MEMORANDUM

POVERTY ALLEVIATION AS A CENTRAL OBJECTIVE OF DEVELOPING COUNTRY MACROECONOMIC POLICY

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Abstract

This paper examines how poverty alleviation can be incorporated as a policy objective in developing country macroeconomic models, analogous to the unemployment objective in industrial country applications. Three elements are involved: selection of the appropriate poverty measure, establishment of linkages with the rest of the macro model, and assessment of how the policy mix is affected. The IMF monetary model, which underpins its widespread adjustment programs, is reworked to include these elements. Some proposals are made to facilitate compliance with the balance of payments constraint, while restraining the extent to which the incidence of poverty rises from stabilization induced causes.

Introduction

It is surprising, given that poverty alleviation may be the single most important concern for a developing country, that developing country macroeconomic models do not treat it on a par with objectives such as inflation control and an improved balance of payments.1/ This contrasts with industrial country applications, where the goal of full employment and its powerful anti-poverty connotations, is center stage. Industrial country models, by taking account of potential trade-offs between full employment and other macroeconomic goals, facilitate the design of more efficient welfare promoting policy mixes. It would be desirable if similar uses could be found for developing country macro models. For this to be feasible, inter-dependencies between both poverty and fluctuations in the level of economic activity, on the one hand, and between poverty and other macroeconomic variables, on the other hand, will need to be made explicit. This enables the more enduring, structural, aspects of the incidence of poverty to be separated out from conjunctural ones, thereby contributing to a more efficient policy design.

The practice in developing country adjustment programs supported by the international financial institutions is to address poverty alleviation on a stand-alone basis. This is usually done through a redirection of budgetary outlays, after first determining the overall budget profile for meeting inflation and balance of payments objectives. In most instances the budget does not routinely provide for adverse short-run effects that the stabilization policy may cause. For many developing countries social insurance systems are greatly circumscribed and automatic stabilizer effects limited. There also seems to be limited scope and capacity for discretionary redeployment of scarce fiscal resources to address a conjunctural or stabilization policy-induced deterioration in poverty incidence. This became painfully evident during the recent East Asian economic crisis, which caused the incidence of poverty to rise dramatically in the affected countries.

1/ For some preliminary attempts see Kanbur (1987), Chand and Shome (1997), and Devarajan, et.al (2000). In contrast, the relationship between growth and poverty has received much more attention in the literature. For reviews see Lipton and Ravallion (1995), Bardhan (1995), Kanbur and Squire (1999), and World Bank (2000).

This paper raises the issue of how poverty alleviation can be incorporated as a central macroeconomic policy objective. The analysis is undertaken in three stages. First, the issue of which poverty measure to use is addressed in Section 2. The measure should be simple to compute, readily understood by politicians, and responsive to fluctuations in major macroeconomic variables. Second, the issue of how the selected measure should be embedded in a macroeconomic model is examined in Section 3. At a minimum, the macroeconomic framework should reproduce some of the major channels through which poverty is affected. The analysis here is based on the IMF's monetary model (see Polak (1957, 1997)) that underpins its influential adjustment programs. Third, how is the policy analysis affected when poverty alleviation is included as a macroeconomic policy objective? There is a growing consensus that tackling poverty should be a major concern of the country adjustment programs that the international financial institutions and other donors support.2/ However, reconciling the objective of compliance with the external balance of payments constraint with that of not allowing a deterioration in poverty is contentious. The priorities assigned to these objectives tend to differ between the international policy making institutions and the borrowing country.3/ Section 4 reviews this issue. Some suggestions are put forward in Section 5 for a more efficient and equitable promotion of the anti-poverty goal in a macroeconomic context. One proposal is for a self-financing mechanism that would provide automatic poverty relief in the event of exchange rate overshooting.

2.   Selecting a Suitable Poverty Measure for Macroeconomic Analysis

The rate of unemployment and its alleviation is a central concern in the macroeconomic analysis of industrial countries. Indeed, the experience of the deep unemployment and associated poverty of the 1930's can be said to have stimulated the development of macroeconomics as a separate body of study. However, with respect to the developing countries the frameworks used for macroeconomic analysis, for example,

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2/ In addition to the World Bank's long standing involvement, the IMF has recently established a revamped financing source - the Poverty Reduction and Growth Facility.
3/ It is intended that they be reconciled through the recently established country-led "Poverty Reduction Strategy Paper" that would take on board the views of various interested parties.

the model that the IMF uses in its highly influential policy work, do not provide an analogous role for unemployment let alone poverty.4/ Stabilization policy is focused on the balance of payments and inflation, whose control are regarded as essential for sustaining or resuming economic growth.

