The Impact of Education on Fertility and Child Mortality: Do Fathers really Matter less than Mothers?

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Abstract

This paper takes advantage of a massive school construction program that took place in Indonesia between 1973 and 1978 to estimate the effect of education on fertility and child mortality. Time and region varying exposure to the school construction program generates instrumental variables for the average education in the household, and the difference in education between husband and wife. We show that female education is a stronger determinant of age at marriage and early fertility than male education. However, female and male education seem equally important factors in reducing child mortality. We suggest that the OLS estimate of the differential effect of women's and men's education may be biased by failure to take in to account assortative matching.

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1 Introduction

The role of male and female education on fertility and human capital formation is a central question for development economists and policy makers. Numerous studies report strong associations between parental education and child mortality or other measure of children's human capital (see Strauss and Thomas (1995) for a survey of the literature). Significant effects of maternal schooling have also been reported for a variety of inputs into child health (e.g., number and timeliness of prenatal visits, likelihood of obtaining immunizations, etc.). Several of these studies also report that female education is more strongly associated with these outcomes than male education. This evidence has been used as an argument in favor of targeting educational expenditures towards girls. However, most of these studies are based on correlation between years of education and the outcomes of interest, often after controlling for community or family background variables.[1] Part of the correlation between parental education and human capital may thus reflect the influence of unobserved background variables correlated with education. Further, the difference between the effects of maternal and paternal education is particularly likely to be biased upwards in absolute value, for two reasons. First, because girls are less likely to be educated, the omitted variable bias might be larger for girls than for boys (because girls' education may be determined more strongly by family background than boys' education). Second, the comparison between the coefficients of husband's and wife's education might be obscured by a correlation between the wife's education and unobserved characteristics of her husband, through the functioning of the marriage market: more educated women may be able to marry men who care more about their children.

A few studies have tried to address the omitted variable bias due to the woman's unobserved abilities by using data on the mother's siblings to control for family fixed effects (see Wolfe and Behrman (1987), and Strauss (1990)). Wolfe and Behrman use data on mother's siblings in Nicaragua to control for the characteristics of her family. They find

[1] When the parents'family background variables are added as controls, the estimated magnitudes tend to decline, but the association remains strong and significant (see Thomas, Strauss and Henriques (1990))

that once the mother's family fixed effect is removed, the association between mother's schooling and child health disappears. Strauss uses data on extended families living together to control for household fixed effects. He finds that the correlation is attenuated once household fixed effects are controlled for.[2] Behrman and Rosenzweig (1999) use data on monozygotic twins to address both problems together and to investigate the impact of mother's schooling on her child's schooling in the United States. They set up a model where a child's schooling is determined by her parents' unobserved abilities and observed education, and where more educated women marry more able men. They show that in this model, under certain structural assumptions, data on monozygotic twins (with different education levels) and their children can be used to identify the effect of mother's education on child education, controlling for genetic ability and the assortative mating effect. Their results suggest that the effect of mother's education on child education is actually marginally negative. These provocative results, while they may not carry over to the effect of mother's education on child health in developing countries, suggest that it is worthwhile taking seriously the hypothesis that the difference between the effect of maternal and paternal education may be overstated.

In this paper, we take advantage of a large-scale school construction program, which took place in Indonesia in the 1970s, to construct instrumental variables estimates of the effect of average parental education and the difference between father's and mother's education on fertility and child mortality. In 1973, the Indonesian Government launched a major school construction program, the Sekolah Dasar INPRES program. Between 1973-1974 and 1978-1979, 61,807 primary schools were constructed–an average of two schools per 1,000 children. Duflo (2001) linked the 1995 intercensal survey of Indonesia (SUPAS) with district level data on the number of INPRES schools built between 1973-1974 and 1978-1979. The exposure of an individual's to the program was determined both by her district (kabupaten) of birth and by her year of birth. After controlling for district and

[2] However, fixed effect methods remove a large part of the variation in the data, and exacerbate the measurement error problem, which tends to bias the coefficient downwards.

year of birth fixed effects, interaction dummy variables indicating the age of the individual in 1974 and the intensity of the program in his region of birth were used as exogenous variables, and as instruments for education in the wage function. This paper uses the same data sets, and replicates the analysis for women and their husbands. The estimates suggest that each school built for 1,000 children increased years of education by 0.15 for the first cohort of women fully exposed to the program, and 0.26 for their husbands. It increased the probability that a woman graduated from primary school by 3.5% and that of her husband by 2.7%. To instrument for average education in a family, we combine the interactions of year of birth dummies and the level of program in the region of birth of each partner.[3] To instrument for the difference in years of education between the husband and the wife, we add a single instrument, based on the observation that, when husbands are not exposed to the program, their wives are increasingly likely to be exposed to the program as they get younger. The interaction of a dummy for whether the husband was born too early to be exposed to the program, the age difference between the husband and the wife, and the intensity of the program can thus be used as an instrument for the level of program in the region of birth (after controlling for the interaction between the husband's exposure dummy and the age difference).

The estimates suggest a strong and significant effect of education on child mortality, but no significant difference between the effects of male and female education. For fertility, the estimates suggest a very different picture, where the difference in education has a strong effect, suggesting that the wife's education is a stronger determinant of fertility decisions than husband's education.

The remainder of the paper is organized as follows. In Section 2, we describe the data, the INPRES program, an the identification strategy. In section 3, we present the results on education. In section 4, we present the mortality and fertility results. Section 5 concludes.

[3]This supposes that we observe complete families. We explicitly deal with selection issues below.

2 Program, Data, and Identification Strategy

2.1 Program and Data

The Sekolah Dasar INPRES program was one of the programs implemented by the Indonesian Government to redistribute oil revenues across Indonesian regions. It is described in more details in Duflo (2001). Starting in 1973, the Indonesian government emphasized the need for equity across provinces. Oil revenues were used to finance centrally administered development programs, the presidential instructions (INPRES). As a result of the oil boom, real expenditures on regional development more than doubled between 1973 and 1980, and the Sekolah Dasar INPRES program became very big. Between 1973-1974 and 1978-1979, 61,807 primary schools were built across the country. This represented more than one school per 500 children. Each school was built for 3 teachers, and 120 pupils. Once an INPRES school was established, the government recruited the teachers and paid their salary. An effort to train more teachers paralleled the INPRES program.

The program was designed explicitly to target children who had not previously been enrolled in school. The general allocation rule was that the number of schools constructed in each district was proportional to the number of children of primary school age not enrolled in school in 1972. There is thus a negative correlation between the number of schools per capita constructed in each region and enrollment rate in before the program.

The data used in this paper come from the 1995 intercensal survey of Indonesia (SUPAS), matched with administrative data on the number of schools sanctioned for each district (kabupaten). It is administered to 150,000 households. The survey contains a fertility history model administered to all women over 15 present in the household. The module has questions on the date of birth of all children ever born, whether they are still alive, and their date of death if they are dead. The survey also record the date and region of birth of each member of the household, their marital status, and their relationship to the head of the household (which, in most cases, allows us to match husband wife). Table 1 present descriptive statistics on the sample. There are 148,845 women in the sample, aged 23 to 50 in 1995. 122,818 of them have children. The average education of women is lower than that of men (6.16 versus 7.15). The fertility is not very high by the standard of a developing country (1.37 children are born before before the woman reached age 25). Out of these children, 0.22 have died, including 0.075 before 1 month, and 0.16 before age one.

