

Income and Fertility – What is the Relationship and how has it changed since 1970? A Longitudinal Register-based Study of Sweden

Ernesto Silva and Martin Dribe
Centre for Economic Demography
Lund University

Abstract

In this paper we study the impact of income on continued childbearing using longitudinal data for Sweden from 1968 to 2005. We analyze how individual and couple income affects the risk of second and higher order births. We use economic theory to derive hypotheses relating family and individual income to fertility. Besides basic income effects and opportunity costs, relations between the spouses are analyzed using bargaining models. In the empirical analysis we use discrete event-history models on a longitudinal dataset including annual income data for both men and women in addition to most of the relevant demographic variables such as country of origin, residence, level and field of education, and sector of employment. Despite the efforts of many researchers, the empirical relationship between income and fertility in contemporary Western societies is far from clear. Sweden is an interesting case considering the welfare policies that are affecting both the overall opportunity costs of having children and the relative bargaining position of the spouses. The micro-level approach allows us to isolate the income effect holding other factors constant such as education, country of origin, place of residence and sector of employment.

Extended abstract

Introduction

The aim of this paper is to analyze the relationship between income and continued childbearing using Swedish data from 1968 to 2005. According to Dribe and Stanfors (2009a), income is positively related to the risk of a second birth but the relation is reversed when it comes to the third and fourth parity. Despite the efforts of many researchers, the empirical relationship between income and fertility in contemporary Western societies is far from clear. Therefore, Sweden is a very interesting case considering the welfare policies that are affecting the opportunity cost of having children.

Theoretical Framework

There is a long-lasting discussion in the Economics of the Family concerning the role of income as a determinant of fertility not only on theoretical grounds, but also regarding the validity of the empirical evidence. Many problems arise when we try to define the issue within a neoclassical microeconomic framework. Considering children as a normal good implies that more income could be regarded as an enhanced possibility to consume more

children. But there are at least three factors counteracting such a positive income effect. Firstly, neither the cost nor the utility of children are necessarily linear. This could alter the way the insatiability concept could be applied to children. Unlike other consumption goods, the idea that the more the better is far from clear and it cannot easily be taken as a reasonable assumption. It may be the case that what parents want is a certain number of children. If parents just want surviving descendants, then, even though more children imply a greater chance of survival, given actual life expectancy, the additional utility of children after certain threshold becomes almost negligible.

Secondly, the cost of children is not independent of income. Children are time consuming goods, which may imply that their opportunity costs also increase when income is higher. In the classical New Home Economics model (see, e.g., Becker 1965, Gronau 1977) all household members are assumed to have a common utility function, or one member (the head) has an exclusive right to decision making. The division of labor in such a context is determined by specialization according to comparative advantages, usually implying that men specialize in market work, and women in housework and child care. This implies that opportunity costs are mainly determined by women's wages as women are assumed to take main responsibility for child care and other household work. Although this might be relevant analyzing the classical male breadwinner model (e.g. Butz and Ward 1979; Freedman and Thornton 1982) it is clearly an untenable assumption in contemporary two-earner models such as Sweden, where men and women are sharing household labor more equally than before. In fact, in Sweden today parenthood does not seem to strengthen a traditional division of labor (Dribe and Stanfors 2009b). To allow for different utility functions for spouses in a couple various bargaining models have been applied, often using insights from game theory (e.g. Manser and Brown 1980; McElroy and Horney 1981; Chiappori 1992; Konrad and Lommerud 1995; 2000). This is also relevant for fertility decisions as bargaining over child care (see Meyer 2007) to a high degree will determine opportunity costs of children, and the allocation of these costs.

Third, there is the often-mentioned trade-off between quantity and quality of children, which is also not independent of income (Becker 1991). High income earners can be expected to aspire for high quality kids; therefore their children are more expensive, at least in absolute terms, than those of low-income parents.

The Swedish Context

There are some particularities that distinguish the Swedish case from other developed countries. Public policies regarding parental leave and childcare provision reduce the costs of children, and enhance the compatibility between parenthood and work. Moreover, parental leave benefits are related to previous earnings, and might thus serve as a stimulus to have children after attaining a good position in the labor market (Sundström and Duvander, 2002; Andersson et al, 2009).

