

Does family policy affect fertility?

Lessons from the Swedish policy experiment

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1. Introduction

Can public policies boost fertility in a modern society by providing financial and in-kind support for families with children? This is a classical question in academic and policy circles. It's also a burning issue in European discussions – as fertility rates fall in most countries, while life expectancy rises and contributes to larger aging populations.

It is hardly surprising that the scientific community cannot provide clear-cut evidence on the impact that various family policies¹ have on overall fertility rates. Typical micro-data sets are of limited use because all women (or families) face the same incentives that result from family policies. Time-series variation in family policies within a country is also difficult to use because policies change only slowly over time, and other changes also occur. The remaining option is to use cross-national variation in family policy and fertility, but here, pitfalls in such analyses also exist.

My thesis in this paper is that my country, Sweden, is a particularly useful study case to infer family policies' effects on fertility. I have three arguments that favour this claim. First, family policies were expanded quickly in Sweden. From the early 1960s to around 1980 (i.e., in less than 20 years), the generosity increased markedly – for paid maternity leave, subsidised child care, paid leave to take care of sick children, and universal child allowances. In retrospect, the speed with which these policies were extended is striking.

Second, as already alluded to, several policies had a specific design, namely, that they facilitated labour force participation for mothers. So the policies potentially could affect the structure of fertility, i.e., timing, spacing, and socio-economic differentials, as well as the overall level of fertility.

Third, pronatalistic arguments did not motivate the policies. In particular, they were not the outcome of a low-fertility period. This fact does not naturally guarantee that the expansion of family policy can be considered exogenous with respect to fertility. But it would have been more problematic to interpret the Swedish experience if, e.g., a sharp drop in fertility rates had preceded the introduction of the new policies.

Rapid family policy expansion from the early 1960s to around 1980 implies that those generations of women who planned their childbearing before the expansion, i.e., women

¹ I use the concept family policy for all policies that provide financial and in-kind support for families with children.

born during the 1920s and most of the 1930s, faced markedly different incentives than women born from the 1950s and onward. So I study changes in fertility patterns between these generations of women in Sweden. Because fertility patterns could change for reasons other than policy changes, I compare the evolution of fertility patterns in Sweden with the evolution in other countries. I primarily compare Sweden with its Nordic neighbours (Denmark, Finland and Norway). In many respects, these countries pursued the same family policy, but they did not go as far as Sweden. I also compare the evolution in Sweden with continental European countries (plus the UK) that pursued quite different family policies compared to Sweden.

Section 2 of this paper describes family policy implementation and employment legislation from a comparative perspective. Section 3 applies conventional economic models of fertility behaviour to derive hypotheses about effects of the policies on the level and structure of fertility. Section 4 presents the empirical strategy. Results are organised by the impact of family policy on (i) overall level of fertility, (ii) fertility levels by educational groups, (iii) timing of childbearing and spacing of children, and (iv) fluctuations in total fertility rates for the period. Section 6 summarises and discusses the main results.

2. Swedish family policy from a comparative perspective

My study exploits two facts: (1) Swedish family policies were markedly extended from the early 1960s to around 1980, and (2) the extension of policies exceeded policies implemented in neighbouring countries. I also emphasise that the policies largely reduce one specific component of the cost of children, namely, women's opportunity cost. In this section, I start by describing the evolution of family policies in Sweden during this period.² Then I briefly compare this policy change with the changes in neighbouring countries.

² See, for example, Hoem & Hoem (1997) and Rønsen & Sundström (1998) for presentations of Swedish family policy over this period.

Table 1. Major changes in Swedish family policies, 1960-1995.

| | Parental leave | Day care | Pay for care of sick children | Employment legislation | Cash support ³ |
|------|---|---|---|--|--|
| 1960 | Low maternity leave benefit for 3 months, since 1955 | Little and mainly part-time care in 1960s | | Dismissal on pregnancy, delivery, or marriage forbidden since 1939 | Universal child allowance SEK4110 a year |
| 1963 | Leave period extended to 6 months | | | | SEK 4565 |
| 1974 | Parental-leave benefit for 6 months, 90% of forgone earnings | About 12 slots per child, ages 0-6 | 10 days paid leave for care of sick child, at 90% of prior earnings | | SEK6911 |
| 1975 | Parental-leave benefits for 7 months that could be used part-time and saved until age 8 | | | | |
| 1978 | 8 months at 90% + 1 month at low, flat rate | 25 slots per child ages 0-6 | | | |
| 1979 | | | | Parents get right to part-time work week (75%) | |
| 1980 | 9 months at 90% + 3 months at low flat rate | | 60 days for sick child | | SEK7261 |
| 1982 | | 40 slots per child ages 0-6 | | | Higher level for 3 or more children SEK7885 |
| 1989 | 12 months at 90% + 3 months at a low flat rate | 50 slots per child ages 0-6 | 90 days for sick child | | |
| 1995 | 1. Benefit for 12 months reduced to 75% of prior earnings. 2. One of the 12 months reserved for father and one for mother | Fees raised mainly for 1 st child. 2 nd or 3 rd child still very low fee | | | SEK9000 |