2.2 Identification strategy: Effect of the program on Education

The date of birth and the region of birth of an individual jointly determine her exposure to the program. Indonesian children normally attend primary school between the age of 7 and 12. A child born in 1962 or before was 12 or older in 19 74, when the first schools were constructed, and therefore would get only a minimal exposure to the program (less than 3% of children born between 1950 and 1962 were still in primary school in 1974). As we explained above, the district of birth is a second dimension of variation in the intensity of the program: children born in a region where the enrollment rates in 1972 were low are very likely to be educated in this region, and thus to be exposed to a high program intensity. Based on this observation, Duflo (2001) proposed to use the interaction between an individual's cohort and the number of school built in his region of birth to evaluate the impact of the program. For example, the difference between the education of men who were aged 2 to 6 in 1974 (exposed) and that of men who were aged 12 to 17 in 1974 (unexposed) is 0.47 in regions that got more schools, and 0.36 in regions that got less schools. The difference in these differences (0.12) can be attributed to the program, under the assumption that, in the absence of the program, the increase in years of educational attainment would not have been systematically different in low and high program regions. This assumption can be checked by running the same differences in differences between cohorts who were not exposed to the program.

We use the same strategy in this paper to estimate the effect of the program on the education of women aged 22 to 45, their husbands aged 22 to 50, and the average education in the household. We are also interested in the difference between the husband's and the wife's years of education. To identify it, we can use the interplay between the husband's age, the age difference between the husband and the wife, and the level of the program in the husband's region of birth.[4] If the husband was not exposed to the program (because he was more than 12 in 1974), the younger his wife, the more likely she is to have been exposed to the program. The difference between the years of education of the husband and that of the wife will thus be more strongly correlated with their age difference in regions where many schools were built. To illustrate, we present simple comparisons in table 2. Each cell presents the coefficient and the standard error of the difference between husband's and wife's education on the age difference between the husband and the wife. In the first row, we restrict the sample to husbands who were not exposed to the program. In the first column, we run the regression in "low program" regions (defined as the regions where the residual of the number of schools constructed on the number of children is positive). In the second column, we run the regression in "high program" regions. The coefficient is 0.021 and significant in low program regions (older husbands are more educated than their wives, perhaps reflecting the selection in the marriage market). However, in the high program region, the coefficient is very close to 0. The difference between these two coefficient is negative (-0.018) and significant, which is what we expected. Of course, this could be due to the fact that the marriage market functions differently in low and high program regions. When the husband is exposed to the program, however, since most wives are younger than their husband (95%), it is likely that they were both exposed. Therefore, we expect a smaller difference (or none at all) between the correlation between the difference in age and the difference in education of husband and wife. This is shown in the second row in table 2. Indeed, the coefficients of the difference in age on the difference in education are now not significantly different (the difference in the coefficients is -0.004, with a standard error of 0.0114). This suggests that the difference among exposed husbands was indeed due to the program, rather than to

[4]We do not explore variation in the husband and the wife's region of birth, because in a large fraction of the households (74%) husband and wife were born in the same region.

some region specific effect. In section 3, we implement a more general, regression based, version of this identification strategy.

2.3 Identification: Effects on Fertility and Child Mortality

We will extend this strategy to construct instruments for education in the equations that determine age at first marriage, fertility and child mortality. Under the assumption that, in the absence of the program, the pattern of fertility and child mortality across cohorts would not have been different in regions that got more schools than in regions that got fewer schools, we can compare the change in fertility or mortality across regions and over time (as we did for education). Under the assumption that the program itself did not affect anything else than the quantity of education, the interactions of time and the level of program can then be used as instruments for education for the outcomes of interest.

There are several potential problems with these assumptions. First, there may be differential time trends across regions, not due to the program. Since older women had their children at earlier dates than younger women, even though fertility and child mortality are measured in the same year, the cohort pattern reflects evolution over time. For example, the reduction in fertility or child mortality may have been faster in program regions in the absence of the program if these regions started with a higher level of fertility or child mortality. This is however likely to affect cohorts smoothly over time, rather than only the cohorts affected by the program. We will thus check whether there are differential trends among the cohorts that were not exposed to the program. In addition, for each regression, we present a specification where we add controls for enrollment rates in 1971, interacted with year of birth dummies. This should capture time-varying factors correlated with pre-program enrollment rates.[5] Second, the fertility and child mortality histories are not

[5]We will also compile a data set on the availability of family planning and health care centers across regions, to verify directly whether it is correlated with the program. It should be noted, however, that Pitt, Rosenzweig and Gibbons (1993) and Gertler and Molyneaux (1994) do not find any effect of family planning clinic on fertility, using fixed effect specifications.

measured over a period of the same length for older and younger women. Specifically, the fertility history of the younger women is censored. This may lead to a spurious difference in difference if regions where more schools were built tend to have higher fertility (or mortality). To address this, we will use as dependent variable the number of children born (or dead) before the woman reached 25 (the youngest women in the sample are 22). A final problem is potential sample selection. A woman's own education and the family average education can be calculated irrespective of the marital status of the woman, or our ability to match her with her husband. However, the difference in the education of the husband and the wife can be calculated only when we are able to match a husband and a wife. In the sample, there are 148,845 women aged 22 to 45. 17,675 of them were never married, and 8,785 are not married any more (widowed or divorced). 11,459 are married, but we were not able to match them with their husbands (we were only able to match a woman with her husband if he or she is the head of the household). Restricting the sample to women who can be matched with a husband can introduce a selection bias in our estimates, if the probability of having a husband is related to our instruments. We will show below that in fact, it does not seem to be the case. However we address this problem by running all regressions in two samples: the sample restricted to those where we were able to match a woman and a man, and a "completed" sample, where, when we do not observe a woman's husband, we impute the data on the husband. Husband's age is imputed as the mean age of actual husbands for each year of birth of the woman; program variables are imputed as the mean of these variables for the husbands in the province of birth of the woman; and husband's education is imputed as the mean education of actual husbands for each year and province of birth of the woman. In all of these regressions, we control for interactions of wife's year of birth dummies and region of birth dummies with a dummy indicating whether the husband's data was imputed.

The first two problems may affect the interpretation of the interactions between the level of the program and husband's and wife's year of birth, but probably not that of our instrument for the difference in education, the interaction between husband's exposure, difference in age between husband and wife, and the level of program. Before proceeding, it is nevertheless useful to think about the interpretation of this coefficient. Since the instruments are based on variables that the husband can observe (level of program and age difference), the interpretation given to the 2SLS coefficients of women's and men's education depends on the underlying model of the marriage market, and how it was affected by the program.

