbladet*, Oslo.
- 1948 1962-11-28 *Arbeiderbladet* Ed.: De FAKTISKE forhold. En dokumentasjon [The actual facts. A documentation], *Arbeiderbladet*, Oslo.
The editor argues against Frisch's accusations in Frisch 1962-11-28b IDa.
IDA:1729

- 1949 1963 Edvardsen, Kåre: Valg av investeringsprosjekter for å nå de mål som er gitt for den økonomiske politikk [Selection of investment projects in order to achieve the objectives given for the economic policy], *Eripainos Taloustieteellisen Seuran vuosikirjasta 1963 [The yearbook of Nationalekonomiska Sällskapet 1963]*, Helsinki, printed by Suomalaisen Kirjallisuuden Kirjapaino Oy, Helsinki 1964, 39-57,
A lecture delivered before the work conference in Nationalekonomiska Sällskapet in Helsinki November 23 1963. A simple selection model of the Channel Model type is developed and presented in order to illustrate important aspects of the Oslo Channel Model. An English translation is issued as Edvardsen 1965 IDa. Also issued as a memo from DE-UO, Edvardsen 1965-01-23 IDb, and as reprint No 5 from DE-UO. A more comprehensive presentation of the Oslo Channel Model proper is found in e.g. Frisch 1962g IDc, see the annotations.
IDa:1956 IDb:1957 IDc:172, 1309
- 1950 1963 Linnamo, Jussi: Diskussion, *Eripainos Taloustieteellisen Seuran vuosikirjasta 1963 [The yearbook of Nationalekonomiska Sällskapet 1963]* Helsinki, printed by Suomalaisen Kirjallisuuden Kirjapaino Oy, Helsinki 1964, 58-59,
Mr. Linnamo puts a number of important questions to Edvardsen's lecture on the Oslo Channel Model, see Edvardsen 1963 IDa.
IDa:1949
- 1951 1963-04-04 Alstadheim, H.: *Matematisk teori for multilateral clearing, Del II [Mathematical theory for multilateral clearing, Part II]*, Oslo, memo DE-UO, 39 pp.
See Frisch 1963-02-07 IDa and Alstadheim 1967 IDb. See also annotations to Frisch 1963d IDc.
IDa:781, 1319 IDb:1962 IDc:176, 1315
- 1952 1963-06-15 Edvardsen, Kåre: *En analyse av import- og eksportstrukturen i Norge. Hefte I [An analysis of the import- and export structure in Norway. Volume I]*, Oslo, memo DE-UO, 205 pp.
Stated in the preface: The work presented in this volume and in the collection of tables, Volume II (Edvardsen 1966-06-15 IDa), comes within a research project of the Institute of Economics, University of Oslo. The research project and the present work bear the same title, "An analysis of the import- and export structure of Norway".
IDa:1960
- 1953 1963-10-17 Fraser, T. C.: *New ways of planning for growth in Britain*, Oslo, memo DE-UO, 15 pp.
With a foreword by Ragnar Frisch, see Frisch 1963-10-63 IDa.
IDa:784, 1321
- 1954 1963-12-28 Edvardsen, Kåre: *Nonplex-metoden: Admissibilitetssøking innenfor en basisform [The Nonplex method: Admissibility seeking within a basic form]*, Oslo, memo DE-UO, 8 pp.
Refer to Frisch 1963-10-04 IDa and 1963-11-14 IDb.
IDa:783, 1485 IDb:785, 1486
- 1955 1965 Alstadheim, H.: *Complete counting of variables, equations and degrees of freedom in PM I. ("Pittsburgh Model 1")*, Oslo, memo DE-UO, 17 pp.
Assisted by Åge Sørsveen. The Pittsburgh Model 1 is developed by Frisch. It is informed in the introduction that the present memo alone is insufficient for a proper understanding of the model. It is referred in particular to Frisch 1961-05-13 IDa and to a Memorandum from the Institute of National Planning in Cairo, Frisch 1963-12-13, titled "How to plan". There is no preference function included in the present presentation; the intention is to focus on only the so-called structural relations.
IDa:763, 1301
- 1956 1965 Edvardsen, Kåre: Selection of investment projects from given aims for economic policy, *Economics of Planning*, Vol 5, 10-28.
A lecture delivered before the work conference in Nationalekonomiska Sällskapet in Helsinki November 23 1963. A simple selection model of the Channel Model type was developed and presented in order to illustrate important aspects of the Oslo Channel

- Model. Originally issued in Norwegian as Edvardsen 1963 IDa, see the annotations for more references.
Ida:1949
- 1957 1965-01-23 Edvardsen, Kåre: *Valg av investeringsprosjekter ut fra gitte mål for den økonomiske politikk [Selection of investment projects from given aims for the economic policy]*, Oslo, memo, DE-UO, 20 pp.
A lecture delivered before the work conference in Nationalekonomiska Sällskapet in Helsinki November 23, 1963. Originally issued (with a slightly different heading) as Edvardsen 1963 IDa, see the annotations for more references.
Ida:1949
- 1958 1966 Bergson, Abram: *Essays in normative economics*, Cambridge Massachusetts, The Belknap University Press of Harvard U. P., pp 93-122.
Chapter 4, "Real income, expenditure proportionality and Frisch's *New methods*" (pp 93-122), gives a thorough discussion of Frisch 1932g IDa. Also a point in Frisch's index numbers treatise 1936a IDb is focused (pp 94-95).
Ida:37, 815, 1020 IDb:63, 819
- 1959 1966 Malinvaud, E.: *Statistical methods of econometrics*, Amsterdam, North-Holland Publishing Company, 631 pp.
The first chapter of the book is linked to Frisch's approach in his work on correlation and scatter, Frisch 1929a IDa, and to his work on confluence analysis, Frisch 1934f IDb.
Ida:17, 1012 IDb:58, 1026
- 1960 1966-06-15 Edvardsen, Kåre: *En analyse av import- og eksportstrukturen i Norge. Hefte II [An analysis of the import- and export structure of Norway. Volume II]*, Oslo, memo DE-UO, 95 pp.
A collection of tables for the analyses in Volume I, Edvardsen 1963-06-15 IDa.
Ida:1952
- 1961 1966-09-13 Bojer, Hilde: *Notat om sammenhengen mellom Richard Stones lineære utgiftsfunksjoner og Ragnar Frisch's "Complete scheme for computing all direct and cross demand elasticities..." [Note on the connection between Richard Stone's linear expenditure functions and Ragnar Frisch's "Complete scheme for computing all direct and cross demand elasticities.."]*, Oslo, memo DE-UO, 35 pp.
Refer to Frisch 1959a IDa with annotations. The present note was reproduced in English as Bojer 1972 IDb.
Ida:147, 849, 921 IDb:1977
- 1962 1967 Alstadheim, H.: *Mathematical theory for a multilateral trade clearing agency, Economics of Planning*, Vol 7, 106-118.
The article was written and issued in connection with Ragnar Frisch's article Frisch 1967b IDa in the same volume of *Economics of Planning*. See also Frisch 1963-02-07 IDb and Alstadheim 1963-04-04 IDc. Reissued together with Frisch 1967b as reprint No 36 from DE-UO.
Ida:205, 1351 IDb:781, 1319 IDc:1951
- 1963 1967 Boot, J. C. G.: *Theory of production*. By Ragnar Frisch, *Econometrica*, Vol 35, 163-164.
A review of Frisch's Theory of production, Frisch 1965k IDa.
Ida:192, 891
- 1964 1967 Fredens, Svend: *Ragnar Frisch: Theory of production*. D. Reidel Publishing Company, Dordrecht 1965, *Nationaløkonomisk Tidsskrift*, nr 3-4 1967, 208-211.
A book review.
- 1965 1967 Hansen, Bent: *Lectures in economic theory. Part II: The theory of economic policy and planning*, Lund Sweden, Studentlitteratur, 139 pp.
Bent Hansen deals with Frisch's macroeconomic planning models in Lecture 18, pp 121-130. The discussion is mostly related to Frisch's "How-to-plan" model (presented in Frisch's Cairo memo 1963-12-13b IDa). On pp 124-126 Hansen gives a comparative

- discussion of Tinbergen's "stage solution" and Frisch's "simultaneity" view.
IDA:789, 1324
- 1966 1967-05-24 Petersen, Erling: Uberettiget hastverk? [Unjustified haste?], *Aftenposten*, Oslo.
 Professor Erling Petersen, member of the Storting (the Norwegian Parliament), responds to Frisch (and Johansen) 1967-05-23 IDa.
IDA:1738
- 1967 1968 Allen, R. G. D.: Maxima and minima: Theory and economic applications, *Econometrica*, Vol 36, 210-210.
 Review of Frisch 1966f IDa.
IDA:197, 1495
- 1968 1969 Edvardsen, Kåre: Ragnar Frisch's vitenskapelige innsats [Ragnar Frisch's scientific achievement], *Sosialøkonomen*, Vol 23 No 9, 2-9 and 52-52.
 For a somewhat more elaborated contribution in English, see Edvardsen 1970 IDa.
IDA:1974
- 1969 1969 Johansen, Leif: Ragnar Frisch's contributions to economics, *Swedish Journal of Economics*, Vol 71, 302-317.
- 1970 1969-10-27 Lundberg, Erik: The Alfred Nobel Memorial Prize in Economic Science, in *Traduction des Discours a la Fête Nobel 1969*, Stockholm, The Nobel Foundation 1969, 49-55.
 Professor Erik Lundberg presents the main reasons for having awarded Ragnar Frisch and Jan Tinbergen jointly the (first) Alfred Nobel Memorial Prize in Economic Science: They have constructed mathematical models to strategic economic relations, and specified these quantitatively with the help of statistical analysis of time series. Key concepts: Ends and means problems; lending economic theory mathematical stringency in a form that permits empirical quantification and statistical testing. Specific referenses as regards Frisch's achievements: the propagation and impulse article; "Frisch was before his time in the building of mathematical models"; constructing theories for stabilization policy; the ecocirc system; developing decision models for economic planning; devising mathematical programming methods with a view to exploiting modern computer techniques.
- 1971 1969-10-28 *Aftenposten*: Brobygging mellom økonomisk teori og statistisk virkelighet [Bridge-building between economic theory and statistical reality], *Aftenposten*, Oslo.
Aftenposten brings the news that Ragnar Frisch and Jan Tinbergen have jointly been awarded the (first) Alfred Nobel Memorial Prize in Economic Science, and recapitulates the reasons given by the Swedish Scientific Academy (see the annotations to Lundberg 1969-10-27 IDa). A relatively copious remark by Professor Bertil Ohlin (Chairman of the Academy's Prize Committee) and a short comment by Professor Ragnar Bentzel (Secretary of the same Committee) are passed on by *Aftenposten's* Stockholm correspondent. In a conversation with *Aftenposten* Ragnar Frisch says himself deeply grateful for having been found worthy of receiving the prize. He gives some reflections on what might have been the main reasons for the Academy's decision, and also some glimpses from his own lifelong work as an economist. Furthermore *Aftenposten* presents viewpoints from the Professors Leif Johansen and Ole Myrvoll.
IDA:1970
- 1972 1969-10-28 Petersen, Erling: Nobel-pris i økonomi [Nobel Prize in economics], *Aftenposten*, Oslo.
- 1973 1970 De Finetti: L'economia in termini matematici, *Scienza & Tecnica 70 - annuario della Enciclopedia della Scienza e della Tecnica - estratti*, Arnoldo Mondadori Editore, 60-63.
 A bibliographical presentation of Ragnar Frisch and Jan Tinbergen occasioned by the award of the 1969 Nobel Memorial Prize. The issue of the periodical is available at UB Oslo (at DE-UO), not for lending.
- 1974 1970 Edvardsen, Kåre: A survey of Ragnar Frisch's contribution to the science of