A plausible explanation for this striking difference is that unemployment is not a well-defined concept for most developing countries. This is presumably because the formal organized sector tends to be a lot smaller than in industrial countries. In developing countries, many households engage simultaneously in a variety of income-earning activities. Some income is obtained from jobs in the formal sector; other income is derived from the production and trade of goods and services in the informal sector, while the rest comes from subsistence production. In such economies, the effects of an economic downturn may be cushioned by informal sector and subsistence activities. Consequently, an indication of higher unemployment in the formal organized sector need not attract the sense of urgency found in industrial economies. Nonetheless, the deprivation caused by the economic downturn can be extensive even if not captured by the formal sector based unemployment indicator. Earnings in the informal sector are likely to be depressed because of the lower purchasing power of formal sector employees. This induces a decline in expenditures and could generate multiplier feed back effects.

As a result, many households may find themselves entering the ranks of the poor even if they have not formally been rendered unemployed. Insofar as this phenomenon is linked to fluctuations in the general level of economic activity, it bears similarities to the macroeconomic problem of unemployment. In principle, it should be amenable to a similar treatment. A simple indicator, based on the OECD convention of recording the number of persons out of work that are actively looking for work, is used in the macroeconomic analysis of unemployment in industrial countries. It is true that this unemployment indicator does not convey adequately the full dimensions of the unemployment problem. For example, it does not take account of the varying periods people are out of employment. The indicator may show no change in the numbers

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4/ See Agénor (2000) for an up-to-date review of developing country oriented models.

unemployed, yet the unemployment situation will have worsened if the unemployed now take twice as long as before to land a job. If the number of persons actively looking for work declines, the indicator registers an improvement even though the reason may be that people simply gave up and stopped looking for work, which indicates a worsening underlying situation.

But the above-mentioned deficiencies in the unemployment indicator has not prevented its effective use in industrial country macroeconomic analysis and policy work. The unemployment numbers are responsive to fluctuations in the level of economic activity, which make them a good indicator of how unemployment is affected by macroeconomic developments. This facilitates a more rational exploitation of trade-offs with the other goals of stabilization policy.5/ Furthermore, the simplicity of the measure focuses attention on the problem and helps in mobilizing the political support needed for addressing unemployment.

A simple poverty indicator that appears sensitive to fluctuations in the level of economic activity is the head count indicator, which indicates the proportion of households whose income falls below a defined poverty line. The use of this indicator has been criticized for neglecting important dimensions of poverty such as its depth and distribution among the poor. A number of indicators have been developed to examine these and other aspects of poverty.6/ Despite their ingenuity in attempting to capture in a single indicator different facets of poverty, they increase the indicator's complexity.

If the indicator is to be used primarily for macroeconomic analysis, its sensitivity to major macroeconomic variables is of primary interest. Including in the indicator components that are less sensitive, because they are subject to different forces detracts from the analysis of stabilization policies. What for example is one to make of a situation

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5/ There are several reasons why people stop looking for work or why the proportion of hard-core unemployed increases that may have relatively little to do with the economic fluctuation. Separating out the conjunctural elements facilitates the analysis of the more enduring aspects of the unemployment problem.
6/ See especially Sen (1976), and Foster, Greer and Thorbecke (1984).

where the economic downturn causes the head-count ratio to rise, but independent redistributional factors have caused the poverty gap (that is the difference between the mean income of the poor and the poverty line) to decline by an amount that more than offsets the first effect? In one sense poverty has declined but should the effect of conjunctural forces be ignored? Had it not been for those forces, poverty would have declined by even more. There is the danger that in mixing different concerns in a single indicator, the remedial actions proposed on the basis of the index would also tend to mix different considerations. This detracts attention from the need for countervailing measures to offset the conjunctural or stabilization related effects that could make a big difference to the poor. There is, therefore, much to be said for opting for the simple head-count indicator when considering stabilization policy.

3. Incorporating the Poverty Indicator in a Macroeconomic Model

The next step is to reformulate a macro model that is widely used in the development of macro policy in countries undergoing adjustment programs to include systematically the poverty alleviation objective. Three elements are needed: first, an indicator, here the head-count ratio; second, a specification of how the indicator interacts with the macro-economy; and third, a norm for the guidance of stabilization policy. The last is taken up in Section 4.

Preparing the head-count indicator

Some manipulations are needed before the head-count indicator can be used in macro-economic analysis. Consider a distribution of households in ascending order of income, and let x represent household income distributed in accordance with a probability density function $f(x)$ with mean μ. Let z denote the poverty line, with $H \equiv F(z)$ the so-called head-count ratio indicating the proportion of households below the poverty line. The Lorentz curve, which plots the cumulative fraction of total income received by different segments ranked by income, is defined as (see Kendall and Stuart (p 48. 1967))

$$L(p) \equiv \Phi(x) = \frac{1}{\mu} \int_0^x tf(t)dt \qquad where$$

$$p = F(x) = \int_0^x f(t)dt$$

Assuming that the distribution of income by households remains unchanged, how does the head-count ratio vary when society's mean income changes or the poverty line? Following Kakwani (1993), the first and second derivatives of the Lorenz curve with respect to the head-count ratio can be expressed, respectively, as

$$L'(H) = z / \mu \qquad \qquad (1)$$

$$L''(H) = \frac{1}{\mu f(z)} \qquad \qquad (2)$$

where μ is the mean per capita income of the population, and $f(z)$ is the frequency density at z. 7/

Differentiating equation (1) with respect to μ and z, respectively, shows how they affect the head-count ratio

$$\frac{\partial H}{\partial \mu} = -\frac{z}{\mu^2 L''(H)} < 0 \quad \equiv -\frac{z}{\mu} f(z) < 0 \qquad (3)$$

$$\frac{\partial H}{\partial z} = \frac{1}{\mu L''(H)} > 0 \quad \equiv f(z) > 0 \qquad (4)$$

where (2) has been used to make relevant substitutions.