To interpret the coefficient, we can think of a very simplified model (used in Behrman and Rosenzweig (1999)) in which the child outcomes depend on the mother's education, the father's education, the mother's unobserved ability, and the father's unobserved ability. Husbands and wives are not randomly matched, but choose each other on the marriage market. The instrumental variable method identifies the effect of giving one more year of education to a random woman before her marriage on child health. Because the marriage intervenes after the woman has completed her education, the future husband can base his choice of wife on the education of the woman. This coefficient will therefore incorporate the effect of assortative mating. Specifically, it will incorporate the average unobserved quality of the men who choose to marry a woman with the education predicted by the instrument, over and above the direct impact of the husband's education, which is included in the regression (and instrumented). This is the parameter of interest for a woman who considers whether to get an education or not, since by getting an education, she will increase the survival probability of her children, not only through her own capabilities, but also through the effects of the marriage market. However, as pointed out by Behrman and Rosenzweig (1999), this is not the parameter of interest if the government is considering raising the average education of all women. In this case, since all the women are more educated, the entire distribution is shifted and the husband each of them chooses is the same as if none of them had received an education. The relevant parameter for policy decisions in this case is the causal effect of the women's education on child health, keeping her husband's characteristics fixed. In the presence of assortative mating, our instrumental variables estimates are upper bounds (in absolute value) for the effect of the difference in education between husband and wife.

3 Effects on Education and Differences in Education

3.1 Reduced form evidence: Effect of the program on education

The identification strategy discussed above can be implemented in a simple regression framework. As in Duflo (2001), we run the following specification, separately for women and their husbands.

$$S_{ijk} = c_1 + \alpha_{1j} + \beta_{1k} + \sum_{l=2}^{23}(P_j * d_{il})\gamma_{1l} + \sum_{l=2}^{23}(\mathbf{C_j} * d_{il})\delta_{\mathbf{11}} + \epsilon_{ijk}, \quad (1)$$

where d_{il} is a dummy that indicates whether individual i is age l in 1974 (a year-of-birth dummy). In these unrestricted estimates, we measure the time dimension of exposure to the program with 22 (27 for the husbands) year of birth dummies. Individuals aged 24 (29 for the husbands) in 1974 form the control group, and this dummy is omitted from the regression. Each coefficient γ_{1l} can be interpreted as an estimate of the impact of the program on a given cohort.

In the estimation of this equation, as well as in the rest of the paper, we do two adjustment to the standard errors. First, we aggregate the data to cells grouping households by husband's year and region of birth, and wife's year and region of birth. The regressions are then weighted by the sum of the weights in each cell. This takes care of the correlation between households with the same characteristics. Second, we correct the standard errors in these aggregate regressions for auto-correlation of an arbitrary form between observations in the wife's region of birth (as suggested in Bertrand, Duflo and Mullainathan (2001).[6]

[6] In practice, we use the stata "cluster" command, at the level of the wifes' region of birth". The standard errors are thus larger than those reported in Duflo (2001), which was not implementing this correction

There is a testable restriction on the pattern of the coefficients γ_{1l}. Because children aged 13 and older in 1974 did not benefit from the program, the coefficients γ_{1l} should be 0 for $l > 12$ and start increasing for l smaller than some threshold (the oldest age at which an individual could have been exposed to the program and still benefit from it).

In figure 1, we show the coefficients γ_{1l} for women (in solid lines) and men (in dotted lines). Each dot on a line is the coefficient of the interaction between a dummy for being a given age in 1974 and the number of schools constructed per 1,000 children in the region of birth. For women and men, these coefficients fluctuate around 0 until age 12 and start increasing after age 12. As expected, the program had no effect on the education of cohorts not exposed to it, and it had a positive effect on the education of younger cohorts. The coefficients are jointly significant for age 2 to 12 in both equations (The F.statistic for the interaction between age 2 to 12 in 1974 and the program are respectively 2.89 and 2.26, for males and females), and insignificant for age 13 and older.

Next, we run a similar specification that combines the husband's exposure to the program to the wife's exposure to the program to explain the average level of education in the household. Namely, we run the following specification, in the complete sample (with imputed husbands).[7]

$$\overline{S}_{irqkl} = c_1 + \alpha^h_{1r} + \alpha^w_{1q} + \beta^h_{1k} + \beta^w_{1l} + \sum_{\tau=2}^{28}(P_r * d^h_{i\tau})\gamma^h_{1\tau} + \sum_{\tau=2}^{23}(P_q * d^w_{i\tau})\gamma^w_{1\tau} + X_{irqkl}\delta + \epsilon_{ijk}, \quad (2)$$

where $\overline{S}_{irqkl}$ is the average education of household i, in which the husband and the wife were born in regions r and q, respectively, and in years k and l, respectively. P_r is the level of program in the husband's region of birth, P_q is the level of program in the wife's region of birth, $d^h_{i\tau}$ (resp. $d^w_{i\tau}$) is a dummy equal to 1 if the husband (resp. the wife) is τ years old in 1974. X_{irqkl} is a vector of control variables, the enrollment rate in each partner's region of birth, interacted with their year of birth dummies, and interaction of a dummy indicating whether the husband's data is imputed and year of birth of the wife

[7]The results in the sample where both woman and husband are observed are almost identical.

dummies on the one hand and region of birth of the wife dummies on the other hand. The interpretation of these coefficients is the same as above: They should be more or less constant till age 12, and then start increasing. The results are presented in figure 2. The pattern is very striking: the coefficients of the husband and the wife are almost on top of each other, and have the same pattern as they have as in the individual regressions. Both husband's and wife's education have contributed to the increase in average education. This regression supports the identification assumption for the education equation: the interactions are jointly significant after age 12 for both genders (the F statistics are 1.82 for men, 1.76 for women, and 2.25 jointly for both genders), and jointly insignificant before age 12 (the F statistic is 1.46 jointly for both genders).

3.2 First Stage Results: Effect of the Program on Education and Differences in Education

We now impose that the program had no effect on the generations that were not exposed to it. To obtain the impact of the program on average education, we run the following specification:

$$\overline{S}_{irqkl} = c_1 + \alpha^h_{1r} + \alpha^w_{1q} + \beta^h_{1k} + \beta^w_{1l} + \sum_{\tau=1}^{12}(P_r * d^h_{i\tau})\gamma^h_{1\tau} + \sum_{\tau=1}^{12}(P_q * d^w_{i\tau})\gamma^w_{1\tau} + X_{irqkl}\delta + \epsilon_{ijk}, \quad (3)$$

where the notation is the same as above.

The results are presented in table 3, columns 1 and 2. The coefficients for both men and women have the expected pattern: they are positive and increasing, and jointly significant (with a F statistics of 2.25) . The significance of the men's instrument is not very high (the F statistics is 1.38 without controls), lower than that of women's instrument.

One of our concerns in this paper is to estimate the impact of the difference in education between the husband and the wife. As we described above, the interaction between a dummy indicating whether the husband was exposed to the program, the age difference of the husband, and the level of program in the region of birth, is likely to predict the difference in education (but not the average level of education). This leads to the following first stage specification:

$$\overline{DS}_{irqkl} = c_1 + \alpha^h_{1r} + \alpha^w_{1q} + \beta^h_{1k} + \beta^w_{1l} + \sum_{\tau=1}^{12}(P_r * d^h_{i\tau})\gamma^h_{1\tau} + \sum_{\tau=1}^{12}(P_q * d^w_{i\tau})\gamma^w_{1\tau} +$$
$$P_r * T_k * (l-k) * \lambda_1 + P_r * (1-T_k) * (l-k) * \lambda_2 + X_{irqkl}\delta + \epsilon_{ijk},$$

In addition from the control variable previously mentioned X_{irqkl} now includes the variables $T_k * (l-k)$ and $(1-T_k) * (l-k)$, The coefficients of interest in this regression is λ_2, which should be negative and significant. Testing whether λ_1 is zero provides a useful specification check. The same specification, with the average education as the dependent variable, will be the first stage for average education in the specification where we instrument both for average education and the difference. In this case, we expect the coefficients of both interactions to be insignificant.

