Are all the good men fathers? Wage dynamics around child birth

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January 2010, Very Preliminary! Not for distribution!

Abstract

In this study we investigate the wage dynamics of men with and without children. Particular account is taken of the endogeneity of fertility of men. We hypothesize that family background is an important contaminating factor and we account for this usually unobserved factor by within brother and within twin estimation. For our empirical analyses we exploit rich Norwegian register data on cohorts of men born between 1955-65 for whom we have information about their complete earnings from 1967 until 2005, and complete information on their fertility including timing of births. Descriptives show that on average men with children earn around 6 per cent more than men without children. This holds also when we follow them over time from the beginning of their careers. This premium reduces when we apply within brother estimates. Within twin estimates become not significant and hence suggest that family heterogeneity is an important explanatory factor. JEL codes:

Key words: life-cycle earnings profiles, men, fertility, family background, twins, siblings

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1 Introduction

International evidence shows that women with children earn less than women without children (Waldfogel, 1998). This is often labelled the "family gap". Among the factors driving differences are observed and unobserved heterogeneity, such as differences in education and experience (e.g. Waldfogel, 1998), and direct losses through work interruptions related to birth and flatter wage profiles after birth (e.g. Ejrnes and Kunze, 2009). By contrast, very little empirical research exists on men's outcomes in the labour market in response to having children. Overall however existing evidence for the US, Germany and Denmark suggests that men with children earn higher wages than other men (Lundberg and Rose, 2002, Choi et al, 2005, Gupta, et al., 2007), and work actually more hours (Lundberg and Rose, 2002, Choi et al, 2005)).\(^1\) This suggests the question whether there is a "family gain" for men.

It is challenging to identify a causal effect of children on wages, and hence family gap or gain. In this study we provide new evidence on the wage dynamics of men with and without children exploiting within brother and within twin brother variation. This approach addresses endogeneity problems through factors driven by the family background. We hypothesize that social attitudes influenced through family background or various factors through the neighbourhood of the family are important but usually unobserved factors and hence otherwise biasing estimated effects of children on wage outcomes. For our empirical analyses we use rich Norwegian register data to measure effects through children on wage dynamics observed for the period 1967 to 2005.

Norway is an interesting case to study the effects of children on wages for men. More recently several countries have introduced parental leave policies that include incentives for fathers to take a period of leave with the goal to increase gender equality. It is still unclear how these policies will affect outcomes since the introduction has been very recent. Such policies have been introduced, for example, by Germany in 2007 and Portugal more recently. Norway on the other hand introduced such a policy already in 1993 and therefore is an informative case to study since here we can observe in the data outcomes before the introduction of paternity leave, and afterwards. Norway introduced in 1993 a parental leave scheme where 4 weeks out of 10 months of parental leave at full pay are reserved to the father. If the father does not take the leave the parents forgo these weeks. Before 1993 less than 3 per cent of fathers took any parental leave. It is only since introduction of the new law in 1993 that the fraction of fathers

\(^1\)Mixed evidence is shown in Angrist and Ewans, 1998.
on leave significantly increased. Since 1998 Norwegian men are world champion in terms of parental involvement in child care after birth. Norwegian fathers before 1993 are however very comparable to fathers elsewhere such as in Germany or Britain.

Norway is also interesting since we may view it already before the 1993 as a relatively family friendly country with high priority given by policy makers to gender equality. For example, during the 1970s the introduction of maternity leave schemes was reasoned by increasing female labour supply and gender equality, by giving women favourable possibilities to work. Hence, for a country like Norway we may expect the “family gain” for men to be lower than in other countries with low priority to gender equality.

Empirical evidence from a country without paternity leave therefore provides an important reference number which can be used to predict the potential (direction of the) effects of paternity leave schemes on wages and labour market behaviour for men. One may speculate, for example, that if such schemes should increase gender equality and we believe that women lose because of children because they are typically those who take birth related work interruptions then an assumption must be that men’s wages prior to these reforms were unaffected through children.

As we will furthermore explain in the paper we have extremely rich data for Norway.