- economics, *De Economist*, Jaargang 118, 175-208.
A contribution in Norwegian, Edvardsen 1969 IDa, formed the basis for the present article.
Ida:1968
- 1975 1971 Pollak, Robert A.: The theory of the cost-of-living index, *Research Discussion Paper No 11*, Washington D. C., Office of Prices and Living Conditions, U. S. Bureau of Labor Statistics,
Published in Diewert, W. E. and C. Montmarquette (eds) 1983: *Price level measurement*, Ottawa, Minister of Supply and Services Canada, 87-161. Also in Diewert, W. E. (ed) 1990: *Price level measurement*, Amsterdam, North Holland, 5-77. See the annotations to Frisch 1936a IDa.
Ida:63, 819
- 1976 1972 Afriat, Sidney N.: The theory of international comparisons of real income and prices, in Daly, D. J. (ed): *International comparisons of prices and output*, New York, National Bureau of Economic Research, Columbia University Press, 13-69.
See the annotations to Frisch 1936a IDa.
Ida:63, 819
- 1977 1972 Bojer, Hilde: A note on the relationship between linear expenditure functions and Frisch's "complete scheme", *Swedish Journal of Economics*, Vol 3, 390-393.
A presentation in Norwegian is given in Bojer 1966-09-13 IDa. Also issued as reprint No 98 from DE-UO.
Ida:1961
- 1978 1973b Johansen, Leif: Ragnar Frisch (1895-1973), *Economics of Planning*, Vol 11 - 1971, 1-3.
An obituary.
- 1979 1973a Lotti, Eraldo: New techniques of industrial organization. An extension of some ideas of Ragnar Frisch, *l'Impresa*, Vol 15, 701-708.
A translation into English by Francesco Alfonso of the Italian original Lotti 1973b IDa, see the annotations.
Ida:1980
- 1980 1973b Lotti, Eraldo: Nuove tecniche di organizzazione della produzione. Estensione di alcuni concetti di Ragnar Frisch, *l'Impresa*, Vol 15, 701-708.
The author discusses practical applications of the mathematical framework of Frisch's *Theory of production* (Frisch 1965k IDa) in single-corporation cases where the corporation is organized in cost centers. An English translation is published in the same issue of *l'Impresa*, printed parallel to the original text. See Lotti 1973a IDb.
Ida:192, 891 IDb:1979
- 1981 1974a Johansen, Leif: Előszó Ragnar Frisch válogatott tanulmányainak magyar nyelvű kiadásához, in Frisch, Ragnar: *Kvantitatív és dinamikus közgazdaságtan*, Budapest, Közgazdasági és Jogi Könyvkiadó, 7-10.
The preface in Frisch 1974f IDa.
Ida:227
- 1982 1974b Johansen, Leif: Establishing preference functions for macroeconomic decision models. Some observations on Ragnar Frisch's contributions, *European Economic Review*, Vol 5, 41-66.
An introductory note: "The article reviews Ragnar Frisch's contributions to solving the problem of establishing preference functions for macroeconomic decision models, and compares Frisch's approach with other possible approaches to the problem. The article considers mainly linear and quadratic preference functions. In discussing the methodology attention is drawn to the analogy with problems in the analysis of consumer demand."
Reissued as reprint No 126 from DE-UO. Refer to Frisch 1961i IDa, see the annotations.
Ida:163, 1105, 1298
- 1983 1974c Johansen, Leif: Ragnar Frisch közgazdasági munkássága [Ragnar Frisch's

- contributions to economics], in Frisch, Ragnar: *Kvantitatív és dinamikus közgazdaságtan*, Budapest, Közgazdasági és Jogi Könyvkiadó, 13-32.
Translation by Ferenc Káposztás of Leif Johansens article on Frisch's contributions to economics, Johansen 1969 IDa.
IDA:1969
- 1984 1974 Samuelson, Paul A.: Remembrances of Frisch, *European Economic Review*, Vol 5, 7-23.
Opening note: The paper reviews Frisch's enormous contribution in the progress of economics over the last decades. Special attention is paid to Frisch's work on macrodynamic modelling, utility measurement from demand data, index number theory and axiomatics in economics.
- 1985 1974 Samuelson, Paul A., and Subramanian Swamy: Invariant economic index numbers and canonical duality: Survey and synthesis, *American Economic Review*, Vol 64, 942-952.
See the annotations to Frisch 1936a IDa.
IDA:63, 819
- 1986 1974 Tinbergen, J.: Ragnar Frisch's role in econometrics - A sketch, *European Economic Review*, Vol 5, 3-6.
Tinbergen's tribute to Ragnar Frisch.
- 1987 1976 Long, Frank: Introduction, in Long, Frank (ed): *Economic planning studies. A collection of essays by Ragnar Frisch, International studies in economics and econometrics, Vol 8*, Dordrecht-Holland, Boston-USA, D. Reidel Publishing Company, IX-XIII.
- 1988 1976 Long, Frank (ed): *Economic planning studies. A collection of essays by Ragnar Frisch, International studies in economics and econometrics, Vol 8*, Dordrecht-Holland, Boston-USA, D. Reidel Publishing Company, 195 pp.
Preface by Jan Tinbergen (Tinbergen 1976 IDa). Introduction by Frank Long (Long 1976 IDb).
IDA:1990, 2152 IDb:1987, 2150
- 1989 1976 Reiersøl, Olav: Ragnar Frisch, 1895-1973, *International Statistical Review*, Vol 44, 178-179.
An obituary notice. The author has limited himself to what he considers to be Frisch's most important publications in the statistical field.
- 1990 1976 Tinbergen, J.: Preface, in Long, Frank (ed): *Economic planning studies. A collection of essays by Ragnar Frisch, International studies in economics and econometrics, Vol 8*, Dordrecht-Holland, Boston-USA, D. Reidel Publishing Company, 1-1.
- 1991 1977 Ames, Edward, and Egon Neuberger: Frisch and Tinbergen on economic planning: Review article, *Journal of Comparative Economics*, Vol 1, 195-212.
The authors seem to consider Frisch's and Tinbergen's works on macroeconomic planning to be fairly close to each other. They write in their abstract: "The Frisch-Tinbergen model of central economic planning represents the first important non-Soviet planning model. This constrained optimization model makes the central planner a staff adviser to the Premier. The central planner explores the Premier's preference ordering and recommends instruments that maximize the Premier's utility, given the constraints within an econometric model. This model assumes Premiers to have no preference over instruments or models and that planning agencies have neither internal structure nor operating responsibilities. The paper explores the consequences of removing such limiting assumptions, utilizing the results of more recent contributions to the theory of economic systems."
- 1992 1977 Nordvik, Helge W.: Krisepolitikken og den teoretiske nyorientering av den økonomiske politikken i Norge i 1930-årene [The crisis policy and the new theoretical orientation of the economic policy in Norway during the 1930s], *Historisk Tidsskrift*, No 3, pp 289-317.
- 1993 1977-04-21 Andvig, J. Chr.: *Den historiske bakgrunnen til Frisch's analyse av forholdet*

- sak og vurdering [The historical background of Frisch's analysis of the relation between scientific statements and value judgements]*, Oslo, memo DE-UO, 92 pp.
Refer to Frisch 1936f IDa.
Ida:67
- 1994 1978 Andvig, J. Chr.: Wicksell's influence on Frisch's macroeconomics in the thirties, *The Scandinavian Journal of Economics*, Vol 80, 140-167.
Reprinted as Andvig 1979 IDa (in Strøm and Thalberg), see the annotations. Also issued as reprint No 175 from DE-UO.
Ida:1995
- 1995 1979 Andvig, J. Chr.: Wicksell's influence on Frisch's macroeconomics in the thirties, in Strøm, S. and B. Thalberg (eds): *The theoretical contributions of Knut Wicksell*, London and Basingstoke, The Macmillan Press Ltd, 20-39.
Quotation from Frisch 1952c IDa (Frisch on Wicksell): "There is probably no other economist who has had so much influence on my thinking, at least not in monetary theory." Originally published as Andvig 1978 IDb.
Ida:119 IDb:1994
- 1996 1979 Johansen, Leif: Frisch, Ragnar, in Sills, David L. (ed): *International Encyclopedia of the Social Sciences, Biographical Supplement, Vol 18*, New York and London, Macmillan Publishing Co., Inc. and Collier Macmillan Publ.,
A biography.
- 1997 1979 Long, Frank: Ragnar Frisch: Econometrics and the political economy of planning, *American Journal of Economics and Sociology*, Vol 38, 141-153.
From an introductory abstract: "... This paper ... argues that although planning was not a special feature of *classical political economy*, Frisch nonetheless shared in the broader social and moral aspirations of political economy; for Frisch, these were the ultimate objectives of planning. To this end the paper discusses Frisch's approach to the formalization of society's *preferences*. This approach involves an interactive mechanism in which politicians and technical experts participate. Against the political economy aspirations of Frisch, some *behavioral* shortcomings of his framework are briefly discussed."
- 1998 1980 Bjerkholt, Olav, and Svein Longva: *MODIS IV. A model for economic analysis and national planning, Samfunnsøkonomiske studier nr. 43*, Oslo, Central Bureau of Statistics of Norway (Statistics Norway), 186 pp.
The economic research activity of Statistics Norway (earlier Central Bureau of Statistics) has been directed to a considerable extent towards developing appropriate tools for economic policy analysis. A macro-economic model called MODIS (or rather a group of models, from MODIS I to MODIS IV) was the most prominent result of this development. The present publication gives a thorough study of the structure and design of MODIS IV. Frisch's contribution to the theory of economic planning and econometric model building is dealt with: "His efforts in this field were not limited to theoretical studies, he initiated a number of pioneering attempts to build models of the Norwegian economy at a time when the available data and computing equipment could not do justice to his ambitious aims. Some of these early models of the 1950's, in particular the Oslo Median Model, see Frisch 1956, are direct precursors of the first MODIS model." (p 12). Refer to Frisch 1955b IDa, 1955f IDb, 1956-01-02 IDc, and 1956-10-10 IDd (Frisch 1956 in the quotation above).
Ida:130, 949, 1200 IDb:134, 1201 IDc:636, 1215 IDd:647, 1220
- 1999 1980 Blatt, John M.: On the Frisch model of business cycles, *Oxford Economic Papers*, Vol 32, 467-479.
- 2000 1980-02-15 Seierstad, Atle: *Profittmaksimering og kostminimering for produksjonsfunksjoner med først tiltagende, så avtagende, utbytte [Profit maximization and cost minimization for production functions with first increasing and next decreasing returns to scale]*, Oslo, memo DE-UO, 22 pp.
With a summary in English.
- 2001 1980-04-16 Andvig, Jens Christopher: *Ragnar Frisch and monetary reform movements in*