Columns 3 to 6 present the first stage results for average education and difference in education. As expected, the coefficients of the interactions are both insignificant in the first stage regression for average education. The precious conclusions are otherwise unchanged, and the instrument set is jointly significant. In the regression for the difference in education, however, λ_2 is negative and significant (with a t. statistic of -3.00), while λ_1 is insignificant. Therefore, this instrument seems indeed to be capturing the effect of interest. The F statistic of the joint set of instrument is 1.86 (p=0.0096).

4 Results: fertility and child mortality

4.1 Reduced form results

In table 4, we present F. statistics of regressions analogous to equation 2, for four outcomes y_{irqkl}: total number of children, number of children by age 25, total number of children who ever died, number of children who died before the woman reached age 25.

$$y_{irqkl} = c_1 + \alpha^h_{2r} + \alpha^w_{2q} + \beta^h_{2k} + \beta^w_{2l} + \sum_{\tau=2}^{23}(P_r * d^h_{i\tau})\gamma^h_{2\tau} + \sum_{\tau=2}^{23}(P_q * d^w_{i\tau})\gamma^w_{2\tau} + X_{irqkl}\delta + \epsilon_{ijk}, \quad (4)$$

We present the F.statistic for testing whether the set of $\gamma^i_{2\tau}$ are jointly significant for $\tau > 12$ and for τ less or equal to 12, for $i = h$ and w.

In the regressions on the total number of children, none of the F.statistics is significant: there is no indication that the program was associated with a reduction in the number of children or the number of children born before the woman turned 25.

The picture is different for the mortality regressions. Here, the F statistic are all jointly insignificant for the pre-program variables, but the woman's interactions are significant after the program, and the set of interaction is jointly significant at the 10% level.

Thus, these results suggest that overall the program may have been effective in reducing mortality, but not fertility. The fact that none of the pre-program interactions are jointly significant is reassuring: it suggests that the effect on mortality is not due to omitted region-specific trends correlated with the program (unless they changed for this specific cohort of woman).

4.2 Restricted reduced forms

In table 5, we present restricted reduced form using specifications analogous to the first stage for education, with the instrument for the difference (table A) and without it (table 5B). In table 5A, in the regressions using the total number of children born (or the number of children born before the woman turned 25), neither the woman's instrument, nor the man's instrument, are jointly significant. The pattern for the mortality variables (total number of children that died or total number of children that died before the woman turned 25) is more similar to the pattern we had for average education: the wife's instruments are jointly significant, while the husband's instrument are not. Jointly, the instruments are significant at the 5% level in all the regressions with control for enrollment rates.

In table 5B, we introduce the variable indicating the difference in exposure to the program by men and women. Interestingly, a different pattern appears in the fertility and the mortality regressions. In the fertility regression, the interaction between the husband's age, the age difference between husband and wife and the level of program in the region of birth is significant: in particular, when the husband is not affected by the program, the interaction between the age difference and the level of the program is negative, and significant at the 10% level. This parallels the negative coefficient we found in the equation for the difference in education. This suggests that the program, by reducing the difference in education between husband and wife, may also have decreased fertility. In the child mortality equations, however, there is no similar effect of the difference in exposure to the program.

4.3 Instrumental variable estimates

Tables 6 and 7 present the OLS and Instrumental variables estimates of the effect of average education and difference in education on a larger number of outcomes related to fertility or child mortality.

$$y_{irqkl} = c_1 + \alpha_{2r}^h + \alpha_{2q}^w + \beta_{2k}^h + \beta_{2l}^w + \mu_1 \overline{S}_{irqkl} + X_{irqkl}\delta + \epsilon_{ijk}, \quad (5)$$

and

$$y_{irqkl} = c_1 + \alpha_{2r}^h + \alpha_{2q}^w + \beta_{2k}^h + \beta_{2l}^w + \mu_2 \overline{S}_{irqkl} + \mu_3 DS_{irqkl} + X_{irqkl}\delta + \epsilon_{ijk}, \quad (6)$$

The excluded instruments for equation 5 are the set of interaction between age in 1974 and intensity of the program in the region of birth (for both husband and wife). In equation 6, we add to this set the interaction between husband's exposure to the program, age difference between husband and wife, and level of the program in the region of birth (we control for the age difference interacted with the husband's exposure to the program).

In tables 6 and 7, the first two columns present the OLS estimates (of the average education in the household in the first column, the average and the difference in the second column). Columns 3 to 6 present the IV results, with or without controls for initial enrollment.

OLS and 2SLS deliver similar results for the age at marriage and the probability that the woman is currently married. Age at marriage is significantly associated with education (the 2SLS estimate is 0.38 for the average education in the household, suggesting that each year of education is associated with an increase of 0.38 in the age at marriage), and women's education matters more than men's education (conditioning on the average education, a greater difference in education between husband and wife reduces marriage age). Education does not seem to be correlated with current marriage status.[8].

The 2SLS results on the number of children ever born are somewhat noisy: the point estimate of the effect of average education on the number of children ever born is similar to the OLS (-0.09), but is not significantly different from 0. The 2SLS estimate effect of the difference in education is almost as large (in the opposite sense), but not significant either. The results of the number of children born before the woman turned 15 and 25 are more interesting. In the case of the woman born before age 15, both average education and the difference in education matter, suggesting once again that women's education has a larger impact on early pregnancy than men's education. In the case of the number of children born before the woman turned 25, the average education does not seem to matter, but the difference in education does matter. In other words, when the education of the man increases relative to that of his wife, the number of children in the household is predicted to *increase*.

In table 7 we present the child mortality results. We obtain very similar results for total number of child who died, mortality before one month, mortality before one year and mortality before 5 years. Average education in the household has the effect of reducing child mortality, and there is no significant effect of the difference between husband's and wife's education. When we restrict the sample to death occuring before the woman was age 25, we find negative estimates as well, although they are less significant.

[8]This shows that our instruments are not correlated with the probability to be selected in the sample of "complete" couples, and thus that results are not very likely to be biased by sample selection.

5 Conclusion

The INPRES program led a to large increase in the education of women as well as men. This increase resulted, not only in higher incomes, but also in lower age at marriage, lower number of very early births, and lower child mortality. Thus, the estimates reported in this paper confirm the findings of the earlier literature, that parental education has a strong causal effect on the reduction of child mortality.

The results on the difference between the effect of male and female education are more nuanced. Female education seems indeed to matter more than male education in determining age at marriage and number of children born before the woman reaches 15 or 25. On the other hands, these estimates do not confirm the intuition derived from OLS specifications (including the OLS specification in this paper) that female education has a stronger causal impact on child mortality than male education. The 2SLS estimates of the differences in education between male and female are never significant. Note that in the presence of assortative matching, the 2SLS remain lower bounds of the effect of the difference between male and female education (to the extent that "good husbands" may prefer wife with higher education, as predicted by the instruments).

In extension to this work, we will present direct evidence of assortative matching. First, each partner's education has a causal effect on his or her partner education. Second, the OLS estimate show a positive effect of the education of the wife on her husband's wage, which disappear after instrumenting.

