

2009

Essays on Labor and Demographic Economics: Dissertation Summary

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This thesis consists of four self-contained essays, broadly belonging to the field of labor and demographic economics. It studies various social problems and policies with respect to its consequences for labor markets, human capital formation, and health. Of special interest is the relationship between childhood environment and child/youth outcomes. A large number of studies have highlighted that early experiences may have long-lasting impacts, and that these effects often are stronger among disadvantaged children (Cunha and Heckman 2007; Currie 2001). The thesis contributes to this literature.

A central theme in the thesis is distinguishing between causation and correlation. Determining cause and effect is one of the oldest questions in the social sciences, where data generated by controlled randomized experiments are rare. There are basically two dimensions to this problem. First, the relationship between two variables could be driven by some unobserved variable(s). Second, the variables might simultaneously influence each other. In both cases, it is difficult to claim that one variable causally affects the other. Understanding causality is essential in making correct policy decisions. If, for instance, an association between two variables is actually governed by a third unobserved factor, then policymakers might be misled to devote resources to influence a parameter of little use.

To deal with these methodological problems, I make use of various quasi-experiments, generating natural treatment and control groups similar in all characteristics except for the treatment received. These “experiments” are typically in the form of major policy changes. Since such policies often are “exogenously” imposed on the individuals, omitted variables and simultaneity become less of a concern.

Another obstacle when analyzing these kinds of questions is the limited availability of high-quality data. An additional contribution of the thesis is to exploit extensive population micro data. Very few datasets contain information linking individuals’ records to family characteristics from early childhood to adulthood. The fact that I have access to precisely such rich data is advantageous since it minimizes problems with small and unrepresentative samples and implies less scope for measurement error. Below follows a description of the papers included in the thesis.

Essay 1

Putting Teenagers on the Pill: The Consequences of Subsidized Contraception²

Unintended childbearing is both frequent and widespread. In the United States, almost 60 percent of all pregnancies are unplanned; a rate that is even higher among young women (Institute of Medicine 1995). The social and economic costs of unintended childbearing are potentially large since these births are associated with poor socioeconomic and health outcomes of both mothers and children. In addition, unwanted pregnancies account for approximately 1.5 million abortions annually in the United States alone (Institute of Medicine 1995). These concerns have motivated policymakers to instigate a wide range of family planning programs. Despite the vast interest in such interventions there is however very scarce evidence on the efficiency of different policies.

This paper investigates the consequences of a series of Swedish policy changes beginning in 1989 where different regions started subsidizing the birth control pill. The reforms were significant and applied to all types of oral contraceptives. The subsidy rate was on average 75 percent. My identification strategy takes advantage of the fact that the reforms were implemented successively over time and targeted specific cohorts of young women, in particular teenagers. This generates plausibly exogenous variation in access to the subsidy, which is used to investigate the impact on abortions, fertility, marriage, educational attainment, and labor supply.

The main argument for subsidizing the birth control pill for teenagers is that young women may lack stable income sources, and therefore are more likely to prematurely end or delay the course of the treatment. Since the timing of the treatment is crucial for its success, even short interruptions from the program increases the risk of an unintended pregnancy. Still, it is not obvious that the demand for contraception is price elastic. Women who consider the cost of pregnancy as very high may either choose to completely abstain from sex or always pay the cost of getting the pill. Thus, it is not certain that subsidizing the pill will lead to a behavioral response. Furthermore, having access to inexpensive contraceptives could mean that women raise their level of sexual activity, increasing the likelihood of a pregnancy. This makes the net effect on fertility ambiguous. If women substitute between the “pill” and other less-effective contraceptive methods in order to avoid unwanted births, a subsidy that changes the relative price between these technologies can potentially also affect the abortion rate.

There are several reasons why easier access to oral contraceptives could matter for socioeconomic outcomes as well. The most obvious mechanisms are delayed childbearing, smaller families, or reduced risk of shotgun marriages. Additionally, it has been suggested that oral contraceptives may

raise the returns to investments in education and work by reducing uncertainty about future interruptions from the labor market and school (Bailey 2006; Goldin and Katz 2002; Mincer and Polachek 1974; Weiss 1986). This means that a subsidy can have a direct effect on socioeconomic outcomes. A similar story is provided by Chiappori and Oreffice (2008), who propose that access to oral contraceptives may improve the woman's bargaining position within a couple, leading to an increased share of the household's resources—something that potentially could reduce female labor supply through a standard income effect.