The response elasticities of the head-count ratio with respect to these two variables follow:

7/ These derivatives follow from the definition of the Lorentz curve on substituting $H(x)$ for p and differentiating.

$$\eta_{H,\mu} \equiv \frac{\partial H}{\partial \mu} \frac{\mu}{H} = -\frac{zf(z)}{H} < 0 \tag{3a}$$

$$\eta_{H,z} \equiv \frac{\partial H}{\partial z} \frac{z}{H} = \frac{zf(z)}{H} > 0 \tag{4a}$$

From (1), taking logarithms and time differentiating the first derivative of the Lorenz curve and using (4a) yields the following expression for the proportional change in the head-count ratio

$$\frac{\dot{H}}{H} = \eta_{H,z} \left[\frac{\dot{z}}{z} - \frac{\dot{\mu}}{\mu} \right]$$

Using discrete percentage changes to approximate continuous rates of change

$$\frac{\Delta H}{H_{-1}} \approx \eta_{H,z} \left[\frac{\Delta z}{z_{-1}} - \frac{\Delta \mu}{\mu_{-1}} \right] \tag{5}$$

The subscript $_{-1}$ refers to the previous period, and Δ is the first difference operator.

Equation (5) states that the head count ratio rises with the poverty line and falls if mean per capita income were to increase. The response to both variables is given by the elasticity of the head-count ratio with respect to z.8/ The expression in (5) provides

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8/ In deriving this expression it is assumed that nominal income growth shifts the Lorentz curve uniformly and that the distribution of income does not undergo change. In real terms this implies a fixed Lorenz curve. There is some supportive empirical evidence. In a study of Indian data, Ravallion and Datt (1996) conclude that the bulk of the fluctuation in the head-count index was the result of income fluctuations, with distributional effects playing a much smaller role. Dollar and Kraay (2000) provide corroboration that the income fluctuation was the dominant influence in affecting the numbers of the poor in a comprehensive study of 92 countries. Banerjee (2001) and Quah (2001) express some well taken methodological skepticism about this study and its reliance on a cross-sectional approach. Cornia and Kiiski(2001) examine time-series evidence and find significant shifts to greater inequality in the post-Bretton Woods era. For short-run stabilization purposes, I shall assume that the degree of inequality remains unchanged.

convenient linkages between the head-count ratio and the macro economy. Assume that z refers to the local currency value of a poverty standard expenditure basket comprising a domestic composite good Q and a final consumption foreign import good Q_f.

$$z = \bar{Q} P^{1-\delta} \left(\bar{Q}_f E P_f \right)^\delta \equiv \bar{Q} P \left(\frac{\bar{Q}_f E P_f}{\bar{Q} P} \right)^\delta \tag{6}$$

where bars indicate the poverty standard; E is the nominal exchange rate in local currency; the subscript f indicates import; and the superscript δ is the share of the foreign good in the poverty line. Let P refer to the GDP deflator, which has an imported input component and is defined as follows:

$$P = P_d \left(\frac{E P_{if}}{P_d} \right)^\beta \tag{6a}$$

Here the subscripts d and if refer to the domestic value-added and imported inputs, respectively. The country is assumed to be a price-taker with respect to foreign imported goods and to follow mark-up pricing practices.

Assuming for simplicity that foreign prices remain unchanged, the proportionate rate of change in z from time differentiating (6) and (6a) is

$$\frac{\Delta z}{z_{-1}} = \left((1-\beta)(1-\delta) \right) \frac{\Delta P_d}{P_{d-1}} + (\beta + \delta(1-\beta))(\frac{\Delta E}{E_{-1}}) \tag{7}$$

Substituting $\dfrac{\Delta \mu}{\mu_{-1}} \equiv \dfrac{\Delta Y}{Y_{-1}} - n$ for the mean per capita income growth rate in (5), where n is the given population growth rate, and using (7)

$$\frac{\Delta H}{H_{-1}} = \eta_{H,z}[(1-\delta)(1-\beta)\frac{\Delta P_d}{P_{d-1}} + (\beta+\delta(1-\beta))(\frac{\Delta E}{E_{-1}}) - (\frac{\Delta Y}{Y_{-1}} - n)] \qquad (8)$$

The head-count ratio increases with the rate of inflation and the exchange rate depreciation, both of which reduce purchasing power, but declines with increasing per capita income. If there is no exchange rate depreciation, for example if the country operates a pegged exchange rate regime, the head count ratio reduces to a negative function of real per capita income growth.