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Figure 1: Coefficients of the interactions age in 1974*program intensity in region of birth in the education equation of each member

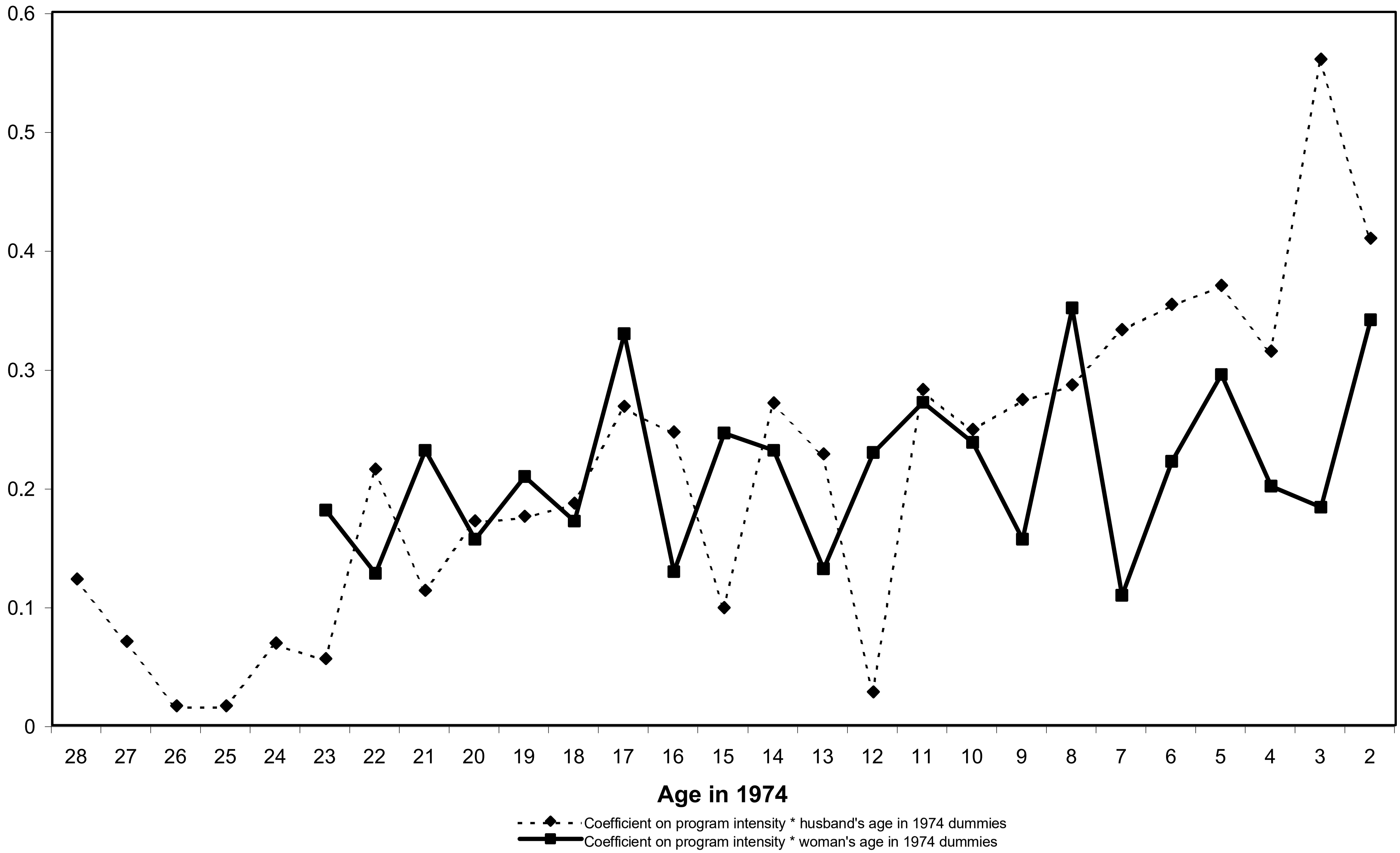

Figure 2: Coefficients of the interactions age in 1974*program intensity in region of birth in the average education equation