The remainder of the paper is organized as follows. Section two discusses the problems how to identify the effect of children on earnings, and outlines our estimation strategy. Section three presents the data and descriptives. Section four presents the results. Section five concludes.

2 The effect of children on earnings profiles for men

A common general framework to estimate the effect of children on individual earnings or wages can be written as follows:

$$\ln w_{ij} = \beta k_{ij} + \gamma X_{ij} + \tau_t + \mu_{ij} + \delta_j + u_{ij}$$

(1)

where $\ln w_{ij}$ representing logarithmic annual real earnings or (hourly) wages for individual $i$ in period $t$ is regressed on a variable $k_{ij}$ that may be an indicator variable for having children or not. The worry is that fertility, or having children, is endogeneous in this regression even after conditioning on control variables, $X$, such as years of education and years of work experience (squared). Time dummy variables, $\tau_t$, may also be added in case of panel data and in order to control for macro shocks to wages. Children may capture fertility-induced withdrawals from the labor force which lower wages as it has been documented in several studies (e.g. Korenman
and Sanders, 1992, Waldfogel, 1998, Ejeanes and Kunze, 2009). An ideal experiment would be to have similar workers where for exogenous reason one has a child and the other not. But this experiment is very difficult to find or implement (an example Angrist and Ewans, 1998).

It is challenging to identify the effect of children on earnings from the above simple model. The most common approach is to estimate the average effect of children on earnings conditional on a range of other observed factors, that are correlated with children. Past research on women’s wages has focused on three potential sources that may bias OLS estimates applied to the above model in equation (1: heterogeneity bias and simultaneity bias, and selection into employment bias. Women typically have interruptive careers around birth which may induce non-random selection into work problems. Since data show convincingly that men are highly stable workers, the potential sources of bias reduce down to unobserved heterogeneity and simultaneity. Another source of endogeneity can arise through simultaneous determination of wages and childbearing. A draw of a high wage residual decreases childbearing via substitution effect. Heterogeneity bias arises if unobserved factors increase market productivity relative to home productivity and therefore increase wages and via substitution affect childbearing.

We model unobserved heterogeneity through family related factors which we will control for by use of samples of brothers and twins. The idea is to use two men brought up in the same family (same mother and same father) and born in the same year (or close in year of birth in case of brothers) so that their development affected by those directly is very similar. Generally siblings are very similar genetically compared to randomly drawn men, and hence we can compare outcomes for brother couples with and without children.

For our purposes, therefore, we extend the notation in eq(1) by a subscript for family \( j \). The \( \delta_j \) are (unobserved) family fixed effects. These can be interpreted as family factors, such as family income and non-monetary resources like attitudes and neighborhood effects of various sorts. \( u_{ij} \) capture other idiosyncratic variation, or luck.

The model in eq (1) has been estimated using individual cross sectional variation which has at least two shortcomings. First, arguably unobserved individual heterogeneity remains a problem and therefore estimates may be biased. Second, the cross sectional comparison of individuals imposes several restrictions on the wage processes around the event of having children. It assumes that wages before birth and after birth are unaffected by the event of becoming a father. Then wages of men without (yet) children and men without children will have identical wages other factors being equal. This linearity assumption may also be imposed on higher order parity. An advance addressing these issues would be to use information on
completed fertility, that is how many children workers have in total in order to distinguish workers who will remain childless for ever from those forming a family at some point.

Use of rich individual panel data and fixed effects estimation may address the problem of individual specific unobserved factors. On the other hand, such panel data might introduce also a couple of challenges. First, it will give biased estimates if past wage shocks are correlated with current child bearing. For example, if men are more likely to have children after receiving positive wage shocks, then fixed effects estimates of the causal effect of children on wages is likely to be downward biased due to regression to the mean. Second, fixed effects will be biased if unobserved factors are time-varying. For example, if fixed effects will be estimated with upward bias if men postpone birth until increases in their unobserved productivity lead to higher wages.