The topic of this paper is related to a series of recent studies highlighting the role of the birth control pill for women's well-being. Ananat and Hungerman (2007), Bailey (2006), Goldin and Katz (2002), and Guldi (2007) exploit cross-state and cross-time variation in different groups' access to the birth control pill in the United States in the 1960s and 1970s. The results suggest that access to the pill increased labor supply, led to later age at first marriage, delayed childbearing, and reduced the abortion rate. Bailey (forthcoming) takes advantage of variation in state laws regulating contraceptive sales from 1873 to 1965 (Comstock laws) and shows that access to the pill accelerated the reduction in U.S. fertility rates. More closely related to my paper is Kearney and Levine (2009), who examine the consequences of state-level Medicaid policy changes that expanded eligibility for family planning services to higher-income women and to Medicaid clients whose benefits would expire otherwise. The results indicate that the reforms led to a 9 percent decrease in births to eligible women age 20–44—a finding that is attributed to greater contraceptive use.

My paper adds to this literature in several ways. First and foremost, it is the first to evaluate the social and economic consequences of subsidized oral contraceptives. As already suggested, this is a question of great interest for policymakers. The fact that the subsidy focused on a group of individuals often targeted in various preventive programs makes the policy relevance even clearer. Second, the impact of a recent subsidy is arguably more relevant for the contemporary debate over contraception, since most countries already have introduced the birth control pill. Third, the rich data used makes it possible to study a wide variety of different outcomes and examine differential effects with respect to socioeconomic background.

I begin the empirical analysis by exploiting county-level panel data to examine the relationship between the subsidy and the sales of oral contraceptives. The results suggest that the subsidy increased sales by, on average, 5–7 percent, and there is suggestive evidence that this effect is larger for teenagers. I go on to study the impact on abortions. Using regional, temporal, and cohort variation in access (differences-in-differences models) I find that the subsidy reduced the abortion rate by about 8 percent. There is also tentative

evidence of an effect on the birth rate, although the estimates are insignificant at the 5 percent level.

One potential concern is that regions that introduced the subsidy even in its absence would have experienced increased sales. To investigate this I ran regressions exploring the relationship between future subsidies and current outcomes. As expected, the results indicate no relationship between the placebo subsidies and current outcomes, suggesting that the reforms indeed were exogenous. The results are robust to a variety of other sensitivity checks.

The last part of the paper uses population micro data to examine the effects on fertility, labor supply, educational attainment, and marriage. The results show that women with long-term access to the subsidy (more than 4.5 years) are 20 percent less likely to have a child before age 21. Consistent with the notion that access to inexpensive contraceptives matters more for financially constrained individuals, this effect is found to be significantly stronger for women from poor socioeconomic backgrounds. However, I find no statistically significant effect on number of children, marriage, educational attainment, or labor supply.

Essay 2

Residential Segregation and Minority Health: Evidence from Population Micro Data³

Racial and ethnic disparities in health are large and well documented (Loue 1998). In the United States, African Americans are twice as likely as white Americans to die from heart disease and 34 percent more likely to die from cancer. In Sweden, the incidence of heart disease is in many immigrant groups up to 50 percent higher than that of natives, and immigrants are 27 percent more likely to suffer from mental disorders (Swedish National Institute of Public Health 2002). The fact that some of these differences remain even after adjusting for individual background characteristics has motivated social scientists to look for possible explanations. Knowledge of the sources to these disparities could help policymakers deal also with inequalities in related outcomes (such as incomes and education). Several recent studies claim that residential segregation could be one reason and show empirical support of an adverse relationship between segregation and health (Acevado-Garcia and Lochner 2001; Chang 2006; Eschbach et al. 2004; Gould 2000; LeClare, Rogers, and Peters 1997; Mellor and Milyo 2004). In fact, Williams and Collins (2001) go so far as to state that residential segregation is “a fundamental cause of racial disparities in health.”

The purpose of this paper is to investigate the consequences of residential segregation for immigrants' health. To this end, I make use of a rich longitudinal dataset collected

from administrative records covering the entire Swedish population age 16–74. The dataset contains information on the exact diagnosis for all individuals admitted to Swedish hospitals each year from 1987 to 2004, as well as a wide range of standard individual characteristics.