- Norway in the thirties*, Oslo, memo DE-UO, 50 pp.
The author's abstract: "In 1934 Ragnar Frisch published a long and neglected article in *Econometrica* on Circulation Planning. The article was both a pioneer work in the field of linear economics, the economics of planning, the study of exchange processes, and an imaginative, but unrealistic monetary reform proposal. This paper describes some of the main ideas of the article and relates them to their Norwegian historic setting." See the annotations to Frisch 1932-12-12 IDa and 1934a IDb.
IDA:333 IDb:54, 1136
- 2002 1981a Andvig, Jens Christopher: Ragnar Frisch and business cycle research during the interwar years, *History of Political Economy*, Vol 13, 695-725.
Also as reprint No 243 from DE-UO.
- 2003 1981b Andvig, Jens Christopher: Ragnar Frisch and business cycle research during the interwar years, *History of Political Economy*, Vol 13, 695-725.
Also issued as reprint No 243 from DE-UO.
- 2004 1981 Diewert, W. E.: The economic theory of index numbers: A survey, in Deaton, Angus (ed): *Essays in the theory and measurement of consumer behaviour: In honour of Richard Stone*, Cambridge, Cambridge University Press, 163-208.
See the annotations to Frisch 1936a IDa.
IDA:63, 819
- 2005 1982 Andvig, Jens Chr.: Keynes and Norway; the case of Ragnar Frisch, *The Cambridge Review*, Vol ?, ?-?
- 2006 1982-01-14 Hylland, Aanund: *Local choice and global preference - A note on a paper by Ragnar Frisch*, Oslo, memo DE-UO, 15 pp.
A note on Frisch 1959a IDa (A complete scheme ...). Hylland presents Frisch's results "in a hopefully more accessible form"; he discusses the problem and the results in greater detail, and gives a proof which consists of a specific example.
IDA:147, 849, 921
- 2007 1983 Christ, Carl F.: The founding of the Econometric Society and *Econometrica*, *Econometrica*, Vol 51, 3-6.
An excerpt from "History of the Cowles Commission 1932-1952" by Carl F. Christ, published in *Theory and measurement: A twenty-year research report*, Chicago, Cowles Commission for Research in Economics, 1952. See also Cowles 1960 IDa and Beaud and Dostaler 1997a IDb.
IDA:2133 IDb:2085
- 2008 1984 Bergh, Trond, and Tore J. Hanisch: *Vitenskap og politikk. Linjer i norsk sosialøkonomi gjennom 150 år [Science and politics. Lines of Norwegian economics through 150 years]*, Oslo, H. Aschehoug & Co. (W. Nygaard), 270 pp.
Chapter IV of the book (pp 145-197) is headed "Frisch-revolusjonen, 1930-1950" ["The Frisch revolution, 1930-1950"]. The next chapter, the last one, deals *inter alia* with the following subjects: "Frisch, Haavelmo og Leif Johansen", "Redskaper for makroøkonomisk planlegging" ["Tools for macro-economic planning"], "Leif Johansen og MSG", "Modeller og politikk" ["Models and politics"], "Mål og midler i styring og planøkonomi" ["Ends and means in overall economic management and planned economy"].
- 2009 1985 Andvig, J. Chr.: Ragnar Frisch's makroøkonometriske forskningsprogrammer - En gjenoppliving av gamle positivistiske idealer [Ragnar Frisch's macro-econometrical research programs - A revival of old positivistic ideals], *Nordisk Tidskrift för Politisk Ekonomi*, 1985 No 18, 47-61.
- 2010 1985 Blaug, Mark: Frisch, Ragnar A. K. (1895-1973), in Mark Blaug: *Great economists since Keynes. An introduction to the lives & works of one hundred modern economists*, Brighton, Sussex, Wheatsheaf Books Ltd, 66-67.
A brief bibliographical and biographical note.
- 2011 1985 Christ, Carl F.: Early progress in estimating quantitative economic

- relationships in America, *The American Economic Review*, Vol 75, 39-52.
 The main question repeatedly encountered in the article is the celebrated identification problem of whether a line fitted to data for price and quantity is an estimate of a demand or a supply equation, or a line without any theoretical significance. In chapter VII: The solution of the identification problem (46-50), Christ deals with contributions by the following authors: Marcel Lenoir 1913, Philip Wright 1915 and 1928, Elmer J. Working 1927 IDa, Henry Moore 1925, Sewal Wright 1925, Mordecai Ezekiel 1928, Henry Schultz 1928 and 1938, Wassily W. Leontief 1929 IDb, Arthur C. Pigou 1930 IDc, Jan Tinbergen 1930 and 1938 (see Tinbergen 1948-11-06 IDd with annotations), Ragnar Frisch 1933f IDe and 1938-07-17 IDf, Trygve Haavelmo 1943 and 1944 IDg, Herman Rubin and Roy B. Leipnik 1950, Tjalling C. Koopmans 1948-11-06 IDh, and contributions by a few other authors (only the references that are supplied with an ID number are recorded in the present bibliography).
Ida:1744 IDb:1746 IDc:1747 IDd:1849 IDe:49, 1024 IDf:355, 1034 IDg:1812 IDh:1848
- 2012 1985 Rødseth, Asbjørn: Makroteori etter kontrarevolusjonen [Macro theory after the contra revolution], *Nordisk Tidskrift för Politisk Ekonomi*, No 18 1985, 11-23.
 The article gives a number of references to Ragnar Frisch. It is also published as reprint No 287 from DE-UO.
- 2013 1986 Andvig, Jens Chr.: *Ragnar Frisch and the great depression: A study in the interwar history of macroeconomic theory and policy*, Oslo, Norwegian Institute of International Affairs, 467 pp.
- 2014 1986 Bjerve, P. J.: Ragnar Frisch og økosirkssystemet [Ragnar Frisch and the ecocirc system], *Sosialøkonomen*, Vol 40 No 9 & 10, 17-23 & 26-30.
 The paper shows that Ragnar Frisch already in the late 1920's worked on a conceptual system of national accounts and how this system was developed further during the 1930's and 1940's. The paper was later translated into English and published as Document 96/21 from Statistics Norway, Bjerve 1996 IDa, see the annotations.
Ida:2082
- 2015 1986 Thorén Amundsen, Herdis: Ragnar Frisch og statistikkens fremvekst [Ragnar Frisch and the progress of mathematical statistics], in *Statistisk sett - Jubileumsskrift - Norsk Statistisk Forening 1936-1986 [From a statistical point of view - Memorial volume - Norwegian Statistical Society]*, Norsk Statistisk Forening, 107-120.
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 See Frisch 1934f with annotations and references.
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- 2018 1987 Pesaran, M. Hashem: Econometrics, in Eatwell, John, Murray Milgate and Peter Newman (eds) *The New Palgrave: A Dictionary of Economics - Volume 2*, London and Basingstoke, The Macmillan Press Limited, 8-22.
- 2019 1987 Willassen, Yngve: A simple alternative derivation of a useful theorem in linear "errors-in-variables" regression models - together with some clarifications, *Journal of Multivariate Analysis*, Vol 21, 296-311.
- 2020 1988 Andvig, Jens Christopher: From macrodynamics to macroeconomic planning. A basic shift in Ragnar Frisch's thinking? *European Economic Review*, Vol 32, 495-502.
- 2021 1988 Boyd, Ian, and John M. Blatt: *Investment confidence and business cycles*, Berlin, Heidelberg, New York, London, Paris, Tokyo, Springer-Verlag, 149 pp.

- A presentation of Frisch's propagation and impulse problems model 1933i IDa and a critical discussion of "Frisch type theories" pp 38-49.
IDA:50, 968
- 2022 1988 Thalberg, Bjørn: Ragnar Frisch, *Økonomisk Debatt*, Vol 1, 42-48,
 The article is placed under the column heading "Økonomporträttet" [The economist portrait].
- 2023 1989 Aldrich, John: Autonomy, *Oxford Economic Papers*, Vol 41, 15-34.
 From the introduction: "At the center of Frisch's network of concepts was "autonomy", or, as it is now more often called, "structure invariance". Before we embark on an elaborate account of the history of this and related concepts, it may be worth considering why the "most basic" question one can ask about a relation should be: How autonomous is it?" Frisch made the statement in the preface of 1948-11-06a IDa. He introduced the autonomy concept in his UN memorandum 1938-07-17 IDb. Other references: Frisch 1933f IDc (with Waugh), 1933i IDd and 1934f IDe.
IDA:448, 1048 IDb:355, 1034 IDc:48, 1023 IDd:50, 968 IDE:58, 1026
- 2024 1989 Bjerve, Petter Jakob: *Økonomisk planlegging og politikk [Economic planning and policy]*, Oslo, Det Norske Samlaget, 224 pp.
- 2025 1989 De Marchi, Neil, and Christopher Gilbert: Introduction, *Oxford Economic Papers*, Vol 41, 1-11.
 See the annotation to De Marchi and Gilbert (eds) 1989 IDa.
IDA:2026
- 2026 1989 De Marchi, Neil, and Christopher Gilbert, (eds): *History and methodology of econometrics*, *Oxford Economic Papers*, Vol 41, 282 pp.
 The whole No 1 of Vol 41 is reserved for works on the history and methodology of econometrics.
- 2027 1989 Epstein, Roy J.: The fall of OLS in structural estimation, *Oxford Economic Papers*, Vol 41, 94-107.
- 2028 1989 Hendry, David F., and Mary S. Morgan: A re-analysis of confluence analysis, *Oxford Economic Papers*, Vol 41, 35-52.
 From the conclusion chapter: "It is important to maintain the distinction ... between confluence analysis and bunch maps. Bunch maps ... have faded out. ... there are good intellectual reasons why they should not be resurrected. Frisch's confluence analysis, on the other hand, played an important role in the development of econometric theory. ... it prompted directly, or indirectly, the important changes in econometric ideas and techniques of the 1940s. These advances did not solve all of Frisch's difficulties. Confluent relations remain problematic for the modern econometrician, just as they did for Frisch and his contemporaries, and in view of recent research on cointegration, they once again deserve serious analysis." Refer to Frisch 1934f IDa and Johansen 1998 IDb. See also Krishna 1995 IDc.
IDA:58, 1026 IDb:2094 IDc:2065
- 2029 1989 Kærgård, Niels: Autonomy, swiching regimes, and super exogeneity, *European Economic Review*, Vol 33, 1799-1804.
 Kærgård shows that there is an obvious parallel between Frisch's and Haavelmo's 'autonomy' from the 1930s and 1940s and central concepts discussed by leading econometricians in the 1970s and 1980s. "Much of what has been said in recent years about changing regimes and policy evaluations by Lucas and others was very explicit in the analysis of the Oslo-econometricians. ... the conclusion of the analysis differs, however, completely. Lucas and Sims among others are advocates of statistical time series models without use of much a priori information, while the Oslo School and Cowles Commission try to develop a structural model based on economic theory." (Kærgård pp 1802-1803.) Refer to Frisch 1948d IDa, where further references are given in the annotations.
IDA:102, 1044
- 2030 1989 Mirowski, Philip: The probabilistic counterrevolution, or how stochastic concepts came to neoclassical economic theory, *Oxford Economic Papers*,