Here we investigate the effect of having children with the focus on men in every point in time of the life cycle earnings profile. To identify direct effects through children we adopt a strategy exploiting variation within twins or siblings. This approach avoids the shortcomings of fixed effects. This strategy has also been used to identify the marriage premium (Antonovics and Town, 2004, Krashinsky, 2004) and returns to education (Ashenfelter and Krueger, 1994) but not to estimate the effect of children on men’s wage processes during the life-cycle. Only in a recent study Simonsen and Skipper (2009) have used the cross sectional variation in wages from Danish data in 2006 within twin brothers and within twin sisters. They estimate the average effect of having children based on a regression (1) where they added a wide range of further controls.\footnote{They rely on the linearity assumption in having children or not, and the assumption that the likelihood to participate in the labour the market is equal which is most relevant for women. In contrast to our study they do not use longitudinal information on earnings neither information on individual completed fertility.} The detailed information on years of births of their offsprings, as well as completed fertility allows us to distinguish outcomes during periods before and after birth, as well as between men without children and men before first birth.

The main idea we suggest is to identify the effect of children on earnings by applying the covariance estimator or within family estimator using samples of brothers or twins. For a couple of siblings equation (1) can be written:

\[ \ln\text{earn}_{1j} = \beta\text{kids}_{1j} + \gamma X_{1j} + \mu_{1j} + \delta_j + \tau_t + u_{1j} \] (2)

\[ \ln\text{earn}_{2j} = \beta\text{kids}_{2j} + \gamma X_{2j} + \mu_{2j} + \delta_j + \tau_t + u_{2j} \] (3)
The crucial assumption to identify \( \beta \) is that \( \mu_{1j} = \mu_{2j} \) is close to fullfilled for siblings and is fullfilled for twins. The main assumption is that genetically determined, individual-specific earnings endowment is identical across twins. Given this assumption we can write:

\[
\lnearn_{1j} - \lnearn_{2j} = \beta(kids_{1j} - kids_{2j}) + \gamma(X_{1j} - X_{2j}) + (u_{1j} - u_{2j}) \tag{4}
\]

where individual and family specific unobserved components are swept out. Hence, estimation of eq(4) will give an unbiased estimate of \( \beta \). If estimates of \( \beta \) from equation (1) and (4) are similar, this gives indication for that unobserved heterogeneity is not very important.\(^3\)

To allow for more heterogeneity in effects through experience and between men without children and not yet with children we will extend the regression 1 by allowing returns to experience to vary between fathers and non-fathers, and before and after birth. Non-fathers we define as men who will remain childless by age 40 to 50. Our specification also allows for varying intercepts between men without and with children. In addition, we control for differences in education. The earnings regression we estimate is as follows:

\[
\lnearn_{ijt} = \beta_1 + \delta_11(kids >= 1)_{ijt} + \beta_2exp_{ijt} + \beta_3exp_{sijt} + \\
\delta_2(exp_{ijt} * 1(kids >= 1))_{ijt} + \delta_3(exp_{sijt} * 1(kids >= 1))_{ijt} + \\
\delta_4(exp_{ijt} * 1(after) * 1(kids >= 1))_{ijt} + \delta_5(exp_{sijt} * 1(after) * 1(kids >= 1))_{ijt} + \\
\beta_6edu_{ij} + \mu_{ij} + \delta_j + \tau_t + u_{ij}
\tag{5}
\]

where all variables are defined as before and we introduce variables that are interacted the index function \( 1(kids >= 1) \) that is zero if non children (completed fertility) and non-zero otherwise. The index function \( 1(after) \) is defined as zero before first birth (that is for those who will become father at some point) and non-zero after first birth (for those where \( 1(kids >= 1) \) is true). Note, that the within twin group estimator identifies the coefficients \( \delta_1, \delta_2, \delta_3, \delta_4 \) and \( \delta_5 \) from within twin differences.\(^4\)


\(^4\)We focus on birth cohorts in a narrow time span and hence problems of decline in percentage of men who will ever become a father are not an issue (See Loughran and Zissimopoulos, 2009).
3 Data and background

Our estimation strategy relies on data that connects family members. We can use the Norwegian multigenerational birth register to match siblings and twin brothers (with the same father and mother, first and second born) and parents to their offspring. Furthermore, we need to observe complete fertility. In order to do so we need to go back in time and we select cohorts born in 1955-65 for which we observe in the birth register the timing of offsprings and the complete number of offsprings counted in 2005. A further reason for selection of this cohort is that we need to observe a sufficient number of births before 1993. We also use individual long complete earning and employment histories from entry into the labour market and across the life cycle. These data are available from the long earnings times series for the period 1967 to 2005. We apply standard adjustments to the source data. Our main dependent variable is annual earnings. We drop low earnings; that is earnings below annually adjusted basic income. Earnings are deflated by the Norwegian consumer price index where 1998 is the base year (=100). We define years of education as the maximum numbers of years of education. Years of experience are measured as age adjusted for years of education minus 6.