There are several arguments for why segregation can affect health. For instance, segregation potentially reduces the cost of information sharing, thereby facilitating individuals' ability to invest in health. Segregation could also affect health investments through its potential impact on income and prices. There is also a discussion that social interactions within a spatially concentrated network could influence health related attitudes and norms, for example, the value of medical check-ups. Since many of the mechanisms can work in either direction, the net effect of segregation on health is an empirical question.

Identifying the causal link between segregation and health is difficult since residential location is a choice variable. If individuals sort across residential areas based on unobserved characteristics related to health, the estimates will be biased. Most previous studies attempt to deal with this issue by controlling for potential confounders but it is far from certain whether this approach really renders a consistent estimate of the parameter of interest.⁴

I address the selection problem using a Swedish refugee placement policy where authorities during the years 1987–1991 assigned newly arrived refugees to their initial location of residence. The policy was implemented in a way that makes initial location independent of unobserved individual characteristics.⁵ There are two arguments for considering placement as exogenous with respect to the unobserved characteristics of the individual: 1) the individual could not choose his or her first place of residence due to the institutional setup and to the practical limitations imposed by scarce housing, and 2) there was no direct interaction between local placement officers and individual refugees, meaning that any selection must have occurred on observed characteristics. The plausibly exogenous source of variation in location is exploited by estimating models relating health to initial segregation and instrument for individuals' long-term exposure to segregation.

The paper makes several contributions to the literature. First, while most previous studies have focused on racial segregation, there is virtually no evidence on how segregation affects immigrants' health. Second, the identification strategy employed provides a sound solution to the selection problem that has plagued most past studies. Third, since many countries have implemented similar policies aimed at influencing the settlement decisions of newly arrived immigrants, it becomes highly policy relevant to understand the potential relationship between residential location and health.⁶ Fourth, the rich dataset makes it possible to investigate some of the mechanisms through which segregation could affect health, e.g., income and stress.

The results can briefly be summarized as follows. The OLS estimates show statistically significant evidence of an adverse relationship between segregation measured at the parish level and the risk of being hospitalized. For instance, a one standard deviation increase in segregation raises the likelihood of an immigrant being admitted to a hospital by about 6 percent. Similar results are documented for different subgroups of the population. To account for omitted variables, I instrument for current segregation using segregation in the assigned parish, which due to the institutional setup is exogenous. The IV and reduced form estimates are in general not statistically significant and indicate that, unless omitted variables are taken into account, there is a risk of overstating the relationship between segregation and health. The results are robust to a variety of different sensitivity checks.

Essay 3

Peers, Neighborhoods, and Immigrant Student Achievement: Evidence from a Placement Policy⁷

In most Western countries the inflow of immigrants has risen substantially over the past decades.⁸ The recently arrived individuals tend to settle in close proximity to people sharing their ethnic background, thereby reinforcing the growth of “ethnic enclaves” (Stark 1991). There is a large literature on the impact of residential segregation on outcomes of minorities in general,⁹ including some studies that have explicitly considered the impact on recent adult migrants (Åslund and Fredriksson 2009; Edin, Fredriksson, and Åslund 2003; Gould, Lavy, and Paserman 2004). The effect of immigrant concentration on the educational achievement of child migrants is equally interesting but has so far received relatively little scientific attention. This is perhaps somewhat surprising given the recent literature arguing that the early environment plays an important role for children's skill formation and long-term economic outcomes, and that the impact of the environment is more pronounced in disadvantaged families (Cunha and Heckman 2007). The purpose of this paper is to empirically examine the role of ethnic concentration among migrant youth in compulsory school performance.

Theoretical research gives no clear predictions on how ethnic concentration per se will affect minority students. Ethnic peers may be beneficial if they, for example, provide information on the workings of the educational system, but detrimental if residential concentration hampers proficiency in the host country's language. Several studies also point out that the effects are likely to vary with the quality of the contacts. Well-established and educated peers may act as role models, but living among people with poor socioeconomic status and performance may have a negative influence on

youth (see, for example, Cutler and Glaeser 1997). Peer pressure can also generate incentives to perform poorly at school to gain status in a disadvantaged group (the “acting white” phenomenon, analyzed by, among others, Austen-Smith and Fryer [2005]).

There is a growing body of—largely U.S.—research studying the effects of racial composition within schools or neighborhoods on students’ academic performance (Angrist and Lang 2004; Boozer, Krueger, and Wolkon 1992; Card and Rothstein 2007; Grogger 1996; Guryan 2004; Hanushek, Rivkin, and Kain 2002; Hoxby 2000; and Rivkin 2000). In general, the results from these studies suggest that minority students who attend schools with a large fraction of ethnic peers, or are in other ways exposed to a disproportional share of minority peers, perform worse academically than other minority students.