- Vol 41, 217-235.
Under the chapter heading "How quantum mechanics influenced early econometrics", mentions of Frisch are found on pp 230 and 231, and several examples are given on p 233 showing a familiarity of Frisch with the physics of his time.
- 2031 1989 Qin, Duo: Formalization of identification theory, *Oxford Economic Papers*, Vol 41, 73-93.
Duo claims (pp 75-77) - referring to Frisch 1933g IDa, 1934f IDb and 1938-07-17 IDc - that Frisch played an important role in the formalization of identification theory during the thirties.
IDa:49, 1024 IDb:58, 1026 IDc:355, 1034
- 2032 1990 Diewert, W. E.: The theory of the cost-of-living index and the measurement of welfare change, in Diewert, W. E. (ed): *Price level measurement*, Amsterdam, North Holland, 79-147.
See the annotations to Frisch 1936a IDa.
IDa:63, 819
- 2033 1990 Lines, Marji: Modelli di equilibrio e cicli economici le ipotesi di Frisch e Slutsky [Equilibrium models of the business cycle: The hypotheses of Frisch and Slutsky], *Ricerche Economiche*, Vol 44, 29-50.
From the English summary: "This article takes an historical look at methodological issues in mathematical business cycle theory, using a dynamic analysis approach."
Contributions by Frisch, Kalecki, Slutsky and Lucas are considered. Refer to Frisch 1933i IDa, and Slutsky, Eugen 1937: The summation of random causes as the source of cyclic processes, *Econometrica*, Vol 5, 105-146.
IDa:50, 968
- 2034 1990a Morgan, Mary S.: *The history of econometric ideas*, Cambridge England, Port Chester, Melbourne, Sydney, Cambridge University Press, 296 pp.
Reviewed by Neuberg 1995 IDa.
IDa:2072
- 2035 1990b Morgan, Mary S.: Statistics without probability and Haavelmo's revolution in econometrics, in Krüger, Lorenz, Gerd Gigerenzer, and Mary S. Morgan (eds): *The probabilistic revolution. Volume 2: Ideas in the sciences*, Cambridge Massachusetts, London UK, The MIT Press, 171-197.
Originally issued in 1987 by MIT. Reissued in 1990 as the first MIT Press paperback edition, "A Bradford book". Morgan claims that even though mathematical economists in the early decades of the 20th century (including the econometricians in the thirties) favoured using statistical methods, their use did not include probability theory. Thus while Frisch was not against using sampling theory as such, he would not use it unless the data had been produced by controlled experiments. As regards Frisch's 1934 problem (the confluence problem), if the sampling aspects were studied under assumptions simple enough to be handled, "the essence of the confluence problem would not be laid bare" (Frisch 1934f IDa p 7). According to Morgan the attitudes against probability analysis were changed by Haavelmo's probability approach. A divergent opinion is that a main effect of Haavelmo's pathbreaking work was that the majority of later research in econometrics followed *other lines* than those formulated by Frisch, *without laying bare the confluence problem*, see Hendry and Morgan 1989 IDb pp 50-52, and Maddala 1998 IDc.
IDa:58, 1026 IDb:2028 IDc:2097
- 2036 1990 Mullineux, A. W.: *Business cycles and financial crises*, Ann Arbor, The University of Michigan Press, 165 pp.
Discussions partly related to Frisch's propagation and impulse problems treatise 1933i IDa, pp 12-29, Frisch-Slutsky hypothesis pp 4-5, 19-29, 42-43 and on several other pages; Frisch-type econometric models pp 12-13, Frisch I hypothesis and Frisch II hypothesis pp 20-21.
IDa:50, 968
- 2037 1990 Thalberg, Bjørn: A reconsideration of Frisch's original cycle model, in Velupillai, Kumaraswamy (ed): *Nonlinear and multisectoral macrodynamics. Essays in honour of Richard Goodwin*, Basingstoke, The Macmillan Press

- Ltd, 96-117.
Thalberg makes the first simulation ever made of Frisch's business cycle model 1933i IDa and studies the function of the model by means of sensitivity analyses. He also studies effects of changing parts of the model itself. For a brief, yet instructive, discussion of Thalberg's simulation, see Chipman 1998 IDb p 95. Also as reprint No 374 from DE-UO.
Ida:50, 968 IDb:2091
- 2038 1991 Sandmo, Agnar: *Ragnar Frisch on the optimal diet, LOS-senter Notat 91/32*, Bergen, Norwegian Research Center in Organization and Management, 16 pp.
Sandmo discusses Frisch 1941a IDa. Sandmo's paper was reproduced in print as Sandmo 1993 IDb.
Ida:84 IDb:2050
- 2039 1991 Zambelli, Stefano: The wooden horse that wouldn't rock: Reconsidering Frisch, *Working Paper: 623, May 1991*, University of California at Los Angeles Dept. of Economics, 36 pp.
The authors abstract: "The present work reconsiders the celebrated article: "Propagation problems and impulse problems", by Ragnar Frisch (1933). The main conclusion is that the propagating mechanism, contrary to what currently accepted, oscillates only under very peculiar or "non-economic" assumptions. Technically in Frisch's model the qualitative behavior of the economy described by the first order differential equation is equivalent - contrary to what Frisch himself thought - to the behavior described by the more cryptic and complicated mixed difference-differential equation. Moreover the examples presented by Frisch himself in the original model are misleading because, in order for the macrodynamic variables to exhibit some sort of oscillating behavior, it is necessary to postulate an unrealistic and inconsistent past historical evolution. These intrinsic contradictions are here studied and presented." Refer to Frisch 1933i IDa.
Ida:50, 968
- 2040 1992 Andvig, Jens Chr.: Introduction to Frisch's article "Statics and dynamics in economic theory", *Structural Change and Economic Dynamics*, Vol 3, 385-389.
Introduction to Frisch 1992 IDa.
Ida:246, 987
- 2041 1992 Danø, Sven: Reflections on the Frisch-Johansen tradition in the theory of production, in Velupillai, Kumaraswamy (ed): *Nonlinearities, disequilibria and simulation. Essays in honour of Bjørn Thalberg*, Basingstoke, The Macmillan Press Ltd, 74-81.
In addition to giving a description of the contributions of Ragnar Frisch and Leif Johansen, Professor Danø also gives indications of possible directions of research to continue the Frisch-Johansen tradition. Two contributions appeared under the discussion after Danø's presentation, one by Lars-Gunnar Svensson (pp 81-82) and one by Rolf Färe (pp 82-83). Mr. Svensson reflects shortly on possible ways of estimating the production function. He points specifically to two ways, the dual approach and the engineering approach. Mr. Färe suggests that a fruitful research programme would be to merge the Frisch-Johansen's tradition with the axiomatic approach found in *Theory of cost and production functions* (1970) by Ronald W. Shephard.
- 2042 1992 Holm, Håkan J.: The rocking horse as a Trojan horse, in Velupillai, Kumaraswamy (ed): *Nonlinearities, disequilibria and simulation. Essays in honour of Bjørn Thalberg*, Basingstoke, The Macmillan Press Ltd, 71-73.
A contribution under the discussion after the presentation of Velupillai 1992 IDa.
Ida:2045
- 2043 1992a Thalberg, Bjørn: Growth, welfare and stabilization: Our analytical heritage, in Velupillai, Kumaraswamy (ed): *Nonlinearities, disequilibria and simulation. Essays in honour of Bjørn Thalberg*, Basingstoke, The Macmillan Press Ltd, 279-289.
Thalberg remembers his time as a student at DE-UO, Frisch's crusade against verbalism, the role in the syllabus of Frisch's "eco-cirk system", Frisch's work on national accounting and later on macroeconomic decision models, how the students were trained in applying tractable versions of such models, and eventually Frisch's switch from fixed targets models to models furnished with a politician's preference function estimated through a

sophisticated interview technique.

- 2044 1992b Thalberg, Bjørn: Some reflections on the problem of whether a (would-be) rocking horse is able to rock, in Velupillai, Kumaraswamy (ed): *Nonlinearities, disequilibria and simulation. Essays in honour of Bjørn Thalberg*, Basingstoke, The Macmillan Press Ltd, 55-55.
Reflections on Zambelli 1992 IDa.
IDa:2046
- 2045 1992 Velupillai, Kumaraswamy: Implicit nonlinearities in the economic dynamics of 'Impuls and propagation', in Velupillai, Kumaraswamy (ed): *Nonlinearities, disequilibria and simulation. Essays in honour of Bjørn Thalberg*, Basingstoke, The Macmillan Press Ltd, 57-71.
References are given to *inter alia* Frisch 1927a IDa, 1931c IDb and 1933g IDc, Samuelson 1974 IDd, and Thalberg 1990 IDE. Remarks by Holm 1992 IDf.
IDa:326, 1009 IDb:26, 960 IDc:50, 968 IDd:1984 IDE:2037 IDf:2042
- 2046 1992 Zambelli, Stefano: The wooden horse that wouldn't rock: Reconsidering Frisch, in Velupillai, Kumaraswamy (ed): *Nonlinearities, disequilibria and simulation. Essays in honour of Bjørn Thalberg*, Basingstoke, The Macmillan Press Ltd, 27-54 and 56.
Originally written as *Working Paper*: Zambelli 1991 IDa, where the author's abstract is presented in the annotations. Bjørn Thalberg contributed with some reflections under the discussion, see Thalberg 1992b IDb.
IDa:2039 IDb:2044
- 2047 1993 Aldrich, John: Reiersøl, Geary and the idea of instrumental variables, *The Economic and Social Review*, Vol 24, 247-273.
The first section of the article treats Frisch's Statistical confluence analysis, "to discover what Reiersøl found worth imitating and extending. In a more general sense, Geary's work also draws on Frisch. The section on Reiersøl marks his passage from confluence analysis to identification theory. The section on Geary marks the movement of instrumental variables from the periphery to the centre of his attention. Our final section has some reflections on the elusive "idea of using instrumental variables."" (From the introduction.) Ref.: Frisch 1934f IDa with annotations and further references.
IDa:58, 1026
- 2048 1993 Kumar, T. Krishna: The probabilistic approaches in econometrics, *Journal of Quantitative Economics*, Vol 9, 1-16.
From the abstract: "In this paper a critical review is made of alternate probabilistic approaches that econometricians employ. The review covers the pre-Haavelmo literature, emergence of Haavelmo's econometric revolution, and recent developments in time series, control-theoretic and Bayesian methods. It traces the errors-in-variables literature pioneered by Frisch and the causal demand supply models of agricultural economists. ... It also emphasizes the need to bring in probability into econometrics in an endogenous way through stochastic economics, such as economic behaviour under uncertainty."
- 2049 1993 Le Gall, Philippe: Les contributions de Kalecki et Frisch à la macrodynamique du cycle et la naissance de l'économétrie [The contributions of Kalecki and Frisch to business cycle macrodynamics and the birth of econometrics], *Revue d'Économie Politique*, Vol 103, 551-578.
From the summary: "We study the role of small business cycle models in the beginning of the 1930s; if they are chiefly the concern of mathematical economics, they will also determine deep trends in econometrics. This double role can be illustrated by the difference between the two main systems of the period, that of Kalecki, and Frisch's "swinging system". After the presentation of Kalecki's system and of the characteristics of its solutions - endogeneous deterministic cycles of constant amplitude -, we explain the elements that allowed Frisch to elaborate another structural system reproducing observed cyclical movements. ..." Refer to Frisch 1933g IDa.
IDa:50, 968
- 2050 1993 Sandmo, Agnar: Ragnar Frisch on the optimal diet, *History of Political Economy*, Vol 25, 313-327.
A reproduction of Sandmo 1991 IDa, discussing Frisch 1941a IDb.