Information both on earnings histories and timing of fertility are crucial to compare earnings in every point in time of the life cycle between men who remain childless over their entire life, and men who will become fathers at some point. These comparisons can be extended to comparison by parity. We also know the year of births of the children and therefore can make comparison before and after becoming a father, by contrast to comparison of mean earnings.

To implement our estimation strategy we need to make men as similar as possible (control for heterogeneity). We focus on the birth cohorts 1955-65 that grew up under similar circumstances. Hence, we want to exclude that otherwise institutional changes could affect the role of family background, such as educational reforms, and hence affect our estimates. For sake of sample size we however need to pool cohorts.

Samples of all men can give descriptive evidence on life cycle patterns but may be biased estimates for the reasons discussed beforehand. Use of sibling brothers and within sibling differences arguably controls for additional heterogeneity related to family background and neighbourhood. While we would expect to control for more heterogeneity using twin brothers than using siblings, the trade off is that samples of twins are smaller than samples of brothers and therefore estimates may be less precisely estimated.

In our analyses we use three samples of data: We use a 10 percent random sample of all
men (which is for practical reasons) for some basic descriptive estimates. Our main estimates are based on samples of brothers and twins. We use the population of brothers born between 1955-65 where we focus on the first two born with the same mother and father, and twin brothers born during the period 1955-65.

### 3.1 Descriptive evidence

Table 1 here

For our samples of men and twins we show the distributions of the number of children in Table 1. Around 20 per cent of all men (this is a 10 percent population sample) born between 1955 to 1965 remain childless by the year 2005 when they are between 40 and 50 years old. For comparison, from national statistics we see that 19.2 per cent of men born in 1955 are counted as childless at age 40, 17.2 by age 45 and 16.6 by age 50. Hence, the fraction of childless men reduces only by 2 percentage points between age 40 and 45, and by 0.6 percentage points between age 45 and 50. This reensures us that we basically can count close to all births for our cohorts, and the population distribution is only slightly underestimated by 1 to 2 percentage points.\(^5\) The average number of children both from our data and national statistics is 2. We see that our sample of twins closely reflects the population distribution too though it seems that we have somewhat more childless fathers and less fathers with two children.

Table 2 here

In Table 2 we show means and standard deviations for the main variables for our analyses. Average earnings are calculated as an average across the entire period which is essentially 1975 when the first enter the labour market until 2005 (very few enter between 1971 and 1975). The mean of the log earnings are very similar, and if anything around 2-4 percentage lower for men who remain childless. This is the same for the all men sample as well as the twin sample. (Means and standard deviations for brothers have still to be added.) Men with children seem to have acquired for years of completed education, and have worked less. Men have at the mean acquired around 5.5 years of experience when they become fathers for the first time.

\(^5\)National statistics are retrieved from Statistics Norway (www.ssb.no.)
4 Results

We estimate for those samples the regression specified in equation 4 by ordinary least squares. The complete results are shown in Table 3 where column (1) shows the results for non-fathers, column (2) for fathers and (3) is the pooled regression. These estimates show a return to experience during the first year in the labour market of 8 percent and then it declines slightly. The marginal change of an extra year of experience after 4 years of experience is still 8 percent (=.405-.3248); hence it is almost linear. The return to experience for those with children at some point seems higher from simple OLS. During the first year in the labour market the difference is 1.5 per cent. The marginal change of an extra year of experience after 4 years of experience is 1.4 per cent (=.0725-.0584) higher than the one for childless men. This is before becoming a father. After the first birth the return from OLS is slightly lower than before birth, that is from 4 to 5 years of experience the return is 2.2 per cent lower. All of the differences are significant.