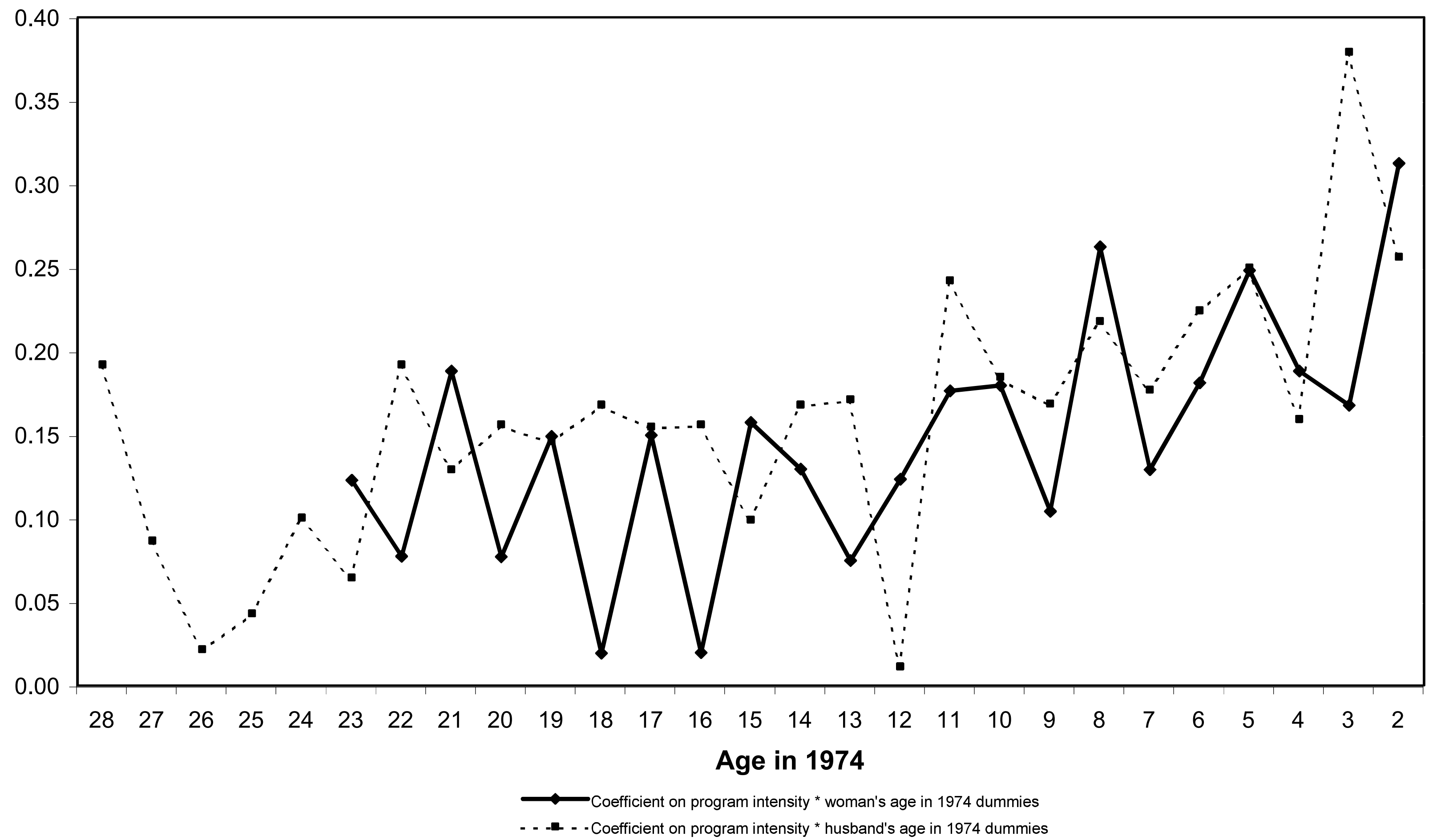

Table 1: Descriptive statistics

Variable:	Mean:
Age of wife	32.1
Age of husband	36.8
Education:	
Fraction of wives who completed primary school	0.68
Fraction of husbands who completed primary school	0.76
Years of education of wives	6.67
Years of education of husbands	7.15
Average years of education in the household	6.91
Difference in years of education of husband minus wife	0.48
Marriage and fertility:	
Wife's age at first marriage	18.4
Age at first birth	20.8
Number of children ever born	2.46
Number of sons born	1.50
Number of daughters born	1.42
Number of children born before woman's age 25	1.37
Child mortality:	
Number of children who died	0.225
Number of sons who died	0.156
Number of daughters who died	0.130
Number of children who died before 1 month	0.075
Number of sons who died before 1 month	0.055
Number of daughters who died before 1 month	0.040
Number of children who died before age 1	0.158
Number of sons who died before age 1	0.112
Number of daughters who died before age 1	0.088
Number of children who died before age 5	0.210
Number of sons who died before age 5	0.145
Number of daughters who died before age 5	0.120
Number of children who died before woman's age 25	0.138
Number of children who died before 1 month before woman's age 25	0.052
Number of children who died before age 1 before woman's age 25	0.108
Number of children who died before age 5 before woman's age 25	0.136
N	148,845
N with children	122,818
N with sons	98,953
N with daughters	96,391

Table 2: Effect of age difference on differences in years of education

	Low program	High program	Difference
Husband not exposed	0.0214	0.0031	-0.0182
	(0.0035)	(0.0042)	(0.0055)
Husband exposed	0.0136	0.0095	-0.0041
	(0.0072)	(0.0087)	(0.0114)

Note: Each cell in columns (1) and (2) of the table present the coefficient of an OLS regression of the difference (husband's years of education-wife's years of education) on the difference (husband's age-wife's age). The third column is the difference between those coefficients.

Table 3: First-stage coefficients on program intensity * year of birth dummies

	Dependent variable: average years of education		Dependent variable: average years of education		Dependent variable: difference in years of education (husband - wife)	
	(1)	(2)	(3)	(4)		
Age difference * husband 2-12			-0.0033	-0.0077	0.0052	0.0038
			(0.0107)	(0.0106)	(0.0092)	(0.0091)
Age difference * husband 12 or more*nin			0.0039	0.0041	-0.0122	-0.0118
			(0.0042)	(0.0042)	(0.0041)	(0.0039)
Woman's age in 1974*nin						
12	0.0397	0.0388	0.0362	0.0347	0.0034	0.0203
	(0.0532)	(0.0552)	(0.0528)	(0.0548)	(0.0460)	(0.0450)
11	0.0920	0.0926	0.0860	0.0848	0.0345	0.0449
	(0.0469)	(0.0483)	(0.0474)	(0.0489)	(0.0453)	(0.0424)
10	0.0924	0.0990	0.0852	0.0902	0.0164	0.0300
	(0.0552)	(0.0561)	(0.0551)	(0.0559)	(0.0655)	(0.0597)
9	0.0224	0.0275	0.0135	0.0168	0.1028	0.1123
	(0.0496)	(0.0498)	(0.0517)	(0.0513)	(0.0623)	(0.0549)
8	0.1776	0.1952	0.1690	0.1854	0.0443	0.0564
	(0.0626)	(0.0588)	(0.0631)	(0.0595)	(0.0522)	(0.0521)
7	0.0420	0.0501	0.0340	0.0420	0.2022	0.2172
	(0.0570)	(0.0585)	(0.0573)	(0.0584)	(0.0602)	(0.0556)
6	0.0930	0.1254	0.0851	0.1189	0.1431	0.1647
	(0.0498)	(0.0457)	(0.0528)	(0.0474)	(0.0652)	(0.0710)
5	0.1601	0.1813	0.1541	0.1778	0.1051	0.1275
	(0.0549)	(0.0563)	(0.0572)	(0.0575)	(0.0720)	(0.0745)
4	0.0995	0.1151	0.0940	0.1138	0.1218	0.1565
	(0.0444)	(0.0469)	(0.0490)	(0.0505)	(0.0638)	(0.0666)
3	0.0790	0.1211	0.0760	0.1235	0.1613	0.1917
	(0.0627)	(0.0526)	(0.0683)	(0.0560)	(0.0787)	(0.0832)
2	0.2230	0.2594	0.2207	0.2637	0.1418	0.1690
	(0.0810)	(0.0670)	(0.0880)	(0.0733)	(0.0835)	(0.0863)
F-statistic	2.09	2.37	1.87	2.10	1.78	1.99

Husband's age in 1974*nin						
12	-0.1244	-0.1258	-0.0873	-0.0710	-0.1775	-0.1827
	(0.0766)	(0.0749)	(0.0867)	(0.0870)	(0.0742)	(0.0660)
11	0.1071	0.0961	0.1430	0.1472	-0.1698	-0.1760
	(0.0600)	(0.0605)	(0.0777)	(0.0790)	(0.0649)	(0.0614)
10	0.0500	0.0401	0.0859	0.0913	-0.1699	-0.1836
	(0.0616)	(0.0607)	(0.0779)	(0.0758)	(0.0698)	(0.0632)
9	0.0340	0.0142	0.0669	0.0592	-0.0851	-0.0963
	(0.0613)	(0.0597)	(0.0655)	(0.0652)	(0.0667)	(0.0607)
8	0.0846	0.0593	0.1166	0.1031	-0.1348	-0.1499
	(0.0562)	(0.0603)	(0.0633)	(0.0665)	(0.0704)	(0.0686)
7	0.0426	0.0409	0.0730	0.0791	-0.0485	-0.0670
	(0.0742)	(0.0777)	(0.0814)	(0.0858)	(0.0782)	(0.0752)
6	0.0900	0.1055	0.1183	0.1390	-0.1000	-0.1144
	(0.0713)	(0.0756)	(0.0819)	(0.0850)	(0.0755)	(0.0731)
5	0.1158	0.1102	0.1406	0.1369	-0.1096	-0.1222
	(0.0829)	(0.0902)	(0.0898)	(0.0969)	(0.0907)	(0.0926)
4	0.0258	0.0123	0.0481	0.0338	-0.0819	-0.1003
	(0.0901)	(0.0914)	(0.1010)	(0.1024)	(0.0896)	(0.0900)
3	0.2456	0.1889	0.2666	0.2055	-0.0493	-0.0435
	(0.1499)	(0.1483)	(0.1610)	(0.1595)	(0.1504)	(0.1539)
2	0.1223	0.2628	0.1396	0.2706	-0.1907	-0.3072
	(0.1604)	(0.1874)	(0.1644)	(0.1894)	(0.1803)	(0.2023)
F-statistic	1.38	1.31	1.35	1.29	1.15	1.64
F-stat for all instr.	2.29	2.27	2.13	2.10	1.86	1.89
Control variables:						
Y.o.b.*enr. rate in 1971	No	Yes	No	Yes	No	Yes
Adj. R-squared	0.36	0.36	0.36	0.36	0.22	0.22
Observations	81,549	81,023	81,549	81,023	81,549	81,023

Notes: All specification include region of birth and year of birth dummies, difference in age between husband and woman interacted with husband being age 2-12 years in 1974, year of birth interacted with number of children in the region of birth in 1971, and interactions of dummy for whether husband is missing with woman's age and with woman's province of birth.
Standard errors are adjusted for clustering on region of birth of wife and husband and year of birth of wife and husband.
The number of observations is the number of cells
The F-statistics test the hypothesis that the interaction coefficients are jointly zero.
For women, the control group are women aged 13-24 in 1974. For men, the control group are men aged 13-29 in 1974.