IDa:2038 IDb:84

- 2051 1994 Andvig, J. Chr.: En makroøkonomisk prinsippdebatt [A macro-economic debate on principles], *Sosialøkonomen*, Vol 48 No 4, 26-28.
A correspondence between Petter Jakob Bjerve, at that time general manager of the Central Bureau of Statistics of Norway, and Professor Ragnar Frisch is reproduced in the article. The same correspondence in Frisch 1962-12-07 IDa.
IDa:778, 1313
- 2052 1994a Aukrust, Odd: The Scandinavian contribution to national accounting, in *The Account of Nations*, Amsterdam: IOS Press, pp 16-65.
The paper surveys developments in national accounting theory and method in Scandinavia. It provides a chronology by countries and authors, with particular attention to the pioneering efforts of Ragnar Frisch and Erik Lindahl during the 1930s. It summarizes the ideas contributed to national accounting by Scandinavian economists, stressing differences between Scandinavian and main stream Anglo-American thinking.
- 2053 1994b Aukrust, Odd: The Scandinavian contribution to national accounting, in Kenessey, Z. (ed): *The accounts of nations*, Amsterdam, IOS Press, 16-65.
From the author's abstract: "This paper surveys developments in national accounting theory and method in Scandinavia (Denmark, Norway, Sweden). The paper provides a chronology by countries and authors, with particular attention paid to the pioneering efforts of Ragnar Frisch and Erik Lindahl during the 1930s and the theoretical work by Ingvar Ohlsson and Odd Aukrust shortly after World War II. ..."
- 2054 1994-06-09 Bakke, Egil: Økonomer og økonomi [Economists and economics], *Dagens Næringsliv*, Oslo.
The article expresses a critical view particularly intended for the economists at the University of Oslo: "The economists should hardly be blamed for the failing economic policy, but rather for their excessive interest in macroeconomic steering models. It is also blameworthy that they too easily base their argumentation on "calculations" that "prove" that they are right. Internationally the market and the economic profession seem to stand stronger than ever. However, the special Norwegian variant, macroeconomic steering models, gives more and more the idea of a museum specimen" (freely translated here).
- 2055 1995 Andvig, Jens Chr.: Frisch: Geni og naiv optimist [Frisch: Genius and naïve optimist], *Observator*, DE-UO, Vol 32 No 1, 9-11.
Some critical remarks to the present contribution in Edvardsen 1995 IDa.
IDa:2062
- 2056 1995a Andvig, Jens Chr., Olav Bjerkholt, and Tore Thonstad: Forord og Innledning: Den første økonometriker [Preface and Introduction: The first econometrician], in Frisch, Ragnar: *Troen på nøkken*, Oslo, Det Blå Bibliotek, UF, 5-5 & 9-30.
The introduction gives first a short biographical overview (9-10), then some pieces of introductory information on the topics dealt with in the book. The topics are (translated): Measuring utility, theory of production, national accounts, econometric methods, macrodynamics, the founding of Econometric Society, "the belief in the river sprite" and other contributions on economic policy, the Institute of Economics as an economic laboratory, planning models, preferences and politics, and finally a mixed biographical and bibliographical section dealing with Frisch as a university teacher. It is emphasized that the selection of articles and the information presented in the book gives only a glimpse of Frisch's life as a researcher, a university teacher and a socially engaged debater. A slightly shortened version of the introduction is issued as an article in *Sosialøkonomen*, Andvig et al 1995b IDa.
IDa:2057, 2161
- 2057 1995b Andvig, Jens Chr., Olav Bjerkholt, and Tore Thonstad: Ragnar Frisch: Den første økonometriker [Ragnar Frisch: The first econometrician], *Sosialøkonomen*, Vol 49 No 3, 4-11.
A slightly shortened version of the introduction in Andvig et al 1995a IDa.
IDa:2056, 2160

- 2058 1995 Bjerkholt Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch - Volume I and II*, Aldershot UK, Brookfield US, Edward Elgar, 463+534 pp.
This collection of works by Ragnar Frisch comprises 42 essays selected from his lifelong production. Volume I comprises 19 pre-war works, grouped in three subject fields: I: Utility measurement and the theory of index numbers; II: Statistical techniques and econometric methods; III: Statics and dynamics. Volume II comprises 23 post-war works grouped in four subject fields: I: Decision models and preference functions; II: Programming techniques; III: Other theoretical contributions; IV: Looking ahead and looking back. The comprehensive introduction is a contribution by the editor, see Bjerkholt 1995a IDa.
IDA:2059, 2162
- 2059 1995a Bjerkholt, Olav: Introduction: Ragnar Frisch, the originator of econometrics, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume I*, Aldershot UK, Brookfield US, Edward Elgar, xi-liii.
The introduction gives an elaborated survey of Frisch's work within the several parts of economics, econometrics and related subject areas. It is as much a biographical as a bibliographical contribution, giving a large volume of background information from Frisch's extensive correspondance. Also issued as Reprint No 78 from Statistics Norway.
- 2060 1995 Bjerve, Petter Jakob: Innverknaden frå Ragnar Frisch på norsk makroøkonomisk planlegging og politikk [The influence of Ragnar Frisch on Norwegian macroeconomic planning and policy], *Sosialøkonomen*, Vol 49 No 10, 26-35.
A footnote on the front page (translated): "The article is a shortened version of a lecture delivered by the author at the Centennial Symposium of Ragnar Frisch March 3 1995. ..."
An English version: Bjerve 1998 IDa.
IDA:2089
- 2061 1995 Boumans, Marcel: Frisch on testing of business cycle theories, *Journal of Econometrics*, Vol 67, 129-147.
- 2062 1995 Edvardsen, Kåre Nikolai: Ragnar Frisch - sosialøkonomiens nybrottsmann [Ragnar Frisch - the backwoodsman of economics], *Observator*, DE-UO, Vol 32 No 4, 30-33.
A short survey of parts of Frisch's "monumental contribution" to the science of economics. Moreover, critical remarks are given to Ervik 1995 IDa and to Helgesen and Lund's interview with Jens Chr. Andvig IDb.
IDA:2063 IDb:2055
- 2063 1995 Ervik, Astrid Oline: Gullsmed, matematiker, birøkter og planøkonom - Biografi [Goldsmith, mathematician, bee-keeper and economic planner - Biography], *Observator*, DE-UO, Vol 32 No 1, 6-8.
Critical remarks to the present article in Edvardsen 1995 IDa.
IDA:2062
- 2064 1995 Hendry, David F., and Mary S. Morgan (eds): *The foundations of econometric analysis*, Cambridge GB, New York, Melbourne, Cambridge University Press, 558 pp.
Preface (pp xi-xii) and Introduction (pp 1-82) by the editors.
- 2065 1995 Kumar, T. Krishna: Cointegration and error correction models: A historical and methodological perspective, *Journal of Quantitative Economics*, Vol 11, 143-154.
From the abstract: "For more than four decades onwards, econometricians were engaged in fitting structural models using non-stationary time-series observations. The spurious correlations and misleading inferences drawn therefrom lead to the popularity of the new time-series technique of Vector Auto Regression (VAR) models and models of cointegration and error correction (ECM). It is the aim of this paper to point out that Frisch and Tintner did realize the non-stationary and the cointegration nature of economic time-series and developed tools that need to be reexamined afresh and contrasted with the currently popular Engle-Granger approach. identifies certain links between the old and

- the new literature on time series analysis. some suggestions are offered for improving the methodology of macroeconomic modelling."
IDA:2048
- 2066 1995 Kydland, Finn E.: Introduction, in Kydland, Finn E. (ed): *Business Cycle Theory*, Aldershot UK - Brookfield US, Edward Elgar Publ. Ltd. - Edward Elgar Publ. Co., ix-xvi.
 Some reflections on the interest to the founders of the Econometric Society in business cycles and on Frisch's propagation and impulse problems article (1933i IDa) are given in part I of the introduction.
IDA:50, 968
- 2067 1995a Leontief, Wassily W.: A final word, in Hendry, David F. and Morgan, Mary S. (eds): *The foundations of econometric analysis*, Cambridge GB, New York, Melbourne, Cambridge University Press, 265-267.
 A reprint of Leontief's final word in the "Pitfalls debate", Leontief 1934a IDa. See the annotations to Frisch 1933g IDb (Pitfalls ...).
IDA:1773 IDb:49, 1024
- 2068 1995b Leontief, Wassily W.: Pitfalls in the construction of demand and supplycurves: A reply, in Hendry, David F. and Morgan, Mary S. (eds): *The foundations of econometric analysis*, Cambridge GB, New York, Melbourne, Cambridge University Press, 259-263.
 Reprint of Leontief 1934b IDa. See Frisch 1933g IDb.
IDA:1774 IDb:49, 1024
- 2069 1995a Marschak, J.: Marschak again, in Hendry, David F. and Mary S. Morgan (eds): *The foundations of econometric analysis*, Cambridge England, New York, Melbourne, Cambridge University Press, 267-270.
 Excerpt from a part of Marschak 1934 IDa, see the annotations to Marschak 1995b IDb and to Frisch 1933g IDc (Pitfalls ...).
IDA:1775 IDb:2070 IDc:49, 1024
- 2070 1995b Marschak, J.: Some comments, in Hendry, David F. and Mary S. Morgan (eds): *The foundations of econometric analysis*, Cambridge England, New York, Melbourne, Cambridge University Press, 257-258.
 Excerpt from Marschak 1934 IDa. See also Marschak 1995a IDb. Marschak's comments made the final contribution in the "pittfalls debate", see Frisch 1933g IDc.
IDA:1775 IDb:2069 IDc:49, 1024
- 2071 1995 Munthe, Preben: Ragnar Frisch, Ole Colbjørnsen og Arbeiderpartiets kriseplaner [Ragnar Frisch, Ole Colbjørnsen and the Labour Party's crisis plans], *Norsk Økonomisk Tidsskrift*, Vol 109, 275-302.
 Munthe recapitulates essential features of the debate and strife that took place in Norway in the years 1933 - 1935, on which measures should be taken by the authorities to fight down the deep economic crisis. Ragnar Frisch and Ole Colbjørnsen were among the influential participants in the Norwegian debate in those years. Refer to *Arbeiderbladet* 1934-03-20 IDa and 1934-03-22 IDb; see the annotations. The present article is reproduced as reprint No 482 from DE-UO.
IDA:1778 IDb:1780
- 2072 1995 Neuberg, Leland Gerson: The history of econometric ideas. Mary S. Morgan, Cambridge University Press, 1990, *Econometric Theory*, Vol 11, 371-383.
 A review of Morgan 1990a IDa.
IDA:2034
- 2073 1995 Puttaswamaiah, K.: *Nobel economists. Lives and contributions. Volume 1 - 1969-1974*, New Delhi, Indus Publishing Company, 438 pp.
 In Chapter 1, Introduction, pp 70-72, the author gives an overview of Ragnar Frisch's work and career. In Chapter 3, pp 165-172, he gives a more exhaustive treatment, a combination of a biography and a bibliography in which also an assessment of his entire scientific contribution is included.
- 2074 1995 Reiersøl, O.: Residual variables in regression and confluence analysis (1945),

in Hendry, David F. and Mary S. Morgan, (eds): *The foundations of econometric analysis*, Cambridge England, New York, Melbourne, Cambridge University Press, 299-306.

An extract of Reiersøl 1945b IDa.