Table 3 here
Figures 1 and 2

Since the effects at those low levels of experience are not very large they are not very strongly visible in the figures. In Figure 1 and Figure 2 simple predicted earnings profiles are shown using the sample of men and pooled twins. For illustration, we constructed individuals who are continuously working and remain childless (dashed line), and individuals who are continuously working but become a father after 5 years of work. At entry differences are very small, almost negligible. Results reported in table 3 show that the entry wage gap is 1.1 per cent and not significant. By the time of becoming a father due to higher returns to experience the gain of fathers has reached around 15 per cent. Then it seems to remain constant. These graphs give the impression that fathers earn more than non-fathers and we want to explore to what extent this finding remains after taking account of family background related ability and other factors.

To ensure that samples of brothers and twins reflect the same features we run the same OLS regressions for these samples as for the sample of all men. We report in Table 4 the results for brothers (only the pooled results) which look almost identical to those results in table 3. Table 5 shows the results for the twin sample which are also the same. It is also encouraging to see that the smaller twin sample still gives significant results at the same level of significance as the other samples.
We want to test whether differences are due to heterogeneity in family background which may reflect social attitudes or resources that drive selection into forming a family.

Table 6 shows the main results of the paper. As a reference estimate it repeats OLS estimates from the sample of brothers shown in Table 5. In Columns 2 and 3 the covariance estimates (CV) from the brother sample and the twin sample are shown. When we compare the effects of experience interacted with kids, and interacted with after (first birth) and kids in columns 1 and 2 we see that the effect decrease (around 50 percent) but stay significant. This indicates that OLS is biased because of unobserved family fixed effects which the covariance or within brother estimator in column 2 accounts for. We would however expect brothers not to as identical as twins in terms of family related genetical background. Hence, the results from within twin estimators should be taking account of further family related heterogeneity. As we see in column 3 it seems in fact that the coefficients of the interacted effects with the kids variable are decreasing further compared to the brother Cv (col 2) and become non significant. Hence, the overall result is that fathers do not experience larger wage than non-fathers.

4.1 Robustness checks

To be added

5 Conclusions

This study contributes to the literature on effects through children on earnings for fathers. For the empirical analysis we used data from a family friendly country before the introduction of parental leave schemes for fathers. For such a country we may expect to find no changes in earnings related to births. We show that somewhat surprisingly simple OLS estimates for Norway reveal a family gain for men. Applying within brother and within twin estimators we find that the differences decrease and become insignificant.
References


[7] Choi


Table 1.17 reports some regressions that indicate that fathers work more hours when their children are young (see p.67 for other references in Pencavel (1986)).


Figure 1: Predicted wage profiles for men born 1955-65, all men (fathers: solid line; non-fathers-dashed line), OLS

Table 1: Distribution of number of children

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>zero children</td>
<td>19.46</td>
<td>21.15</td>
<td>25.9</td>
<td>16.6</td>
</tr>
<tr>
<td>one child</td>
<td>13.94</td>
<td>14.24</td>
<td>13.77</td>
<td>13.2</td>
</tr>
<tr>
<td>two children</td>
<td>36.64</td>
<td>35.37</td>
<td>31.82</td>
<td>37.1</td>
</tr>
<tr>
<td>three children</td>
<td>23.37</td>
<td>22.13</td>
<td>21.89</td>
<td>23.3</td>
</tr>
<tr>
<td>four or more</td>
<td>6.57</td>
<td>7.13</td>
<td>6.5</td>
<td>9.9</td>
</tr>
</tbody>
</table>
Figure 2: The predicted wage profile for men born 1955-65, twins (fathers: solid line; non-fathers-dashed line), OLS

![Graph showing wage profile for men born 1955-65, twins (fathers: solid line; non-fathers-dashed line), OLS](image)