Expanding the IMF monetary model to include poverty alleviation

The next step is to specify a model, which will generate solutions for $\frac{\Delta Y}{Y_{-1}}$ and for $\frac{\Delta P}{P_{-1}}$ that will determine how the head-count ratio varies. For the present I will treat the rate of exchange rate depreciation as exogenous and defer the discussion of some of the influences on it to the next section. Since most developing and transition economies either have a current adjustment program with the IMF or are negotiating one, it is useful to refer to the IMF monetary model. Polak (1957, 1997) pioneered this model which provides the key underpinning for the financial programs. The model is in the classical monetary tradition, and is often referred to as the open economy quantity theory of money model. The model operates by regulating the domestic source component of money supply – the rate of domestic credit expansion – to achieve a desired balance of payments target. The latter is linked to the rate at which the monetary system's international reserves are being accumulated - the foreign source component of the money supply.

Its basic equations (Polak, op.cit) refer to an interval in time *t* and have all variables in nominal local currency values unless otherwise specified:

$$Mo = \frac{1}{v}Y \qquad (9)$$

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$$M = mY \tag{10}$$

$$\Delta Mo \equiv B + \Delta D \tag{11}$$

$$B \equiv X - M + K \tag{12}$$

where Mo is the Money stock, v the velocity of circulation of money, M is imports, m is the marginal propensity to import, B is the local currency value of the change in international reserve holdings, D is the stock of net domestic assets of the banking system, X represents exports, and K denotes net capital inflow.

Equation (9) is a demand for money function; equation (10) is an import function; equation (11) is an identity indicating the sources of domestic monetary expansion; and equation (12) is the balance of payments identity.9/ The solutions are obtained on equating the incremental flow supply of money (11) with its incremental demand, obtained on taking first differences of (9).

$$\frac{1}{v} \Delta Y = B + \Delta D \tag{13}$$

Using the definition of B from (12), the import demand function (10), the property $Y \equiv \Delta Y + Y_{-1}$, one–period lagged B_{-1}, and one-period lagged money demand, the above equation can be conveniently expressed in terms of growth rates as

$$\frac{\Delta Y}{Y_{-1}} = \frac{1}{(1+mv)} \frac{\Delta(K+X)}{Mo_{-1}} + \frac{1}{(1+mv)} \frac{\Delta D}{Mo_{-1}} + \frac{1}{(1+mv)} \frac{B_{-1}}{Mo_{-1}} \tag{14}$$

9/ Since the concern here is with the conceptual use of the model, no specifications are provided of definitions, valuations and other aspects needed for empirical applications. These are to be found in readily accessible IMF documents explaining the technique of financial programming. To simplify the exposition, Polak assumes both v and m are constant. There is a conceptual problem with the model in that it breaks down if the small country assumption is maintained and nominal income is fixed, since its adjustment mechanism relies on changes in nominal income to induce changes in imports. This problem is easily handled on rendering imports a function of domestic expenditure instead. See Chand (1989).

The period by period solution for the balance of payments is obtained on making the relevant substitutions in (13), using (14)

$$\frac{B}{Mo_{-1}} = \frac{1}{(1+mv)}\frac{\Delta(K+X)}{Mo_{-1}} - \frac{mv}{(1+mv)}\frac{\Delta D}{Mo_{-1}} + \frac{1}{(1+mv)}\frac{B_{-1}}{Mo_{-1}} \qquad (15)$$

Equations (14) and (15) indicate that both nominal income growth rates are stimulated and the balance of payments improved by increasing net foreign capital inflows and exports. However, raising the rate of domestic credit expansion has opposite effects – stimulating nominal income growth but worsening the balance of payments.

Subtracting equation (15) from (14) and using $\dfrac{\Delta Mo}{Mo_{-1}} = \dfrac{\Delta Y}{Y_{-1}}$ from the demand function in (9), yields

$$\frac{\Delta Mo}{Mo_{-1}} - \frac{B}{Mo_{-1}} = \frac{\Delta D}{Mo_{-1}} \qquad (16)$$

The solutions of the model thus conform to the requirements of the fundamental monetary condition that the rate of growth in the money supply equal its domestic and foreign source components.

In the IMF's financial programming approach a balance of payments target B^* is specified. Often the rate of growth in nominal income is taken as exogenously given, which determines the rate of growth in the demand for money. Inserting the latter into (16) generates a solution for the rate of domestic credit expansion. On the face of it this implies a one-to-one relationship between the domestic credit expansion instrument and the balance of payments outcome. However, as the exposition of Polak's model shows, this is not an essential requirement, since changing the rate of domestic credit expansion will affect the rate of growth in nominal income, and hence the incremental demand for money. Determining the appropriate rate of domestic credit expansion to achieve a given

balance of payments target requires therefore that the whole model comprising (14) and (15) be solved. Equation (16) is an ex post condition that is always met, but without operational implication for the determination of the permissible rate of domestic credit expansion, except if nominal income is exogeneously determined and not sensitive to the credit flow.