IDa:1815

- 2075 1995 Tinbergen, J.: Mr. Tinbergen's reply to Professor Frisch's note on "Statistical versus theoretical relations in economic macrodynamics", in Hendry, David F. and Mary S. Morgan (eds): *The foundations of econometric analysis*, Cambridge England, New York, Melbourne, Cambridge University Press, 419-423.
A reprint of the parts II, III and IV of Tinbergen 1948-11-06 IDa. See the annotations to Frisch 1938-07-17 IDb.
IDa:1849 IDb:355, 1034
- 2076 1995-02-27 Solstad, Arve: Gi meg skrive- og regnehjelp! [Give me writing and calculating assistance!], *Dagbladet*, Oslo.
Arve Solstad in conversation with Ragnar Frisch on the occasion of Frisch's 70th birthday.
- 2077 1995-03-03 Bakke, Egil: Professor Frisch hyldes [Professor Frisch is paid homage to], *Dagens Næringsliv*, Oslo.
Egil Bakke (former Director General of Norwegian Competition Othority) gives in the introduction some short remarks of prais for works Frisch accomplished in the therties. His chief aim is, however, to convey the message that Frisch has come into the shade, and that the main reason for his decline is that he was fundamentally wrong, especially in one matter: his insistence on the possibility (and even necessity) of building practicable comprehensive macroeconomic planning models. Bakke is also severely critical about Frisch's way of advocating in favour of his model building ideas.
- 2078 1995-03-03 Kjos, Sigmund: Professor R. Frisch 70 år [Professor R. Frisch 70], *Aftenposten*, Oslo.
Sigmund Kjos pays tribute to Professor Frisch on his 70th birthday, and gives a rough outline of Frisch's achievements as a scientist. He also gives some reflections on Frisch's way of thinking as regards the possibility and even the necessity of constructing comprehensive decision models for the political authorities to use as steering instruments.
- 2079 1995-03-05 Munthe, Preben: Ragnar Frisch - ved hundreårsminnet [Ragnar Frisch - at the hundredth anniversary], *Aftenposten*, Oslo.
Preben Munthe refers to some of the fields in which Frisch achieved remarkable results. "Ragnar Frisch obtained overwhelming evidence to prove that his lifework was appreciated. He received marks of respect from a number of universities abroad. However, he did not live to see the most distinguished proof that he had formed a school. He had been dead and gone for meny years when his student, assistent and finally colleague Trygve Haavelmo stood in the Concert Hall in Stockholm receiving the Nobel Prize diploma and medal" (translated).
- 2080 1995-05 Laffont, Jean-Jacques: *Frisch, Hotelling and the marginal cost pricing controversy*, Université des Sciences Sociales de Toulouse, Document de travail No 48, Institut d'Economie Industrielle, 34 pp.
The paper was written for the Symposiem at the Centennial of Ragnar Frisch ... Oslo, March 3-5, 1995. It is published in Strøm 1998 IDa pp 319-342, see the annotations. References are given *inter alea* to: Coase, R. H. 1946: The marginal-cost-controversy, *Economica*, Vol 13; Hotelling, H. 1938: The general welfare in relation to problems of taxation and of railway and utility rates, *Econometrica*, Vol 6, 242-269; Frisch 1939a IDb; and Hotelling 1939b IDc.
IDa:2096 IDb:78, 898 IDc:1801
- 2081 1995-11 Førsumd, Finn R.: *Engineering production functions: Chocolate production revisited*, Oslo, memo DE-UO, 47 pp.
It is referred to Frisch 1935h IDa, which is problaby the first known example of establishing an engineering production function. It is also referred to Ragnar Frisch as one of the founding fathers of the journal *Nordisk Tidsskrift for Teknisk Økonomi*, in which Frisch's 1935g article was published. A later article by Førsumd, 1999-03 IDb, is, except for minor changes, similar to the present memo.

IDA:62, 873 IDb:2116

- 2082 1996 Bjerve, Petter Jakob: *Contributions of Ragnar Frisch to national accounting, Documents 96/21*, Oslo, Statistics Norway, 18 pp.
The paper is to a large extent a translation into English of Bjerve 1986 IDa, see the annotations. The author's abstract: "The paper demonstrates that Ragnar Frisch already in the late 1920's presented a conceptual system of national accounts similar to that of modern national accounts, and how this system was further developed during the 1930's and 1940's. It also describes an attempt by Frisch to develop numerical national accounts for Norway. Pointing out how these contributions occurred as part of an international trend, the paper concludes that their impact on official national accounting appears dominating to such a degree that Frisch perhaps, even internationally, deserves the distinction as a major originator of national accounting."
IDA:2014
- 2083 1996 Fiebig, Denzil G., Robert Bartels, and Walter Krämer: The Frisch-Waugh theorem and generalized least squares, *Econometric Reviews*, Vol 15, 431-443.
From the introductory abstract: "We discuss the standard linear regression model with nonspherical disturbances, ... where, analogous to the Frisch-Waugh procedure, the original GLS procedure is applied to the transformed data. We ... show via examples ... that the Frisch-Waugh theorem still "works" with nonspherical disturbances if efficient estimation is applied to both the original and the transformed data." See Frisch 1933f IDa with annotations.
IDA:48, 1023
- 2084 1996 Norman, V. D.: Ragnar Frisch: Troen på nøkken [Ragnar Frisch: The belief in the river sprite], *Sosialøkonomen*, Vol 50 No 4, 39-41.
Review of Frisch 1995bq IDa.
IDA:322
- 2085 1997a Beaud, Michel, and Gilles Dostaler: The birth and development of econometrics, in Beaud, Michel and Gilles Dostaler: *Economic thought since Keynes - A history and dictionary of major economists*, London, New York, Routledge, 64-67.
See also Cowles 1960 IDa and Christ 1983 IDb.
IDA:2133 IDb:2007
- 2086 1997b Beaud, Michel, and Gilles Dostaler: FRISCH Ragnar Anton Kittil (1895-1973), in Beaud, Michel and Gilles Dostaler: *Economic thought since Keynes - A history and dictionary of major economists*, London, New York, Routledge, 238-241.
In part II of the book, called "Dictionary of major contemporary economists".
- 2087 1997 Thalberg, Bjørn: Frisch, Ragnar Anton Kittil (1896-1973), in Glasner, David (ed): *Business cycles and depressions - An encyclopedia*, New York & London, Garland Publishing, Inc., 250-252.
Frisch's last Christian name is misspelled in the title. The correct spelling is Kittil. The article deals with Frisch's works on cyclical phenomena in the economy and his scientific achievements within that field. The greater part is a presentation and discussion of Frisch 1933i IDa (propagation and impulse problems ...).
IDA:50, 968
- 2088 1998a Bjerkholt, Olav: Interaction between model builders and policy makers in the Norwegian tradition, *Economic Modelling*, Vol 15, 317-339.
Abstract: "Norway has a long tradition in the use of macroeconomic models for policy making. This article traces this tradition to the direct and indirect influence of Ragnar Frisch and discusses the institutional features that distinguish the Norwegian tradition from that of other countries, in particular the role of the central statistical institution in model building with government."
- 2089 1998 Bjerve, Petter Jakob: The influence of Ragnar Frisch on macroeconomic planning and policy in Norway, in Strøm, Steinar (ed): *Econometrics and economic theory in the 20th century: The Ragnar Frisch Centennial*

Symposium, Cambridge UK, New York, Melbourne, Cambridge University Press, 531-559.

As to the content the present article and Bjerve 1995 IDa are almost identical.

IDa:2060

- 2090 1998 Blundell, Richard: Consumer demand and intertemporal allocations: Engel, Slutsky, and Frisch, in Strøm, Steinar (ed): *Econometrics and economic theory in the 20th century: The Ragnar Frisch Centennial Symposium*, Cambridge UK, New York, Melbourne, Cambridge University Press, 147-166.
Blundell refers - as his point of departure - to Frisch 1959a IDa (A complete scheme ...) and the works by Gorman, W. M. 1959: Separable utility and aggregation, *Econometrica*, Vol 27, 469-481, and Strotz, R. H. 1957: The empirical implication of the utility tree, *Econometrica*, Vol 25, 269-280. He uses the link between Frisch demands and Marshallian demands to provide "an attractive strategy for estimating income effects, price effects, and intertemporal substitution effects in consumer demand".
IDa:147, 849, 921
- 2091 1998 Chipman, John S.: The contributions of Ragnar Frisch to economics and econometrics, in Strøm, Steinar (ed): *Econometrics and economic theory in the 20th century: The Ragnar Frisch centennial symposium*, Cambridge UK, New York, Melbourne, Cambridge University Press, 58-108.
From expressions in the introduction (p 59): Chipman declares himself "especially interested in recounting the controversies in which Frisch was engaged, and in showing how they led to important advances in the subject." He looks at "four fields in which Frisch made major contributions: (1) Utility theory, index numbers, and welfare economics, (2) estimation of demand and supply functions, and statistical confluence analysis, (3) capital theory and dynamic economics, and (4) depression and circulating planning."
- 2092 1998 Heckman, James J., and Jeffrey Smith: Evaluating the welfare state, in Strøm, Steinar: *Econometrics and economic theory in the 20th century: The Ragnar Frisch Centennial Symposium*, Cambridge UK, New York NY, Cambridge University Press, 241-318.
The authors point at the outset to Frisch's role as an advocate of national economic planning in the service of the welfare state. They refer specifically to his Nobel lecture Frisch 1970c IDa and to "his famous article on circulation planning" Frisch 1934a IDb.
IDa:212, 1113 IDb:54, 1136
- 2093 1998 Hughes Hallett, A. J.: On the need for macroeconomic planning in market economies: Three examples from the European Monetary Union project, in Strøm, Steinar (ed): *Econometrics and economic theory in the 20th century: The Ragnar Frisch Centennial Symposium*, Cambridge UK, New York, Melbourne, Cambridge University Press, 577-618.
In parts of the article Hughes Hallett discusses (or at least aims at discussing) Frisch's approaches to the problem of furnishing a structural planning model for the society with a preference function, i.e. a function which represents the political authority's social-economic preferences. However, even though he refers *inter alia* to Frisch 1970c IDa, he seems to equate Frisch's approach and Theil-Tinbergen's flexible targets approach (confer pp 2-4 in Hughes Hallett and Frisch 1970c p 227: The preference function).
IDa:212, 1113
- 2094 1998 Johansen, Søren: Statistical analysis of some nonstationary time series, in Strøm, Steinar (ed): *Econometrics and economic theory in the 20th century: The Ragnar Frisch Centennial Symposium*, Cambridge UK, New York, Melbourne, Cambridge University Press, 433-457.
It is referred to contributors on cointegration such as Granger (1981) and Engle and Granger (1987). Also to Frisch 1934f IDa and Hendry and Morgan 1989 IDb.
IDa:58, 1026 IDb:2028
- 2095 1998 Klein, Lawrence R.: Ragnar Frisch's conception of the business cycle, in Strøm, Steinar (ed): *Econometrics and economic theory in the 20th century: The Ragnar Frisch Centennial Symposium*, Cambridge UK, New York, Melbourne, Cambridge University Press, 483-498.

The article consists of four subsections, the headlines of which are: Propagation problems, Impulse problems, Some comparisons with Frisch's contemporaries, and Macroeconomic policy. It is referred to Frisch 1933i IDa, 1933i IDb and 1947ae IDc.