Table 4: Unrestricted reduced form coefficients on program intensity * year of birth dummies

	Dependent variable: total number of children	Dependent variable: total number of children before woman's age 25	Dependent variable: number of children that died	Dependent variable: number of children that died before woman's age 25
	(1)	(2)	(3)	(4)
F-statistic for nin * woman's age 2-12	0.74 (p=0.695)	0.75 (p=0.687)	2.07 (p=0.022)	2.10 (p=0.021)
F-statistic for nin * husband's age 2-12	0.85 (p=0.592)	1.26 (p=0.247)	0.66 (p=0.773)	0.81 (p=0.630)
F-statistic for nin * woman's age 13-23	1.29 (p=0.232)	1.47 (p=0.141)	1.16 (p=0.318)	0.90 (p=0.544)
F-statistic for nin * husband's age 13-28	1.49 (0.103)	1.85 (p=0.025)	0.90 (p=0.574)	0.97 (p=0.491)
Control variables:				
Y.o.b.*enr. rate in 1971	No	No	No	No
Adj. R-squared	0.56	0.31	0.13	0.07
Observations	81,549	81,549	77,203	77,203

Notes: All specification include region of birth and year of birth dummies, difference in age between husband and woman interacted with husband being age 2-12 years in 1974, year of birth interacted with number of children in the region of birth in 1971, and interactions of dummy for whether husband is missing with woman's age and with woman's province of birth.
Standard errors are adjusted for clustering on region of birth of wife and husband and year of birth of wife and husband.
The number of observations reported is the number of cells (defined by husband's region of birth, wife's region of birth, husband's year of birth, wife's year of birth)
The F-statistics test the hypothesis that the interaction coefficients are jointly zero.

Table 5A: Restricted reduced form coefficients on program intensity * year of birth dummies

	Dependent variable: total number of children		Dependent variable: total number of children before woman's age 25		Dependent variable: number of children that died		Dependent variable: number of children that died before woman's age 25	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
F-statistic for nin * woman's age 2-12	0.94 (p=0.506)	0.86 (p=0.575)	0.79 (p=0.650)	1.06 (p=0.392)	2.23 (p=0.013)	2.69 (p=0.0027)	2.02 (p=0.027)	2.05 (p=0.024)
F-statistic for nin * husband's age 2-12	0.80 (p=0.644)	0.74 (p=0.703)	1.16 (p=0.314)	1.05 (p=0.401)	0.64 (p=0.796)	0.90 (p=0.542)	0.81 (p=0.626)	1.00 (p=0.444)
F-stat for all 22 instruments	1.01 (p=0.447)	0.97 (p=0.501)	1.25 (p=0.207)	1.26 (p=0.195)	1.36 (p=0.134)	2.00 (p=0.0059)	1.40 (p=0.114)	1.53 (p=0.062)
Control variables:								
Y.o.b.*enr. rate in 1971	No	Yes	No	Yes	No	Yes	No	Yes
Adj. R-squared	0.56	0.56	0.31	0.31	0.13	0.13	0.07	0.07
Observations	81,549	81,023	81,549	81,023	77,203	76,713	77,203	76,713

Notes: All specification include region of birth and year of birth dummies, difference in age between husband and woman interacted with husband being age 2-12 years in 1974, year of birth interacted with number of children in the region of birth in 1971, and interactions of dummy for whether husband is missing with woman's age and with woman's province of birth.
Standard errors are adjusted for clustering on region of birth of wife and husband and year of birth of wife and husband.
The F-statistics test the hypothesis that the interaction coefficients are jointly zero.
For women, the control group are women aged 13-24 in 1974. For men, the control group are men aged 13-29 in 1974.

Table 5B: Restricted reduced form coefficients on program intensity * year of birth dummies

	Dependent variable: total number of children		Dependent variable: total number of children before woman's age 25		Dependent variable: number of children that died		Dependent variable: number of children that died before woman's age 25	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Age difference * husband 2-12 * nin	0.0004	0.0012	0.0064**	0.0075***	0.0001	0.0010	0.0012	0.0016
	(0.0042)	(0.0042)	(0.0028)	(0.0029)	(0.0015)	(0.0015)	(0.0010)	(0.0010)
Age difference * husband 13-28 * nin	-0.0041*	-0.0041*	-0.0026*	-0.0025	-0.0009	-0.0010	0.0002	0.0002
	(0.0024)	(0.0024)	(0.0016)	(0.0016)	(0.0006)	(0.0007)	(0.0005)	(0.0005)
F-statistic for nin * woman's age 2-12	0.73	0.73	0.95	1.46	2.03	2.30	1.83	1.83
	(p=0.711)	(p=0.705)	(p=0.493)	(p=0.145)	(p=0.026)	(p=0.011)	(p=0.049)	(p=0.049)
F-statistic for nin * husband's age 2-12	0.84	0.80	1.65	1.50	0.71	0.98	0.69	0.93
	(p=0.603)	(p=0.640)	(p=0.084)	(p=0.130)	(p=0.724)	(p=0.469)	(p=0.745)	(p=0.512)
F-stat for all 22 instruments	0.94	0.86	1.63	1.70	1.34	2.02	1.29	1.55
	(p=0.549)	(p=0.650)	(p=0.040)	(p=0.028)	(p=0.143)	(p=0.0052)	(p=0.178)	(p=0.058)
F-stat for all 24 instruments	1.03	1.00	1.68	1.85	1.30	1.90	1.52	1.72
	(p=0.426)	(p=0.469)	(p=0.026)	(p=0.011)	(p=0.163)	(p=0.0079)	(p=0.060)	(p=0.021)
Control variables:								
Y.o.b.*enr. rate in 1971	No	Yes	No	Yes	No	Yes	No	Yes
Adj. R-squared	0.56	0.56	0.31	0.31	0.13	0.13	0.07	0.07
Observations	81,549	81,023	81,549	81,023	77,203	76,713	77,203	76,713

Notes: All specification include region of birth and year of birth dummies, difference in age between husband and woman interacted with husband being age 2-12 years in 1974, year of birth interacted with number of children in the region of birth in 1971, and interactions of dummy for whether husband is missing with woman's age and with woman's province of birth.
Standard errors are adjusted for clustering on region of birth of wife and husband and year of birth of wife and husband.
The F-statistics test the hypothesis that the interaction coefficients are jointly zero.
For women, the control group are women aged 13-24 in 1974. For men, the control group are men aged 13-29 in 1974.