As noted above, the issue of peer effects among child migrants has received little attention in the academic community. There are several reasons for focusing on immigrants in particular. First, the group typically performs substantially worse than other students in industrialized countries (OECD 2007). Second, many governments run various types of policies aimed at influencing where new immigrants settle (Edin, Fredriksson, and Åslund 2004); thus, knowledge on the importance of peer characteristics is highly policy relevant. Third, it seems reasonable that peers can exert particularly strong influences on young migrants striving to find their place in the new country.

Cortes (2006) is one of the few studies examining whether ethnic concentration affects the school performance of immigrants. She studies the effect of age at arrival and attending an enclave school on the test scores of a sample of first- and second-generation immigrants residing in the U.S. cities of Miami and San Diego. The results suggest that attending an enclave school (defined as one where above 25 percent are foreign born) has no effect on students’ test scores.

In many ways, Borjas (1995) is the study most similar to the present one. He finds that immigrants who grew up in ethnic communities with an abundance of human capital did better on the labor market. However, as for many other studies of contextual effects, one could worry that selection problems bias the estimates in Cortes (2006) and Borjas (1995). This is mainly because a student’s neighborhood or school is a family choice variable. If parents choose neighborhoods or schools based on unobserved characteristics that also affect learning outcomes, the estimates will be biased and cannot be interpreted causally.

Some recent studies have relied on placement policies generating exogenous variation in the initial residential distribution. We have previously used this approach to study economic outcomes among adult migrants (Åslund and Fredriksson 2009, Åslund et al. 2008, and Åslund and Rooth 2007; Edin, Fredriksson, and Åslund 2003). Between 1987 and 1991, Swedish authorities assigned refugees to their

initial locations. Since individuals were not free to choose, we argue that the initial location was independent of (unobserved) individual characteristics, an issue we will obviously return to below.¹⁰

Our strategy is quite demanding on data availability. We have access to administrative records containing detailed information on all students graduating from Swedish compulsory schools during 1988–2003. The data also contain rich individual information on the population age 16–65 from 1985 and onward, and provide the opportunity to link children to their parents. This means that we can identify when the individual arrived, where he or she initially resided, the characteristics of his or her parents, and also the properties of the neighborhood peers at different points in time.

The results suggest that a standard deviation increase in the fraction of highly educated peers in the assigned neighborhood raises compulsory school GPA by 0.9 percentile ranks; a corresponding increase in the size of the ethnic community in the assigned neighborhood has about the same effect, but the effect is less precisely estimated. Peer influences are larger among those who arrived before age seven than for those who arrive at an older age.

Had we not accounted for residential self-selection using the placement policy, our conclusions regarding the impact of ethnic concentration would have been very different. Auxiliary regressions suggest that disadvantaged children (in the unobserved sense) are sorted into neighborhoods with a high share of members from their own ethnic group. The sorting bias is so severe that the size of the ethnic community at the time of graduation is negatively related to student outcomes. Sorting bias does not plague the estimate on the educational composition of the ethnic group, however.

The analysis also shows that the effects of the educational composition of peers do not vary across the population of child migrants. However, the size of the ethnic community is more important for boys and for children whose parents are less educated—two groups that have the poorest school outcomes. These results shed light on the sorting bias alluded to above. Having a less-educated family background, for example, is arguably negatively correlated with the unobserved determinants of school outcomes. The results on heterogeneous effects thus suggest that it is rational for students from weak backgrounds to sort themselves into ethnic communities, which, again, is the sorting pattern we observe in our data.

The above results are obtained by holding the overall population of immigrants constant. In auxiliary regressions, imposing more restrictive assumptions, we also report evidence on how school performance is affected by the size of the total immigrant community. These tentative results suggest that immigrant concentration is detrimental for school performance, but that the positive effects of ethnic concentration prevails.

Essay 4

Family Size and Child Outcomes: Is There Really No Trade-Off?¹¹

Social scientists have long been interested in how early experiences determine children's long-term welfare (Have-
man and Wolfe 1995). One example is the relationship
between family size and the outcomes of children, where the-
ory proposes a "quantity-quality trade-off": when increasing
the quantity of children, parents are forced to decrease their
investments per child (Becker and Lewis 1973; Becker and
Tomes 1976; Willis 1973). However, the seemingly robust
empirical finding that increased family size adversely affects
children's outcomes (Björklund et al. 2004; Hanushek 1992;
Holmlund 1988) has recently been questioned by studies
arguing that more complex empirical strategies are needed to
identify causal effects of family size.