³ 1995 prices

Table 1 provides an overview of Swedish family policy implementation from 1960 to today. Columns 1–4 describe policies that in some way help women combine working careers and children; the benefits of the policies depend on previous or current labour market activity. Column 5 describes support to families with children; this support does not depend on labour market activity.

In 1960, Swedish law gave women the right to X months of unpaid leave after giving birth, and it was illegal to dismiss a woman because of childbirth. Since the mid-1950s there was also a paid maternity-leave scheme that offered pay for three months at a flat rate; typical female workers were compensated by about 60 percent of forgone earnings. In 1963, the paid maternity-leave scheme was extended to six months; the benefit became loosely tied to foregone earnings with a replacement level about 65 percent.

Major extensions of this leave scheme occurred on different occasions from 1974 onward. In 1974, the scheme was changed to a parental-leave system, although ever since, mothers have used the bulk of paid-leave opportunities.⁴ The benefit level was also raised to 90 percent of foregone earnings, and eligibility was based on earnings during 240 days before giving birth. Those who did not fulfil this requirement instead received a low flat rate. Further, there was an upper limit on the benefit, but this level was quite high so most women had a replacement rate at 90 percent. The major, 1974, system change made benefits taxable, and the benefits counted as an income source that generated future pension rights.

A period of extensions of the benefit period then followed. In 1975 the period was seven months, in 1978: eight months plus one month at the low flat rate, in 1980: nine months plus three months at the low flat rate: in 1989 it was extended to 12 months with 90 percent replacement rate plus three additional months at the low flat rate.

The Swedish rules that determine maternity-leave benefits also contain elements that create a kind of speed premium on further childbearing.⁵ Because maternity-leave benefits are earnings related, a period of no work or only part-time work after a birth

⁴ See Sundström & Dufvander (2002), who show that the fraction of paid days used by fathers never exceeded 11 percent over the 1974–1990 period. They also perform an interesting statistical analysis of the determinants of mothers' and fathers' use of the leave.

⁵ Authorities – rather than politicians – determined these rules about practical implementation of the scheme. So one cannot claim that politicians deliberately created incentives for close spacing of children.

would reduce the benefit level after a subsequent birth. But during the late 1970s and early 1980s the rules became successively more generous in allowing the parent to retain the right to the benefit level that she once had obtained by working full-time before the first, or any previous, birth. From 1974 to 1979, the parent could abstain from work-related earnings for 12-18 months (depending on local practice of the rules) and yet retain the right to a previous benefit level for subsequent births. From 1980-85 the interval became 24 months, and in 1986 it was prolonged to 30 months; from 1980 onward, there was no local variation in the rules.

Local-government-subsidised child care in care centres is another important result of policy. In the early 1960s only some part-time options were offered, but from the late 1960s onward a major extension occurred. Because local governments have been the major providers of child care, there has always been some variation in coverage and rules; the general ambition has been to provide care that allows both parents to work full time. Further, the fees have only covered about 10-20 percent of all costs; often, the fees have been even lower for the second child and subsequent children. Only families with two working (or studying) parents have been eligible for this subsidised care. And while supply of care slots increased quickly over this period (see Table 1), there has often been excess demand for the slots. Techniques used to handle this situation have varied among local governments. Families on social assistance (often single mothers or families with special needs) often received priority if there was a queue for child care.

Besides care for pre-school children, local governments provide subsidised morning and afternoon care for school children up to about age 10 (the school-starting age is 7 in Sweden). This care also rapidly increased over the same time period.

In most local communities, the structure of the fees for pre-school care and afternoon care for young children (ages 7-9) created a kind of speed premium. In general, families, which had more than one child in public care at the same time, were offered much lower fees for the second child and subsequent children. So total fees were much lower for closely spaced children (e.g., for three children up to age nine) than for more widely spaced children. The main motivation for this fee structure has hardly been to create a speed premium for childbearing, although such an effect was created.

Employees, who work at both types of child care facilities, have been adequately trained for these jobs. Typically, they have had two years of special training after high school. So the number of schools for these employees increased during this period, and the positions (*förskollärare* at day-care centres and *fritidspedagog* at the morning- and afternoon-care centres) became well-known, licensed occupations during this period.