IDA:50, 968 IDb:53 IDc:95, 830, 974

- 2096 1998 Laffont, Jean-Jacques: Frisch, Hotelling, and the marginal-cost pricing theory, in Strøm, Steinar (ed): *Econometrics and economic theory in the 20th century: The Ragnar Frisch Centennial Symposium*, Cambridge UK, New York, Melbourne, Cambridge University Press, 319-342.
Originally issued as Laffont 1995-05 IDa, see the annotations. From the conclusion: "In an indirect way, this essay questions Frisch's view of the relationships between economists and politicians."
IDA:2080
- 2097 1998 Maddala, G. S.: Econometric issues related to errors in variables in financial models. in Strøm, Steinar (ed): *Econometrics and economic theory in the 20th century: The Ragnar Frisch Centennial Symposium*, Cambridge UK, New York, Melbourne, Cambridge University Press, 414-432.
From the introduction: "Ragnar Frisch worked with errors in variables models. Later researchers in econometrics moved the field in the direction of errors in equations. That situation was partially rectified in the early 1970s by the contributions of Goldberger (1972) and Griliches (1974) and later surveys by Griliches (1985) and Chamberlain and Goldberger (1990) ..." The present essay discusses the use of errors in variables theory in financial models, specifically with reference to the topics: (1) tests of the capital-asset pricing model, (2) tests of the arbitrage pricing theory, (3) measuring market responses to corporate pronouncements, and (4) portfolio performance measures.
- 2098 1998 Malinvaud, E.: How Frisch saw in the 1960s the contribution of economists to development planning, in Strøm, Steinar (ed): *Econometrics and economic theory in the 20th century: The Ragnar Frisch Centennial Symposium*, Cambridge UK, New York, Melbourne, Cambridge University Press, 560-576.
"... the history of economic ideas should analyze those views about planning that were influential during the third quarter of this century, particularly in Western Europe." This was, according to Malinvaud, one of the considerations that had motivated his essay. And further: "Because I am one of the few living non-Norwegian economists who had such an acquaintance with Frisch, I feel a duty to provide whatever information I can regarding that extraordinary man." (p 560). The essay gives a critical discussion and an assessment of Frisch's contribution and his stand in the field of macroeconomic planning.
- 2099 1998 Strøm, Steinar: Introduction, in Strøm, Steinar (ed): *Econometrics and economic theory in the 20th century: The Ragnar Frisch Centennial Symposium*, Cambridge UK, New York, Melbourne, Cambridge University Press, iv-xii,
- 2100 1998 Strøm, Steinar (ed): *Econometrics and economic theory in the 20th century: The Ragnar Frisch Centennial Symposium*, Cambridge UK, New York, Melbourne, Cambridge University Press, xiv + 629 pp.
Econometric Society Monographs No. 31.
- 2101 1998 Søylen, Espen: *Fra frischianisme til keynesianisme? En studie av norsk økonomisk politikk i lys av økonomisk teori 1945-1980 [From frischianism to keynesianism? A study of Norwegian economic policy in the light of economic theory 1945-1980]*, Kristiansand, Høyskolen i Agder, Avdeling for økonomi og samfunnskunnskap, 468+VI.
- 2102 1998 Thalberg, Bjørn: Frisch's vision and explanation of the trade-cycle phenomenon: His connections with Wicksell, Åkerman, and Schumpeter, in Strøm, Steinar (ed): *Econometrics and economic theory in the 20th century: The Ragnar Frisch Centennial Symposium*, Cambridge UK, New York, Melbourne, Cambridge University Press, 461-482.
The article is organized in seven sections. The section headlines are: 1 Wicksell's tentative trade-cycle theory, 2 Åkerman's thesis "On the rhythm of economic life", 3 Schumpeter's explanation of the business cycle, 4 Frisch's "propagation and impulse" essay, 5 Frisch's

model of the propagation mechanism, 6 The disturbed case: A "full" explanation of the cycle, and 7 Some concluding remarks. Thalberg also refers to Velupillai 1992 IDa, Zambelli 1992 IDb, and to his own works Thalberg 1990 IDc and 1992b IDd.

Ida:2045 IDb:2046 IDc:2037 IDd:2044

- 2103 1998-01 Willassen, Yngve: *Deriving bounds on the structural vector when the measurement errors are correlated: An elaboration of the Frisch/Reiersøl approach*, Oslo, memo DE-UO, 17 pp.
Refer to Frisch 1934f IDa and Reiersøl 1941 IDb and 1945a IDc.
Ida:58, 1026 IDb:1808 IDc:1814
- 2104 1998-12 Willassen, Yngve: *The ET interview: Professor Olav Reiersøl*, Oslo, memo DE-UO, 16 pp.
Published in print as Willassen 2000 IDa.
Ida:2121
- 2105 1999 Bakke, Egil: Bokanmeldelse eller raseriutbrudd? [A book review or a fit of rage?], *Sosialøkonomen*, Vol 53 No 9, 21-22.
A declaration of support for Munthe 1999a IDa against Bjerkholt 1999a IDb.
Ida:2114 IDb:2106
- 2106 1999a Bjerkholt, Olav: Munthe om amatører: Preben Munthe: Populister og originale økonomer [Munthe about amateurs: Preben Munthe: Populists and eccentric economists], *Sosialøkonomen*, Vol 53 No 8, 34-36.
A strongly critical review of Munthe 1999a IDa.
Ida:2114
- 2107 1999b Bjerkholt, Olav: *Ragnar Frisch og anvendt forskning [Ragnar Frisch and applied research]*, *Observator*, DE-UO, Vol 36 No 3, 6-11.
Lecture at the opening conference of Frischsenteret, Mai 21 1999 (refer to Frisch 1932-02-10 IDa). From the end words of the lecture (translated here): The foundation of Universitetets Økonomiske Institutt in 1932 was remarkable in several respects. Let it here be mentioned that two of the three Norwegians who have been awarded the Nobel Prize for scientific achievements, worked together at this institute for several years. Ragnar Frisch was awarded the first Nobel Prize in economics mainly for contributions made in this period. Trygve Haavelmo was awarded the Nobel Prize in economics for a treatise he in all essentials had finished one and a half years after having left the Institute. The importance of the activity of the Institute for the development of the science of economics in Norway after the war can hardly be expressed in a better way.
Ida:1614
- 2108 1999c Bjerkholt, Olav: Ragnar Frisch og Trygve Haavelmo [Ragnar Frisch and Trygve Haavelmo], *Nytt Norsk Tidsskrift*, No 4 1999, 362-370.
Two portraits. Also issued as reprint No 155 from Statistics Norway, Research Department.
- 2109 1999d Bjerkholt, Olav: Two grumpy old men. Svar til Munthe og Bakke [Two grumpy old men. Replay to Munthe and Bakke], *Sosialøkonomen*, Vol 53 No 9, 22-22.
Refer to Munthe 1999b IDa and Bakke 1999 IDb.
Ida:2115 IDb:2105
- 2110 1999 Fan, Mingtai: The changing business cycle in transitional China - An impuls-propagation mechanism effect analysis, in *Social Sciences: Chinese Academy of Social Sciences Forum*, Beijing, China, China Social Sciences Publishing House, Postcode: 100720, 1-16.
- 2111 1999 Førsund, Finn R.: On the contribution of Ragnar Frisch to production theory, *International Review of Economics and Business*, 1-34.
- 2112 1999 Holmemo, Camilla: Populister og originale økonomer [Populists and eccentric economists], *Observator*, Oslo, Vol 36 No 4, 24-27.
Partly a review of Munthes book 1999a IDa and partly comments to the discussion caused by the book, including a short interview with Professor Munthe.

IDa:2114

- 2113 1999 Kærgård, Niels: Oslo-skolen og norsk økonomisk politikk [The Oslo school and Norwegian economic policy], 25 pp.
The article is by and large identical with the author's contribution in the capacity of first opponent at Espen Søylen's defence of thesis at The Norwegian School of Economics and Business Administration, Bergen, 29 January 1999. The paper is not published. Copies are obtainable from the author - addr: Institut for Økonomi, Skov og Landbohøjskole, Rolighedsvej 23, 1958 Frederiksberg C, Denmark.
- 2114 1999a Munthe, Preben: *Populister og originale økonomer [Populists and eccentric economists]*, Oslo, Tano Aschehoug, 160 pp.
The book triggered an intense debate including a number of strongly critical contributions, see the references in the bibliography.
- 2115 1999b Munthe, Preben: Populister og originale økonomer [Populists and eccentric economists], *Sosialøkonomen*, Vol 53 No 9, 20-21.
A replay to Olav Bjerkholt's critical review 1999a IDa.
IDa:2106
- 2116 1999-03 Førsund, Finn R.: On the contribution of Ragnar Frisch to production theory, *RISEC*, Vol 46, 1-34.
The present article is, except for minor changes, similar to Førsund 1995-11 IDa, see the annotations.
IDa:2081
- 2117 1999-10-20 Slotnæs, Marit K.: Skrullete økonomer [Crazy economists], *Universitas*, Oslo.
The article refers to the debate triggered by Munthe 1999a IDa.
IDa:2114
- 2118 2000b Bjerkholt, Olav: Ordsiftet fortsetter [The discussion goes on], *Observer*, Oslo, Vol 37 No 1, 22-22.
A final word from Professor Bjerkholt in the debate with Professor Munthe about Munthe 1999a IDa, *Populists and eccentric economists*.
IDa:2114
- 2119 2000 Munthe, Preben: Populister en gang til [Populists one more time], *Sosialøkonomen*, Vol 54 No 1], 15-15.
A second rejoinder to Bjerkholt with specific ref. to Bjerkholt 1999d IDa.
IDa:2109
- 2120 2000 Thalberg, Bjørn: *Leif Johansen - 1930-1982, Norsk Økonomisk Tidsskrift*, Vol 114, 1-157.
- 2121 2000 Willassen, Yngve: The IT interview: Professor Olav Reiersøl, *Econometric Theory*, Vol 16, 113-125.
The present work was first issued as memo from DE-UO, Willassen 1998-12 IDa. Having graduated in mathematics and mathematical statistics Reiersøl was appointed an assistant by Professor Ragnar Frisch early in 1936. In 1938 he was appointed a lecturer in theoretical statistics for students of economics, and held this position till 1945. Reiersøl has made several important contributions to econometrics and statistics, some of which recorded in the present bibliography. Willassen writes *inter alia* (p 114): "Professor Reiersøl, Ragnar Frisch, Trygve Haavelmo and Herman Wold made up the strong Scandinavian group whose contributions definitely helped lay the statistical foundation of modern econometrics."
IDa:2104

III.2

WRITINGS ABOUT RAGNAR FRISCH

- 2122 1934-05-29 *Aftenposten*: Professor Wieth-Knudsen klager over at han ikke blev dosent i Kjøbenhavn [Professor Wieth-Knudsen complains of not being appointed senior lecturer at Copenhagen], *Aftenposten*, Oslo.
Professor Wieth-Knudsen blames Professor Frisch, who was a member of the selecting committee, for not having acquainted himself sufficiently with Wieth-Knudsen's scientific production. A newspaper report presented as a special telegram from Copenhagen, signed -k.
- 2123 1937 Bosse, Ewald: *Tilstanden ved Universitetet [The state at the University]*, Oslo, Fabritius og Sønner, 167 pp.
In February 1928 a group of 19 prominent politicians - of whom 17 members of the Storting - made a written request to the Storting to establish a personal chair for Professor Dr. Ewald Bosse, the holding of which should entail a special obligation to read on a new subject dealing with the workmen's economic, sociological and cultural role in the society. The subject had been "constituted" by Professor Bosse himself, who had named it "arbeidslære" ["labour studies"]. The Professors of Economics did not approve the subject, nor did they find Professor Bosse competent for a professorship within the Economic Section of the Faculty of Law. Professor Bosse accused them for having given him an unfair treatment. The book is partly an indictment and partly an exposition of the whole story judged from Professor Bosse's point of view.
- 2124 1947 E. Aa.: Våre lærere III [Our teachers III], *Stimulator*, Oslo, Vol 1 No 3, 28-29.
E. Aa. is a signature, maybe an abbreviation of the author's name. The article gives a glimps of Frisch's activity as a teacher and a researcher, home and abroad.
- 2125 1947-01-21 *Aftenposten*: Norsk formann i FN-kommisjon [Norwegian chairman of a UN-Commission], *Aftenposten evening issue*, Oslo.
Professor Ragnar Frisch, representative of Norway in the UN Economic and Employment Commission, was appointed chairman of the Commission. He was proposed by the British representative and elected unanimously after having been supported by Poland.
- 2126 1947-01-21 *The New York Times*: Two posts in U.N. go to Norwegians. Frisch heads Economic and Employment Commission - Colban in ITO Office, *The New York Times*.
From the New York Times January 21 1947: "LAKE SUCCESS, N. Y., Jan. 20 - Professor Ragnar Frisch, Norwegian economist, was elected today chairman of the Economic and Employment Commission at its first session as a fully constituted organ of the Economic and Social Council."
- 2127 1955 *Stimulator*: Ragnar Frisch 60 år [Ragnar Frisch at 60], *Stimulator*, Oslo, Vol 9 No 2, 4-5.
Tribute to Ragnar Frisch.
- 2128 1955-03-03 Argentarius, *Verdens Gang*: Hvem er Ragnar Frisch? [Who is Ragnar Frisch?], *Verdens Gang*, Oslo.
A salute to Ragnar Frisch on his 60th birthday.
- 2129 1957-03-18 *Dagbladet*: Prof. Erling Petersen vil ikke anerkjenne Frisch [Prof. Erling Petersen is not willing to recognise Frisch], *Dagbladet*, Oslo.
Dagbladet (translated): Professor Petersen attracts attention at the university by a ridiculously surly article in a well-known encyclopaedia, printed the year after Frisch received the economists highest international distinction (Schumpeter's Memorial Prize). None of the impressive number of posts and marks of distinction received by Frisch are mentioned, and from Frisch's extensive written production only two rather unimportant

contributions are reported. The readers of Petersen's article were in fact served with an awkward and reluctant piece of writing with an obvious tone of political antipathy. (Professor Petersen's article is reproduced in *Dagbladet*.)