We follow the approach study by Black, Devereux, and
Salvanes (2005), who used twin births as an exogenous
source of variation in family size and found no effect of
family size on the amount of education completed. In addi-
tion to replicating their findings, we analyze a broader set
of outcomes ranging from childhood to adulthood using
high-quality data on entire Swedish birth cohorts. Intermedi-
ate outcomes (such as grades) are interesting as indicators on
performance and well-being during adolescence. They also
provide a supplementary test of the quantity-quality trade-
off hypothesis.

Needless to say, the potential trade-off differs depending
on economic circumstances. In developing countries with
fertility rates of about six births per woman, malnutrition
may be a consequence of sibship size, which could affect
long-term economic outcomes. In industrialized countries
with fertility rates between one and two, nutrition is in most
cases not the issue. Still, parents in richer countries act under
a budget constraint (at least in terms of hours available),
which may decrease the resources available for each child as
family size increases. Even though the effects of family size
may work through different mechanisms in different parts
of the world, the basic theories suggest there to be universal
signs of the trade-off.

Still, it is not hard to come up with explanations as to why
the effects may actually go in the other direction. Children
may stabilize marriages or keep parents at home, which some
presume to be beneficial for the upbringing of children. One
could also argue that siblings act as role models or inspire
each other to progress at school or in other arenas.

The net effects of family size must therefore be deter-
mined empirically. As already mentioned, recent work
questions the conclusions from previous studies. The first ob-
jection is methodological: the observed correlation may not
reflect causation. For instance, parents with preferences for

small families might also be the ones who emphasize educa-
tion and labor market success for their children. The second
objection concerns the quality of data used: most studies are
plagued by problems generated by small and often unrepresentative samples, and/or by poor child-parent match rates,
making the estimates both imprecise and less reliable.

We use detailed Swedish population micro data covering
the entire birth cohorts 1972–1979 (843,333 individuals) and
twin births to address both of these problems. Because twin
births are essentially randomly determined, they provide an
exogenous source of variation in family size that can be used
to distinguish causation from correlation.¹² Our data come
from administrative records and include a wide range of
educational and labor market outcomes: grades in all subjects
ever taken, GPA in compulsory and secondary school, transi-
tions to higher education, highest degree attained, years of
schooling, earnings, employment status, welfare dependence,
etc. We document effects through the educational system and
then later in the labor market. Also, there is rich informa-
tion on parental characteristics that makes it possible for us
to directly investigate whether the effect of family size is
stronger for parents with limited resources, as suggested by
the seminal work by Becker and others.

Judging from recent empirical work, it seems that the
jury is still out. Angrist, Lavy, and Schlosser (2006) com-
bine several instrumentation strategies on Israeli data and
state that the results are "remarkably stable in showing no
evidence of a quantity-quality trade-off."¹³ Black, Devereux,
and Salvanes (2007) find negative effects of sibship size on
IQ in Norway. Qian (2006) argues that the family size effect
on school enrollment varies with birth order in China, and
Caceres (2006) finds inconclusive evidence on a number
of outcomes in the United States. Rosenzweig and Zhang
(2006) find negative effects on parental investments in edu-
cation in China. Grawe (2008) finds evidence of a trade-off
between family size and several child outcomes including
achievement scores.

Similar to Black, Devereux, and Salvanes (2005) and An-
grist, Lavy, and Schlosser (2006), we find no effect of family
size on long-term educational attainment or labor market
outcomes. The analysis also shows that one risks overstating
the impact of family size unless endogeneity is handled; OLS
estimations suggest a substantial correlation between sibship
size and all the outcomes considered. There is, however,
some evidence that family size affects grades in groups that
are likely to be vulnerable to reductions in parental invest-
ments: in large hosts of siblings, at higher parities, and for
children to low-educated parents. Furthermore, we find
clearer impacts on subjects where parental investments are
more likely to be influential.