Table 2: Summary statistics

<table>
<thead>
<tr>
<th>Variables</th>
<th>log earnings</th>
<th>years of education</th>
<th>years of experience</th>
<th>years of experience before birth</th>
<th>years of experience after birth</th>
<th>percentage with kids</th>
</tr>
</thead>
<tbody>
<tr>
<td>All men pooled</td>
<td>12.29</td>
<td>11.68</td>
<td>11.48</td>
<td>7.42</td>
<td>8.19</td>
<td>80</td>
</tr>
<tr>
<td>(n=119388)</td>
<td>(.53)</td>
<td>(2.62)</td>
<td>(7.32)</td>
<td>(8.77)</td>
<td>(6.37)</td>
<td></td>
</tr>
<tr>
<td>...without children</td>
<td>12.24</td>
<td>11.41</td>
<td>12.23</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>(n=23351)</td>
<td>(.52)</td>
<td>(2.82)</td>
<td>(7.15)</td>
<td>(.52)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>...with children</td>
<td>12.3</td>
<td>11.75</td>
<td>11.30</td>
<td>5.55</td>
<td>9.23</td>
<td>100</td>
</tr>
<tr>
<td>(N=96037)</td>
<td>(.53)</td>
<td>(2.61)</td>
<td>(7.35)</td>
<td>(8.89)</td>
<td>(4.01)</td>
<td></td>
</tr>
<tr>
<td>All twins</td>
<td>12.29</td>
<td>11.57</td>
<td>14.26</td>
<td></td>
<td>10.19</td>
<td></td>
</tr>
<tr>
<td>(N=66191)</td>
<td>(.49)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>...without children</td>
<td>12.26</td>
<td>11.39</td>
<td>15.46</td>
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</tr>
<tr>
<td>(n=13492)</td>
<td>(.50)</td>
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<tr>
<td>... with children</td>
<td>12.29</td>
<td>11.61</td>
<td>13.95</td>
<td></td>
<td>11.05</td>
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<tr>
<td>(N=52699)</td>
<td>(.49)</td>
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Table 3: OLS regression results using men born 1955-65

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Non-father sample</td>
<td>Father sample</td>
<td>Pooled</td>
</tr>
<tr>
<td>years of education</td>
<td>0.022*** (0.001)</td>
<td>0.025*** (0.001)</td>
<td>0.022*** (0.001)</td>
</tr>
<tr>
<td>experience</td>
<td>0.081*** (0.002)</td>
<td>0.097*** (0.002)</td>
<td>0.082*** (0.002)</td>
</tr>
<tr>
<td>$experience^2$</td>
<td>-0.002*** (0.000)</td>
<td>-0.003*** (0.000)</td>
<td>-0.002*** (0.000)</td>
</tr>
<tr>
<td>experience after</td>
<td>-0.007*** (0.001)</td>
<td>-0.007*** (0.001)</td>
<td></td>
</tr>
<tr>
<td>expsq after</td>
<td>0.001*** (0.000)</td>
<td>0.001*** (0.000)</td>
<td></td>
</tr>
<tr>
<td>kids</td>
<td>-0.011 (0.016)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>yrs of edu * kids</td>
<td>0.003** (0.001)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>yrs of exp * kids</td>
<td>0.015*** (0.002)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>expsq * kids</td>
<td>-0.001*** (0.000)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| N        | 23351 | 96037 | 119388 |
| r2       | 0.280 | 0.341 | 0.331  |
| F        | 267.024 | 1275.804 | 1404.880 |

Standard errors in parentheses
*p < 0.05, **p < 0.01, ***p < 0.001
Table 4: OLS regression results using brothers born 1955-65

<table>
<thead>
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<td>pooled</td>
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<tr>
<td>kids</td>
<td>-0.044***</td>
</tr>
<tr>
<td></td>
<td>(0.004)</td>
</tr>
<tr>
<td>years of education</td>
<td>0.057***</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
</tr>
<tr>
<td>years of education *kids</td>
<td>0.001**</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
</tr>
<tr>
<td>years of exp</td>
<td>0.083***</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
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<tr>
<td>yrs of expsq</td>
<td>-0.002***</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
</tr>
<tr>
<td>yrs of exp*kids</td>
<td>0.013***</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
</tr>
<tr>
<td>yrs of expsq*kids</td>
<td>-0.001***</td>
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<tr>
<td></td>
<td>(0.000)</td>
</tr>
<tr>
<td>yrs of exp after birth</td>
<td>-0.007***</td>
</tr>
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</tr>
<tr>
<td>yrs of expsq after birth</td>
<td>0.000***</td>
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<td>N</td>
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</tr>
<tr>
<td>r2</td>
<td>0.335</td>
</tr>
<tr>
<td>F</td>
<td>33049.018</td>
</tr>
</tbody>
</table>