Equation (14)'s nominal income solution provides one term in the head-count change index stated in equation (8). A solution is also needed for the rate of inflation. A simple way of closing the model, appropriate where the rate of output growth is exogenously determined, as might be the case with pure agricultural economies, is to postulate

$$\frac{\Delta P}{P_{-1}} = \frac{\Delta Y}{Y_{-1}} - q \qquad (17)$$

where q is the exogenously given rate of growth in output.10/ The solution for the rate of inflation follows immediately on using (14) to substitute for nominal income growth in the above equation.

4.   Poverty Alleviation as a Macroeconomic Objective: Between Scylla and Charybdis

First, some policy implications of the IMF monetary model, as extended here to include poverty alleviation, are noted. This is followed by a discussion of political economy issues involving two alternative modes. In the first, which I shall refer to as the international creditor mode, or Scylla, the focus is on complying with the balance of payments constraint. I shall refer to the second, where the emphasis is on economic growth and reducing poverty, as the national mode, or Charybdis. These two modes are caricatures but they may help in identifying the constraints on policy and options

10/ Allowing for aggregate demand effects on output growth complicates the exposition, but can be readily handled using the approach set out in Chand (1997).

available. Finally, I will offer suggestions for reconciling the different viewpoints in a manner that promotes the goal of poverty alleviation.

An overdetermined model

What would constitute an appropriate objective for poverty alleviation in a stabilization context? This varies but a minimal goal would be that of keeping the head-count ratio unchanged. Merely keeping the head-count ratio constant would have resulted in a much-improved situation for the population of the East Asian crisis economies. Setting equation (8) equal to zero implies

$$(1-\delta)(1-\beta)\frac{\Delta P_d}{P_{d-1}} + (\beta+\delta(1-\beta))(\frac{\Delta E}{E_{-1}}) - (\frac{\Delta Y}{Y_{-1}} - n) = 0 \qquad \text{or}$$

$$\frac{\Delta Y}{Y_{-1}} = n + (1-\delta)(1-\beta)\frac{\Delta P_d}{P_{d-1}} + (\beta+\delta(1-\beta))(\frac{\Delta E}{E_{-1}}) \equiv A1 \qquad (18)$$

Now from equations (14) and (15) a balance of payments target $B*$ implies the following solution for the rate of nominal income growth

$$\frac{\Delta Y}{Y_{-1}} = \frac{\Delta(K+X)}{Mo_{-1}} + \frac{B_{-1}}{Mo_{-1}} - \frac{1}{mv}\frac{B*}{Mo_{-1}} \equiv A2 \qquad (19)$$

Finally, the rule for determining the inflation rate implies yet another solution for nominal income growth

$$\frac{\Delta Y}{Y_{-1}} = \frac{\Delta P*}{P_{-1}} + q \equiv A3 \qquad (20)$$

From the definition in (6)

$$\frac{\Delta P^*}{P_{-1}} = (1-\beta)\frac{\Delta P_d}{P_{d-1}} + \beta\frac{\Delta E}{E_{-1}} \tag{21}$$

On using (21) in equation (20), the inflation target's implication for nominal income growth is

$$\frac{\Delta Y}{Y_{-1}} = \left(\frac{1}{(1-\beta)}\right)\frac{\Delta P^*}{P_{-1}} - \frac{\beta^2}{(1-\beta)}\frac{\Delta E}{E_{-1}} + q \equiv A3 \tag{22}$$

Using (21) also to substitute for the domestic value-added component of the price index in equation (18) yields an alternative and simpler expression for the condition of no change in the head count index.

$$\frac{\Delta Y}{Y_{-1}} = (1-\delta)\frac{\Delta P^*}{P_{-1}} + \delta\frac{\Delta E}{E_{-1}} + n \equiv A1 \tag{23}$$

The three targets with respect to the head-count ratio, the balance of payments and the inflation rate can be simultaneously achieved only if $A1 = A2 = A3$. In general, this may not be possible. This is because only one instrument has been explicitly provided so far– the rate of domestic credit expansion. While the exchange rate is a potential instrument, its beneficial effects in terms of stimulating exports and import substitution are likely to take longer than the usual period for a stabilization program whereas its shorter-term nominal price effects are felt immediately. For reasons advanced later involving volatile capital flows, it may be difficult to program the exchange rate instrument. Unless additional instruments are forthcoming, either one or more fixed targets will have to be given up and replaced by flexible targets.