Notes

1. This PhD thesis was accepted by the Faculty of Social Sciences, Uppsala University (Dept. of Economics) on February 23, 2009. The thesis was advised by Associate Professor Olof Åslund and Professor Per-Anders Edin. Hans Grönqvist is currently an Assistant Professor at SOFI, Stockholm University; 106 91 Stockholm, Sweden; Hans.Gronqvist@sofi.su.se
2. Part of this essay was completed while visiting the Department of Economics at Harvard University. I am grateful to the faculty and staff for their hospitality, to Richard Freeman for inviting me, and to Jan Wallander and Tom Hedelius Foundation for financial support. I thank Olof Åslund, Niklas Bengtsson, Per-Anders Edin, Olle Folke, Richard Freeman, Claudia Goldin, Jonathan Gruber, Bertil Holmlund, Lawrence Katz, Melissa Kearney, Kevin Lang, Phillip Levine, Thomas MaCurdy, Robert Moffitt, Eva Mörk, Peter Nilsson, Anna Sjögren, Roope Uusitalo and audiences at SOLE 2008 (New York), ESPE 2008 (London), EALE 2008 (Amsterdam), the 2008 Econometric Society European Winter Meetings (Cambridge), the RTN Meeting in Micro Data Methods and Practices (Uppsala), Stockholm University (SOFI), and Uppsala University for valuable comments and discussions.
3. I am grateful to Per Johansson for generously sharing his data and to Staffan Khan for data preparations. I acknowledge helpful comments from Olof Åslund, Janet Currie, Per-Anders Edin, Mikael Elinder, Erik Glans, Bertil Holmlund, Andrea Ichino, Emilia Simeonova, Roope Uusitalo and audiences at the American Economic Association Annual Meetings 2009 (San Francisco), the Annual Swedish Integration Research Network Conference (Växjö), and Uppsala University.
4. One exception is Gould (2000), who studies the consequences of racial segregation for birth weight using government structure at the metropolitan level as instruments for segregation. She finds that increased levels of segregation leads to lower birth-weight of children to black mothers.
5. Several previous studies have used the same identification strategy in examining the relationship between neighborhoods and immigrants' economic outcomes (Åslund and Fredriksson 2008; Åslund and Rooth 2007; Åslund et al. 2008; Edin, Fredriksson and Åslund 2003).
6. Similar policies are currently active (or have recently been) in, for example, the United States, Denmark, Germany, and the Netherlands (Edin, Fredriksson, and Åslund 2004).
7. This essay is co-written with Olof Åslund, Peter Fredriksson, and Per-Anders Edin. We are grateful to David Cutler, Richard Freeman, Per Johansson, Kevin Lang, Mikael Lindahl, Daniele Paserman, Nicole Schneeweis, and Eskil Wadensjö for helpful comments and suggestions. We have also benefited from comments by seminar and conference participants at IFS (London), University of Padova, Harvard University, Kalmar University, Uppsala University, Stockholm University, the Nordic Summer institute in Labor Economics (Aarhus), and the Nordic Migration Workshop (Helsinki).
8. For a summary of the OECD experience, see Friedberg and Hunt (1995).
9. See Cutler and Glaeser (1997) Bertrand, Luttmer, and Mullainathan (2000), Grönqvist (2006), and Goel and Lang (2007) for recent contributions.

10. Gould, Lavy, and Paserman (2004) use a similar placement policy where Ethiopian refugees were distributed across Israeli municipalities to identify the causal effect of school quality on students' high school grades. In a sensitivity analysis they include the fraction of Ethiopian children in the class as a covariate, and thus touch on the question of ethnic peer effects. The estimate turns out to be insignificant.
11. This essay is co-written with Olof Åslund. We are grateful to Peter Fredriksson, Magnus Gustavsson, Rafael Lalive, Eva Mörk, Peter Nilsson, Oskar Nordström-Skans, and Kjell Salvanes for valuable comments and discussions, and to Björn Öckert for sharing his data. We thank Louise Kennerberg for preparing the data. This essay has benefited from comments by audiences at the 2007 Annual Meetings of the European Economic Association (Budapest), the 2007 Nordic Summer Institute in Labor Economics (Helsinki), Uppsala University/IFAU, Stockholm University (SOFI), and Växjö University (CAFO).
12. Rosenzweig and Wolpin (1980) were the first to use twin births as an instrument for family size.
13. Another instrument used in recent studies is sibling sex composition (Lee 2006; Conley and Glauber 2006; Angrist, Lavy, and Schlosser 2006). The argument for this approach is that parental preferences for mixed sex of their children encourage parents to have another child if their preferences are not satisfied at the latest attempt. However, the instrument has been criticized since research has shown that sex composition may have a direct effect on child outcomes (Butcher and Case 1994).

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