Standard errors in parentheses

*p < 0.05, **p < 0.01, ***p < 0.001
Table 5: OLS regression results using brothers born 1955-65

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Pooled</td>
<td>Pooled</td>
<td>Pooled</td>
</tr>
<tr>
<td>kids</td>
<td>-0.034***</td>
<td>-0.006</td>
<td>0.005</td>
</tr>
<tr>
<td></td>
<td>(0.005)</td>
<td>(0.003)</td>
<td>(0.003)</td>
</tr>
<tr>
<td>yrs of exp</td>
<td>0.074***</td>
<td>0.074***</td>
<td>0.062***</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
</tr>
<tr>
<td>yrs of expsq</td>
<td>-0.001***</td>
<td>-0.001***</td>
<td>-0.002***</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
</tr>
<tr>
<td>yrs of exp after</td>
<td>-0.004***</td>
<td>-0.004***</td>
<td>-0.001**</td>
</tr>
<tr>
<td>birth</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
</tr>
<tr>
<td>yrs of expsq after</td>
<td>0.000***</td>
<td>0.000***</td>
<td>0.000***</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
</tr>
<tr>
<td>yrs of exp*kids</td>
<td>0.005***</td>
<td>0.005***</td>
<td>0.003***</td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>yrs of expsq*kids</td>
<td>-0.000***</td>
<td>-0.000***</td>
<td>-0.000***</td>
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<tr>
<td></td>
<td>(0.000)</td>
<td>(0.000)</td>
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<tr>
<td>controls for Yrs</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>of eduy</td>
<td>N</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
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<td>834609</td>
<td>834609</td>
</tr>
<tr>
<td>r2</td>
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<td>0.081</td>
<td>0.045</td>
</tr>
<tr>
<td>F</td>
<td>8151.132</td>
<td>9164.439</td>
<td>5631.505</td>
</tr>
</tbody>
</table>

Standard errors in parentheses
*p < 0.05, **p < 0.01, ***p < 0.001
Table 6: Within brothers and within twin estimation results (covariance estimator)

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<tr>
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<th>brothers OLS</th>
<th>Brothers CV</th>
<th>Twins CV</th>
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<tbody>
<tr>
<td>kids</td>
<td>-0.044***</td>
<td>-0.034***</td>
<td>0.082**</td>
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<td>(0.004)</td>
<td>(0.005)</td>
<td>(0.025)</td>
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<td>years of exp</td>
<td>0.083***</td>
<td>0.074***</td>
<td>0.052***</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.004)</td>
</tr>
<tr>
<td>yrs of expsq</td>
<td>-0.002***</td>
<td>-0.001***</td>
<td>-0.002***</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
</tr>
<tr>
<td>yrs of exp*kids</td>
<td>0.013***</td>
<td>0.005***</td>
<td>0.002</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.001)</td>
<td>(0.002)</td>
</tr>
<tr>
<td>yrs of expsq*kids</td>
<td>-0.001***</td>
<td>-0.000***</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
</tr>
<tr>
<td>yrs of exp after birth</td>
<td>-0.007***</td>
<td>-0.004***</td>
<td>-0.001</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.004)</td>
</tr>
<tr>
<td>yrs of expsq after birth</td>
<td>0.000***</td>
<td>0.000***</td>
<td>-0.000</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
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<tr>
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<td>834609</td>
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<td>r2</td>
<td>0.335</td>
<td>0.081</td>
<td>0.019</td>
</tr>
<tr>
<td>F</td>
<td>33049.018</td>
<td>8151.132</td>
<td>67.569</td>
</tr>
</tbody>
</table>

Standard errors in parentheses
*p < 0.05, **p < 0.01, ***p < 0.001