Scylla

Countries typically approach the Fund when their international reserves have been depleted and they are encountering difficulties in import financing. As failure to

satisfactorily resolve this problem will jeopardize future growth and prosperity, an adjustment program is therefore developed, which is built around a target for improving the balance of payments. Typically the stabilization objectives will also involve a target for the rate of inflation. This target helps ensure the competitiveness of the economy and is important in reducing the incidence of poverty.11/ From (20), the lower the inflation target, the lower the rate of growth in nominal income has to be, given q. But as equation (19) shows, the lower the rate of nominal income growth, which requires a more contractionary credit policy, the bigger the improvement in the balance of payments. From the vantage point of the international creditor, this outcome would be regarded as favorable since it implies a lower repayment risk. It is widely believed that IMF supported programs tend to over perform on the balance of payments during the program period.12/

Charybdis

Suppose the analysis had begun with the focus on poverty and equation (23) is operative. The greater the exchange rate depreciation, the bigger the increase in nominal income growth required to preserve the head count ratio. Credit policy would have to be easier to ensure this outcome, which could be popular but unlikely to promote compliance with the balance of payments constraint.

Some traditional resolutions and their limitations

Improvements in the poverty indicator brought about by an easier credit policy will therefore not be sustainable when the balance of payments constraint is binding. A solution that might be considered is to impose controls on external transactions so as to over come the payments constraint. This could buy some time, but is likely to bring about a culture of evasion, excessive bureaucraticsm, and corruption. The progressive isolation

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11/ See Easterly and Fischer (2000).
12/ A definitive assessment is still pending. Bruno (1992) notes the balance of payments over performance for several Eastern European countries, which Lane et. al (1999) also find for the East Asian crisis economies.

of the economy will also cut it off from vital international sources of growth. There are enough country examples to illustrate the resulting stagnation.

A potential instrument that has not so far been considered is net foreign capital inflows K. If through debt relief or additional assistance it is increased, it could help improve the balance of payments as is readily seen from equation (15). It will also stimulate nominal GDP as is indicated by equation (14), and thereby help promote the poverty alleviation goal. However, the inflation target could now be jeopardized.

In the period after the second oil shock in 1978/79, foreign capital became scarce. Since neither the so-called catalytic effect of Fund programs in stimulating capital inflows was as strong as it used to be, nor were commodity prices buoyant, the contractionary effects of adjustment programs were more acutely felt. Borrowing countries increasingly complained about the immiserizing effects of the adjustment programs and the international financial institutions found themselves facing a dilemma. On the one hand, how to deal with the balance of payments problems of the borrowing countries when international financial flows were constrained? On the other hand, how to prevent the decline in real incomes and the growing incidence of poverty from jeopardizing the programs?

The solution that emerged was for governments to engage in more pro-poor discretionary expenditures. Given a minimum acceptable balance of payments improvement target, if the maximum rate of domestic credit expansion ΔD is inadequate to support any further increases in government expenditure, the only recourse is to change its composition in favor of the poor. But this is a limited solution for political economy reasons. While there are doubtless examples of wasteful expenditures that could be cut to the general benefit, powerful local vested interests are likely to resist. Furthermore, the country's constitution and other legal provisions might protect many items of expenditures.

Increasing foreign capital inflows thus remains an attractive option, and in the 1990's countries were urged to make themselves more attractive to foreign capital through opening up their capital markets. But this created a new source of vulnerability for many developing countries. If capital is attracted by the ease with which it can leave, then ubiquitous circumstances, which need not be economic, as appears to have occurred recently in Turkey, could cause capital to rapidly flow out. Since opening to capital flows makes it more difficult to discriminate against residents, the capital outflow of non-residents is likely to be compounded by residents, who fearing a large and rapid depreciation of the exchange rate, also send their money out. The very ease with which local cash hoards can be converted into foreign currency assets will rapidly deplete international reserves. Sooner or later the exchange rate may have to be floated, which could result in massive overshooting of the exchange rate beyond the levels needed to improve competitiveness. According to (14), the capital outflow will also be contractionary, lowering the rate of growth in nominal GDP. This together with the exchange rate development, will cause the head-count indicator to increase.

In response to problems of volatile capital outflows and overshooting of exchange rates, standard recommendations are to raise interest rates, and initiate structural reforms to promote more effective financial sector regulation, greater transparency and good governance. Since the intention is to make the environment more attractive to needed foreign capital, it is further recommended that the temptation to re-introduce controls on capital movements be resisted. Recognizing that vulnerable groups might be exposed to additional hardships- a rise in interest rates of several hundreds of percentage points is bound to have a severe impact on credit markets and hit the small businesses hardest - a social safety net is recommended. We are thus at the starting point, where the balance of payments constraint enforced an unpopular solution of changing the composition of government expenditure in favor of the poor, except that capital market liberalization may have worsened the problem. It is, perhaps, not surprising that proposals of progressive capital market liberalization combined with pro poor policies has encountered so much resistance.