- 2130 1957-05-04 *Farmand*. Editor: Fra den økonomiske front [From the economic front], *Farmand*, Oslo.
The article repudiates the accusations made by *Dagbladet* 1957-03-18 IDa against Professor Petersen's encyclopedia article on Frisch. The bulk of *Farmand*'s article gives a (subjective) evaluation of Ragnar Frisch, as a teacher and as a researcher: Although he appears outwards as non-political, his students seem indoctrinated to a standardized understanding of how a rational economic policy should be. A number of them have come to power in departments and directorates where they put the Frischian policy into practice. Norway has been driven into a half-way socialistic planned economy, a development for which Frisch is more responsible than any other single person. Finally *Farmand* finds it likely that the decline in the number of students in economics reflects a tendency among economic students to dissociate themselves from the Frischian ideas of economic planning. Schreiner and Storvik (both students of economics at DE-UO) argue in 1957-05-25 IDb strongly against *Farmand*'s allegations.
IDA:1916, 2129 IDb:2131
- 2131 1957-05-25 Schreiner, Per, and Kjell Storvik: Fra den økonomiske front [From the economic front], *Farmand*, Oslo.
The authors reject strongly the assertions in *Farmand* 1957-05-04 IDa on the study of economics at the University of Oslo and on the influence of Ragnar Frisch. *Farmand* has added a "tail".
IDA:2130
- 2132 1958-06-07 Bj. G.: Regnemester med verdensry [Expert at arithmetic with world fame], *Arbeiderbladet*, Oslo.
Ragnar Frisch interviewed by Bj. G. in *Arbeiderbladet*.
- 2133 1960 Cowles, Alfred: Ragnar Frisch and the founding of the Econometric Society, *Econometrica*, Vol 28, 173-174.
See also Christ 1983 IDa and Beaud and Dostaler 1997a IDb.
IDA:2007 IDb:2085
- 2134 1960 The editors: Salute to Ragnar Frisch in honour of his sixty-fifth birthday, *Econometrica*, Vol 28, 172-172.
- 2135 1961-08-19 *Orientering*. Ed.: En banebryter [A pioneer], *Orientering*, Oslo.
Some biographical observations on Ragnar Frisch.
- 2136 1964a Lindholt, Tore: The man behind the gun. Ragnar Frisch - et intervju, *Observator*, Oslo, DE-UO, Vol 1 No 1, 9-14.
The interview continues in the next number of *Observator*, Lindholt 1964b IDa.
IDA:2137
- 2137 1964b Lindholt, Tore: Teori, praksis og ekspertise: To spørsmål til professor Frisch [Theory, experience and expertise: Two questions to Professor Frisch], *Observator*, Oslo, DE-UO, Vol 1 No 2, 1-4.
A continuation of the interview in *Observator* No 1, Lindholt 1964a IDa.
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Aftenposten brings the news that Ragnar Frisch and Jan Tinbergen have jointly been awarded the (first) Alfred Nobel Memorial Prize in Economic Science, and recapitulates the reasons given by the Swedish Scientific Academy (see the annotations to Lundberg 1969-10-27 IDa). A relatively copious remark by Professor Bertil Ohlin (Chairman of the Academy's Prize Committee) and a short comment by Professor Ragnar Bentzel (Secretary of the same Committee) are passed on by *Aftenposten's* Stockholm correspondent. In a conversation with *Aftenposten* Ragnar Frisch says himself deeply grateful for having been found worthy of receiving the prize. He gives some reflections on what might have been the main reasons for the Academy's decision, and also some glimpses from his own lifelong work as an economist. Furthermore *Aftenposten* presents viewpoints from the Professors Leif Johansen and Ole Myrvoll.

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- 2142 1969-10-28 Solli, Jens: Modellbygger og Nobelpris-vinner [Model builder and Nobel Prize winner], *Arbeiderbladet*, Oslo.
- 2143 1969-11-17 Samuelson, Paul A.: On two remarkable men, *Newsweek*, 66-66.
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- 2150 1976 Long, Frank: Introduction, in Long, Frank (ed): *Economic planning studies. A collection of essays by Ragnar Frisch, International studies in economics and econometrics, Vol 8*, Dordrecht-Holland, Boston-USA, D. Reidel Publishing Company, IX-XIII.
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- 2155 1987 Nørregaard Rasmussen, P.: Frisch, Ragnar Anton Kittil (1895-1973), in Eatwell, John, Murray Milgate and Peter Newman (eds) *The New Palgrave. A dictionary of economics. Volume 2*, London and Basingstoke, The Macmillan Press Limited,
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- 2162 1995a Bjerkholt, Olav: Introduction: Ragnar Frisch, the originator of econometrics, in Bjerkholt, Olav (ed): *Foundations of modern econometrics. The selected essays of Ragnar Frisch. Volume I*, Aldershot UK, Brookfield US, Edward Elgar, xi-lii.
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- 2163 1995b Bjerkholt, Olav: Ragnar Frisch, editor of *Econometrica* 1933-1954, *Econometrica*, Vol 63, 755-765.
Note on p 755: The article commemorates Ragnar Frisch (1895-1973), the first editor of *Econometrica*, and relates the events which finally led to the establishment of the journal.
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In Chapter 1, Introduction, pp 70-72, the author gives an overview of Ragnar Frisch's work and career. In Chapter 3, pp 165-172, he gives a more exhaustive treatment, a combination of a biography and a bibliography in which also an assessment of his entire scientific contribution is included.
- 2165 1995-02-27 Solstad, Arve: Gi meg skrive- og regnehjelp! [Give me writing and calculating assistance!], *Dagbladet*, Oslo.
Arve Solstad in conversation with Ragnar Frisch on the occasion of Frisch's 70th birthday.
- 2166 1995-03-01 Seip, Helge: Vår største sosialøkonom [Our greatest economist], *Dagbladet*, Oslo.
Helge Seip draws a colourful picture of Ragnar Frisch, as scientist, teacher, debater, human being, and as both caring and demanding master of his younger associates and assistants.
- 2167 1995-03-03 *Arbeiderbladet*: Professor Ragnar Frisch 70 år [Professor Ragnar Frisch 70], *Arbeiderbladet*, Oslo.
Arbeiderbladet's tribute to Professor Frisch.
- 2168 1995-03-03 Bakke, Egil: Professor Frisch hyldes [Professor Frisch is paid homage to], *Dagens Næringsliv*, Oslo.
Egil Bakke (former Director General of Norwegian Competition Othority) gives in the introduction some short remarks of prais for works Frisch accomplished in the thirties. His chief aim is, however, to convey the message that Frisch has come into the shade, and that the main reason for his decline is that he was fundamentally wrong, especially in one matter: his insistence on the possibility (and even necessity) of building practicable comprehensive macroeconomic planning models. Bakke is also severely critical about Frisch's way of advocating in favour of his model building ideas.
- 2169 1995-03-03 Kjos, Sigmund: Professor R. Frisch 70 år [Professor R. Frisch 70], *Aftenposten*, Oslo.
Sigmund Kjos pays tribute to Professor Frisch on his 70th birthday, and gives a rough outline of Frisch's achievements as a scientist. He also gives some reflections on Frisch's way of thinking as regards the possibility and even the necessity of constructing comprehensive decision models for the political authorities to use as steering instruments.
- 2170 1995-03-05 Munthe, Preben: Ragnar Frisch - ved hundreårsminnet [Ragnar Frisch - at the hundredth anniversary], *Aftenposten*, Oslo.
Preben Munthe refers to some of the fields in which Frisch achieved remarkable results. "Ragnar Frisch obtained overwhelming evidence to prove that his lifework was appreciated. He received marks of respect from a number of universities abroad. However, he did not live to see the most distinguished proof that he had formed a school. He had been dead and gone for many years when his student, assistant and finally colleague Trygve Haavelmo stood in the Concert Hall in Stockholm receiving the Nobel Prize diploma and medal" (translated).
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Ringerike is a periodical issued by Ringerikes Museum, Ringerike Ungdomslag and Ringerike Historielag. The Røyse Ridge, often named only Røyse, is a little place in the Ringerike district. There Frisch owned a cottage and a freehold site of a few acres. This country place was the "head quarter" for his work on apiculture, including queen rearing, from some years before the Second World War till he died in 1973. The present article is a tribute to the bee keeper, the scientist in economics, and the particular, though still generous, human being Ragnar Frisch.
- 2174 1998 Andvig, J. Chr., and Tore Thonstad: Ragnar Frisch at the University of Oslo, in Strøm, Steinar (ed): *Econometrics and economic theory in the 20th century: The Ragnar Frisch Centennial Symposium*, Cambridge UK, New York, Melbourne, Cambridge University Press, 3-25,
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- 2177 1998 Strøm, Steinar (ed): *Econometrics and economic theory in the 20th century: The Ragnar Frisch Centennial Symposium*, Cambridge UK, New York, Melbourne, Cambridge University Press, xiv + 629 pp.
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- 2178 2000a Bjerkholt, Olav: *Kunnskapens krav [The demands of knowledge]*, Oslo, Statistics Norway, 294 pp.
See the review of the present book by Einar Lie (research officer at Senter for teknologi, innovasjon og kultur, UiO), Lie 2000-12-04 IDa.
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- 2179 2000c Bjerkholt, Olav: *A turning point in the development of Norwegian economics - the establishment of the University Institute of Economics in 1932*, Oslo, memo DE-UO, No 36/2000, 60 pp.
The abstract: "A confluence of circumstances led to the foundation of the University Institute of Economics in Oslo in 1932. Ragnar Frisch was the kingpin in this development. After having been appointed professor of economics and statistics by an unusual decision by the Storting in 1932 he decided to decline an attractive offer of a permanent professorship from Yale University. The decisive factor was the prospect of establishing an empirical research institute at the University, financed by Rockefeller Foundation. The outcome was of major importance for the development of economics and empirical social science in Norway".
- 2180 2000-12-04 Lie, Einar: Da jerntriangelet ble til [When the iron triangle came into existence], *Dagbladet*, Oslo.
Einar Lie, researcher at Senter for teknologi, innovasjon og kultur, Universitetet i Oslo, [Centre of Technology, Innovation and Culture, University of Oslo], gives a review of Olav Bjerkholt's book "Kunnskapens krav" ["The demands of knowledge"], Bjerkholt 2000a IDa, see the annotation. The corners of the so-called Iron Triangle were the University Institute of Economics, the Ministry of Finance and Customs, and the Central Bureau of Statistics. "The Iron Triangle" was an expression used to visualize the close cooperation that took place between those three institutions. In this "triangle" the new (the post-war) Norwegian economic policy was staked out.

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PART IV

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