Table 6: OLS and 2SLS results for fertility, using program intensity * age in 74 dummies as instruments for average years of education of woman and husband, and for difference (husband - woman) in years of education

Dependent variable:	Endogenous regressors:	OLS (1)	OLS (2)	2SLS (3)	2SLS (4)	2SLS (5)	2SLS (6)
Woman's age at first marriage	Average years of education	0.331***	0.382***	0.080	0.385**	0.094	0.402**
		(0.008)	(0.008)	(0.225)	(0.174)	(0.196)	(0.156)
	Difference in years of education (husb.-wife)		-0.113***		-0.356		-0.266
			(0.005)		(0.217)		(0.187)
Observations		77,203	77,203	77,203	77,203	76,713	76,713
Probability that woman has a husband in the sample	Average years of education	-0.00005	-0.00005	0.0004	0.0044	0.0004	0.0046
		(0.00007)	(0.00007)	(0.0004)	(0.0032)	(0.0004)	(0.0033)
	Difference in years of education (husb.-wife)		0.00010		-0.0069		-0.0065
			(0.00006)		(0.0046)		(0.0045)
Number of children ever born	Average years of education	-0.087***	-0.088***	-0.094	-0.129	-0.100	-0.134
		(0.004)	(0.004)	(0.121)	(0.107)	(0.116)	(0.100)
	Difference in years of education (husb.-wife)		0.028***		0.094		0.081
			(0.002)		(0.118)		(0.110)
Number of children born before age 15	Average years of education	-0.0030***	-0.0031***	-0.0078*	-0.0101**	-0.0063	-0.0095**
		(0.0002)	(0.0002)	(0.0044)	(0.0051)	(0.0043)	(0.0049)
	Difference in years of education (husb.-wife)		0.0002		0.0093		0.0110*
			(0.0002)		(0.0062)		(0.0063)
Number of children born before age 25	Average years of education	-0.083***	-0.083***	0.007	-0.037	0.003	-0.046
		(0.003)	(0.003)	(0.074)	(0.059)	(0.064)	(0.051)
	Difference in years of education (husb.-wife)		0.029***		0.135*		0.122*
			(0.002)		(0.074)		(0.068)
Control variables:							
Y.o.b.*enr. rate in 1971		No	No	No	No	Yes	Yes
Observations		81,549	81,549	81,549	81,549	81,023	81,023

Notes: All specification include region of birth of wife and husband, and year of birth of wife and husband dummies, and year of birth of wife and husband interacted with number of children in the region of birth in 1971.
Standard errors are adjusted for clustering on region of birth of wife.
* denotes significance at 10%, ** denotes significance at 5%, *** denotes significance at 1%

Table 7: OLS and 2SLS results for mortality, using program intensity * age in 74 dummies as instruments for average years of education of woman and husband, and for difference (husband - woman) in years of education

Dependent variable:	Endogenous regressors:	OLS (1)	OLS (2)	2SLS (3)	2SLS (4)	2SLS (5)	2SLS (6)
Total number of children who died	Average years of education	-0.029***	-0.029***	-0.102***	-0.104***	-0.114***	-0.116***
		(0.001)	(0.001)	(0.030)	(0.028)	(0.031)	(0.028)
	Difference in years of education (husb.-wife)		0.004***		-0.002		-0.003
			(0.001)		(0.032)		(0.036)
Number of children who died before 1 month of age	Average years of education	-0.0092***	-0.0093***	-0.0271**	-0.0327***	-0.0318**	-0.0397***
		(0.0005)	(0.0005)	(0.0134)	(0.0141)	(0.0144)	(0.0152)
	Difference in years of education (husb.-wife)		0.0008*		0.0164		0.0182
			(0.0005)		(0.0150)		(0.0152)
Number of children who died before 1 year of age	Average years of education	-0.0201***	-0.0202***	-0.0508**	-0.0558***	-0.0612***	-0.0679***
		(0.0006)	(0.0006)	(0.0226)	(0.0214)	(0.0223)	(0.0213)
	Difference in years of education (husb.-wife)		0.0023***		0.0125		0.0147
			(0.0007)		(0.0251)		(0.0252)
Number of children who died before 5 years of age	Average years of education	-0.0269***	-0.0270***	-0.0863***	-0.0898***	-0.0987***	-0.1017***
		(0.0012)	(0.0007)	(0.0283)	(0.0265)	(0.0285)	(0.0257)
	Difference in years of education (husb.-wife)		0.0036***		0.0075		0.0045
			(0.0008)		(0.0302)		(0.0306)
Number of children who died before woman was 25	Average years of education	-0.0182***	-0.0182***	-0.0336	-0.0336*	-0.0402**	-0.0424***
		(0.0008)	(0.0008)	(0.0208)	(0.0187)	(0.0177)	(0.0149)
	Difference in years of education (husb.-wife)		0.0028***		0.0023		0.0059
			(0.0006)		(0.0228)		(0.0231)
Number of children who died before woman was 25 before 1 month of age	Average years of education	-0.0063***	-0.0063***	-0.0071	-0.0096	-0.0094	-0.0144
		(0.0004)	(0.0004)	(0.0100)	(0.0101)	(0.0101)	(0.0102)
	Difference in years of education (husb.-wife)		0.0010**		0.0083		0.0126
			(0.0004)		(0.0118)		(0.0121)
Number of children who died before woman was 25 before 1 year of age	Average years of education	-0.0139***	-0.0139***	-0.0156	-0.0147	-0.0216	-0.0243*
		(0.0006)	(0.0006)	(0.0184)	(0.0176)	(0.0159)	(0.0141)
	Difference in years of education (husb.-wife)		0.0021***		-0.0003		0.0072
			(0.0005)		(0.0194)		(0.0195)
Number of children who died before woman was 25 before 5 years of age	Average years of education	-0.0178***	-0.0179***	-0.0305*	0.0304	-0.0371**	-0.0395***
		(0.0008)	(0.0008)	(0.0205)	(0.0186)	(0.0173)	(0.0148)
	Difference in years of education (husb.-wife)		0.0028***		0.0026		0.0064
			(0.0006)		(0.0022)		(0.0228)
Observations		77,203	77,203	77,203	77,203	76,713	76,713
Number of sons who died	Average years of education	-0.018***	-0.018***	-0.065***	-0.065***	-0.072***	-0.073***
		(0.001)	(0.001)	(0.024)	(0.024)	(0.024)	(0.023)
	Difference in years of education (husb.-wife)		0.002**		-0.0005		0.001
			(0.001)		(0.023)		(0.021)
Observations		66,035	66,035	66,035	66,035	65,613	65,613
Number of daughters who died	Average years of education	-0.016***	-0.016***	-0.037*	-0.041**	-0.044**	-0.049***
		(0.001)	(0.001)	(0.019)	(0.017)	(0.017)	(0.015)
	Difference in years of education (husb.-wife)		0.003***		0.010		0.011
			(0.001)		(0.021)		(0.021)
Observations		64,776	64,776	64,776	64,776	64,365	64,365
Control variables: Y.o.b.*enr. rate in 1971		No	No	No	No	Yes	Yes

Notes: All specification include region of birth of wife and husband, and year of birth of wife and husband dummies, and year of birth of wife and husband interacted with number of children in the region of birth in 1971. Standard errors are adjusted for clustering on region of birth of wife.