5.   Some Proposed Solutions

What can be done to ensure a better poverty outcome with respect to stabilization or conjunctural forces for developing countries without violating the overall constraint imposed by the balance of payments, and at the same time promoting an acceptable inflation performance? It is helpful to look at equations (22) and (23), initially on the assumption that there is no exchange rate adjustment. Two equations for determining nominal income growth that are linear in the target inflation rate result:
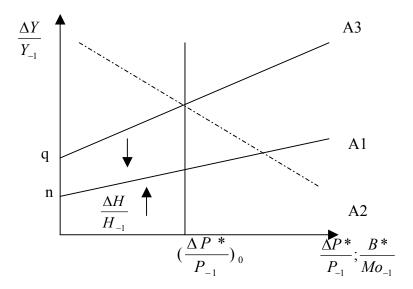
$$\frac{\Delta Y}{Y_{-1}} = \left(\frac{1}{(1-\beta)}\right)\frac{\Delta P^*}{P_{-1}} + q \equiv A3 \tag{22a}$$

$$\frac{\Delta Y}{Y_{-1}} = (1-\delta)\frac{\Delta P^*}{P_{-1}} + n \equiv A1 \tag{23a}$$
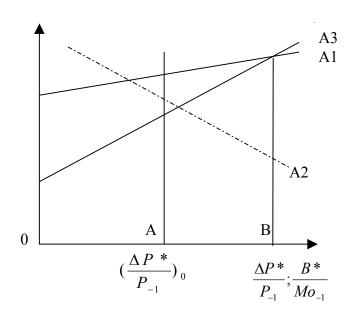
These relationships are plotted in the upper panel of Chart 1 on the assumption that the intercept terms $q > n$, and noting that the slope of the inflation target condition in (22a) is greater than that of the head count index condition (23a) for reasonable parameter values. The Y-axis indicates the rate of growth in nominal income, while the abscissa shows respectively the rate of inflation and the rate of growth in the foreign component of the money supply. For the given inflation target, the implied nominal income growth rate *A3* from the inflation condition exceeds that denoted *A2* needed to preserve the head count ratio. The head count ratio will therefore fall. By construction, the *A3* line concerning the balance of payments passes through the point *O* indicating that the balance of payments target and the inflation rate targets are being met. The outcome portrayed in the upper panel is favorable.

CHART 1. CONSISTENCY OF STABILIZATION TARGETS

Panel A: No Exchange Rate Action

Panel B: With Exchange Rate Action

Next allow for exchange rate depreciation in the lower panel of the chart, reverting to equations (22) and (23). The effect is to shift the intercept terms, raising that for the poverty index while lowering the *A3* line. If the exchange rate displacement is sufficiently large, the *A1* line will exceed the *A3* line for the given inflation target as shown in the Chart. The rate of growth of nominal income would now fall short of that needed to meet the poverty target, and the head count ratio will rise. The balance of payments or *A2* line is assumed not to be affected – it could go either way depending on how the exchange rate change affects the various categories. As drawn in the lower panel it implies over performance with respect to the inflation target. To promote the poverty alleviation objective, nominal income growth will have to be increased, which would   A1 require an increase in the inflation target. Moving from point *A* to *B* on the abscissa of Panel B, will preserve the poverty objective but now the balance of payments performance will suffer. The implication is that unless additional instruments can be mobilized, it may not be possible to attain the targets simultaneously and the policy mix will have to be juggled to ensure an acceptable set of trade-offs.

Insofar as there is over performance on the balance of payment, some leeway is provided for the adoption of a more expansionary domestic monetary policy. The additional credit could be used to ease the government budget constraint and provide more resources for the poor, and also support credit programs targeted to small businesses.

Exchange rate overshooting and underlying volatile capital outflows can exert strong effects on the poverty indicator. They should be avoided to the extent possible.[13] If it is not possible to avoid the exchange rate overshooting and capital outflows, how

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[13] This may require imposing restrictions on the free flow of capital as do China, India, Chile, and now Malaysia. The purpose, of course, is not to deny capital the freedom to move, but rather to restrain speculative excesses. Many devices are available that fall well short of outright prohibition, for example, information requirements, ensuring that taxes have been paid before repatriation is allowed, regulating borrowings by banks for the purpose of financing capital outflows, etc

could their adverse impact on the poverty indicator be mitigated? Additional resources will be needed to finance the anti-poverty measures, but where are these to be obtained? It is difficult to mobilize these resources through ordinary taxes on income and consumption, but there may be scope for taxing windfalls. These accrue as a consequence of the exchange rate overshooting to a fortunate few with foreign exchange earnings. It is even possible that the existence of a credible windfall tax, in place before a crisis hits, could go some way towards restraining the initial speculative excesses and exchange rate overshooting. Such a tax would apply to windfalls generated by the exchange rate overshooting on exports and on holdings of foreign exchange balances. Often a large part of exports are undertaken under various preferential tax arrangements and escape taxation. It would seem only fair that they should at least pay a windfall tax and bear some of the adjustment burden. Diverting the proceeds from this source to supplement the purchasing power of the poor compensates them directly for the losses they experience from the exchange rate overshooting.

It is also important to have the macroeconomically oriented anti-poverty measures in place before the crisis hits. There may be a problem in quickly identifying the households who cross the poverty line as a result of deteriorating incomes and depreciating exchange rates. An alternative, broader-based, approach financed through windfall taxes could be adopted that subsidizes essential commodities consumed by the poor or credit requirements for their businesses. These would be temporary subsidies that decline as the exchange rate overshooting is reversed and incomes pick up. In effect the proposal here amounts to creating an automatic fiscal stabilizer, but different from the traditional version in that they are fully financed. It may not be possible to give full scope to the traditional type of fiscal stabilizers since the implied increase in the budget deficit would require additional credit financing that is justifiable only if international reserve holdings are adequate. Taxing windfalls is ideal, since they would probably have fuelled a capital outflow.