This specific context of policies makes us to reconsider some assumptions that are taken for granted in other studies. Parental leave benefits and provision of childcare

should reduce the burden that children take on the mother. Moreover, they could impose some opportunity cost on fathers that is usually overlooked in other cases. The likelihood of the latter is relegated by the findings of Sundström and Duvander (2002:442) who came to the opposite conclusion. Fathers with higher income are more likely to take parental leave which may suggest that income effect dominates substitution effects. In that case, there is no reason to think that the usual positive link between male income and fertility could be reversed or debilitated by the Swedish institutional system.

Empirical studies suggest that most of the parental leave benefits are taken by mothers (Sundström and Duvander 2002; Evertsson & Neramo 2007; Meyer 2007) which may bring us back to the classical duality model between male and female incomes. Some studies tend to support the idea “that higher female wages delay times to all conceptions and reduce total conceptions” (Heckman and Walker 1990:1439) which leads to another question: is it the case that female wages reduce conceptions because they increase opportunity costs or the effect works indirectly toward first birth delay? Educational attainment can be related to both, income and first birth postponement, thereby producing an artificial negative relation between female wages and completed fertility (see Björklund, 2002; Kreyenfeld, 2002; Andersson et al, 2009).

However, the negative effect of female wages can be mitigated or even reversed by the link between parental benefits and previous earnings. It is reasonable to expect that the system encourages women to find a job before having a child even if they are planning to stay at home for a relatively long time. The latter expectation is supported by many studies; for example Hoem (2000) who found that first birth rates were associated with municipal employment levels. The parental leave in Sweden is also less generous than in other Nordic countries for those who have not worked before childbearing (Björklund, 2002:8).

Moreover, the fact that some mothers are not in the labor force do not necessarily imply incompatibility between work and childbearing. If female wages are actually increasing opportunity cost of childbearing we should be able to identify an empirical relation in which those mothers with higher earning potential are returning to the labor force earlier after every birth. Otherwise, whenever income effects dominate substitution effects we can conclude that female wages are not deterring childbearing, at least not directly.

In any case, we cannot be sure that the negative impact of women’s wages that appears in many studies is reversed by the Swedish welfare policies, but it seems reasonable to expect that its effect should be more positive in Sweden than in other developed countries. In the context of Swedish family policies, income effect should be stronger than the substitution effect.

Data and method

The data used come from the Swedish population registers maintained by Statistics Sweden. From a dataset consisting of all individuals in the birth cohorts 1942–1989 who resided in

Sweden at any time from 1961 onwards, we select heterosexual couples (married or cohabiting without being formally married) who are in their first partnership. We follow these couples from the birth of the first child, to woman's age 45, the dissolution of the partnership, emigration, or the end of the study period in 2005.

The data are derived from the multigenerational register which contains information on biological and adopted children to all index persons in the sampling frame (all individuals in birth cohorts 1942–89 who resided in Sweden at some point in time after 1960). Due to frequent missing information on adoption dates for adopted children we only include biological children in the analysis. Because we only study couples in their first partnership with children, the number of children previously born is always the same for men and women in the couples. From 1990 onwards the Swedish population registers record non-marital cohabitation when there are common children. For individuals in these couples we have linked register based information on place of residence, income, education (level and field), branch of employment, as well as demographic events (deaths, external migration, and changes in civil status). For the period before 1990, we rely on educational and occupational information from the censuses (every five years) and only study the married population as no information on non-marital cohabitation is available for this period.

Most of the register based information is available once a year while the demographic information is available on a monthly basis. Even though, in principle, it is possible to construct a dataset for fertility analysis that is continuous with monthly precision in terms of the events studied and the starting time of partnerships, such an approach creates a large number of tied observations because a majority of birth intervals are between two and three years, and thus most couples share a rather limited number of birth intervals. For this reason we choose a discrete approach in the multivariate analysis, studying the probability of having a birth, or experiencing a separation, during the year conditioned on the values of the covariates at the beginning of the year. Multiple births during a year (i.e. twins or two separate births within the same calendar year) are counted as one delivery, but the number of previous births takes multiple births into account. For example, in the case of a twin birth as second birth only one birth event is created as an end point of the interval from the first to the second birth, and the interval between the second and third birth is not included, because it happened at the same time as the second birth. Thus, the interval 3–4 follows immediately upon the 1–2 interval.

Given the discrete approach we estimate logit models of the transformed probability of having a birth during the year. We estimate models separately for each birth interval (first to second births, second to third, and third to fourth). We differentiate income effects of father's and mother's income, and take into account different intervening variables such as education and age at first birth to avoid biases. Country of origin, place of residence, and sector of employment are also considered.

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