6. Conclusion

This paper has argued for the routine inclusion of a poverty alleviation objective in macroeconomic models that are applied to developing countries, and illustrated how this can be done in the context of the IMF's monetary model. The proposed poverty indicator is deliberately kept simple so as to facilitate the analysis and control of macroeconomically induced fluctuations in the incidence of poverty. A distinction was drawn between conjunctural influences on the incidence of poverty, including those exerted by stabilization policy, and longer-run growth related effects. It would seem essential to separate the two for more efficient and effective policy making.

It is hoped that by making more explicit the stabilization policy implications for poverty, the zeal with which objectives such as reducing the rate of inflation or improving the balance of payments are pursued would be tempered. This outcome would be analogous to the balancing effects exerted by the simple unemployment indicator in industrial country applications, through recognition of its explicit tradeoffs with the other macroeconomic objectives. Controlling for adverse macroeconomic effects on the incidence of poverty can help clear the ground for the systematic handling of the more enduring, multi-faceted aspects of poverty.

References

Agénor, Pierre-Richard, 2000, *The Economics of Adjustment and Growth*, Academic Press

Bardhan Pranab, 1995, "Research on Poverty and Development Twenty Years After *Redistribution with Growth*," *Annual World Bank Conference on Development Economics*. P. 59-72.

Banerjee Abhijit, 2001, "Inequality and Growth: What Can the Data Say?" paper presented at the WIDER Development Conference, *Growth and Poverty*, May 2001, Helsinki.

Bruno, Michael, 1992, " Stabilization and Reform in Eastern Europe" *IMF Staff Papers*, vol.39.

Chand, Sheetal K, 1989, "Towards a Growth-Oriented Model of Financial Programming" *World Development*, vol. 17. No.4. p.567-98.

---------, 1997, "Nominal Income and the Inflation-Growth Divide" IMF Working Paper 97/147 (Washinton: IMF).

--------, and Partho Shome,1997 "Poverty Alleviation in a Financial Programming Framework: An Integrated Approach" chapter 7 in *Fiscal Policy and Economic Reform*, ed. by M. Blejer and T. Ter-Minassian, Routledge.

Cornia Giovanni Andrea with Sampsa Kiiski, 2001, "Trends in Income Distribution in the Post World War 11 Period: Evidence and Interpretation" paper presented at the WIDER Development Conference, *Growth and Poverty*, May 2001, Helsinki.

Devarajan, Shanta, et.al. 2000, "A Macroeconomic Framework for Poverty Reduction Strategies," mimeo, World Bank.

Dollar, David, and Aart Kraay, 2000 "Growth is good for the poor," World Bank mimeo.

Easterly, William and Stanley Fischer, 2000, "Inflation and the Poor," *Journal of Money Credit and Banking*.

Foster, J. Joel Greer and Eric Thorbecke, 1984, "A class of Decomposable Poverty Measures," *Econometrica* 52 p. 761-66.

Kakwani, Nanak, 1993, "Poverty and Economic Growth with Application to Cote d'Ivoire," *Review of Income and Wealth*, Vol. 39 p. 121-39.

Kanbur, Ravi, 1987, "Measurement and Alleviation of Poverty," *IMF Staff Papers* 34 p. 60-85.

----------- and Lynn Squire, 1999, "The Evolution of Thinking About Poverty: Exploring the Interactions" mimeo, World Bank.

Kendall, M.G, and A. Stuart, 1969, *The Advanced Theory of Statistics*, Vol. 1. (Hafner, New York)

Lane, Timothy et. al., 1999, " IMF-Supported Programs in Indonesia, Korea, and Thailand: A Preliminary Assessment" *IMF Occasional Paper*, 178.

Lipton, Michael and Martin Ravallion, 1995 "Poverty and Policy," in Jere Behrman and T.N. Srinivasan, editors, *Handbook of Development Economics*, Volume 3B, Chapter 41.

Polak, Jacques J., 1957, "Monetary Analysis of Income Formation and Payments Problems," *IMF Staff Papers*, 6 p. 1-50.

----------1997, " The IMF Monetary Model at Forty," IMF Working Paper 97/49 (Washington: IMF).

Quah Danny, 2001, "Some Simple Arithmetic on How Income Inequality and Economic Growth Matter" paper presented at the WIDER Development Conference, *Growth and Poverty*, May 2001, Helsinki.

Ravallion Martin, and Gaurav Datt, 1996, "India's checkered history in fight against poverty," *Economic and Political Weekly*, Special number, September.

Sen, A, 1976, "Poverty: An Ordinal Approach to Measurement," *Econometrica*, 44 p. 219-31.

World Bank, 2000, *World Development Report*. Washington D.C.