Column 3 displays the pay for care of sick children. This benefit was introduced as part of the changes in 1974. At first, 10 days per year of paid leave for care of a sick child were covered to 90 percent of forgone earnings. In 1980 the number of days was increased to 60 a year, and in 1989, to 90. This benefit probably helps alleviate stress that is associated with having young children and a job. Because the mandatory vacation has been at least four weeks since the 1970s, parents need not use their vacation days to take care of sick children.⁶ And they need not pay for expensive care for a sick child. In the 1960s, families probably used vacation days for these purposes if both parents (and grandparents worked or if retired grandparents did not live nearby).

Sweden also used labour relations legislation to facilitate the combination of childbearing and mothers participating in the labour market. In 1979 the parliament took an important decision that gave young children's parents the right to cut back their working hours from full time to 75 percent. This right makes it easier for parents to take part-time leave. Parents can exercise this right until children reach age 8.

The major form of cash support for families with children is the universal child allowance that was introduced in 1948. A non-taxable fixed amount per child is paid each month to the mother. As shown in Table 1, column 5, the real value of this benefit

increased during the period. And in 1982 a higher amount for the third child and subsequent children was introduced. Besides this universal allowance, families with children can become eligible for means-tested housing allowances and social assistance benefits.

The other Nordic countries also extended their family policies over this period, but not as much as in Sweden. The uniqueness of Swedish policy is most marked for the policies shown in Table 1, columns 1-4. Duration of the parental-leave right was longer in Sweden than in Denmark, Finland, and Norway during the 1970s and 1980s. And it remained somewhat longer during the 1990s. Parental leave rights were more flexible in Sweden, so they could be used over a longer period and combined with part-time work; here, employment legislation complemented the parental-leave system.

Compared to other Nordic countries, Sweden's parental-leave system has been relatively less generous for women who had not worked before childbearing. The minimum benefit level in Sweden's parental-leave system has been very low compared to minimum benefit levels in the other countries.

Sweden also had a more generous care-centre policy than Finland and Norway, whereas Denmark was quite close to Sweden. Finally, no other Nordic country has been as generous as Sweden regarding working families' rights to stay home and care for sick children. So when it comes to family policy that helps families combine work with having children, Sweden clearly dominates its three Nordic neighbours. Without going into details, I claim that Sweden also dominated most other European countries. In my

⁶ Because of this policy, care centres can require that a sick child be kept home instead of coming to the centre with obvious risk for contagion.

subsequent cross-country comparison of fertility patterns, I use data for Germany, Netherlands, Belgium, France, and the UK. So my claim refers to these countries.

It is less obvious how the comparison turns out when various types of cash support are also accounted for. It could well be that Sweden does not dominate all other countries in extending support to families with children when such cash support also enters the picture. Such cash support takes many different forms in different countries, so it is a huge task to make a comparison in this respect. Fortunately, Wennemo (1994) carried out the time-consuming work of estimating the value of tax credits, cash benefits, and tax allowances in several OECD countries over the time period on which I focus.

Table 2 reports some results from her inquiry for 1960, 1970, 1980, and 1985. The value of the benefits is expressed as the share of the net income of an average industrial worker. As expected from the information in Table 1, the average value of these benefits increased in Sweden. [Most important for my research strategy, however, the other countries do not dominate Sweden in the sense that they extended this kind of support substantially more than Sweden did. It is rather the case that Sweden also dominates most other countries in this dimension.](#)

Thus, my general conclusion is that the period from the early 1960s to around 1980 was a time when Sweden extended its policies to families with children more than its neighbour countries. Sweden was particularly unique because its policies cut child-related costs that are associated with foregone earnings for parents (usually mothers) who would have stayed home to care for children.

Table 2. The value of tax credits, cash benefits and tax allowances as a share of the net income of an average industrial worker.

| | 1960 | 1970 | 1980 | 1985 |
|----------------|------|------|------|------|
| Sweden | 8.0 | 9.0 | 10.8 | 12.2 |
| Denmark | 6.0 | 8.2 | 5.5 | 7.0 |
| Finland | 9.2 | 8.7 | 11.0 | 10.5 |
| Norway | 13.3 | 8.1 | 9.8 | 12.1 |
| Germany | 4.2 | 4.8 | 8.3 | 7.5 |
| Netherlands | 14.4 | 15.5 | 12.3 | 11.5 |
| Belgium | 14.6 | 16.8 | 15.5 | 18.0 |
| France | 8.3 | 10.0 | 10.0 | 10.2 |
| United Kingdom | 9.2 | 10.3 | 10.0 | 11.0 |
| Austria | 14.5 | 18.6 | 18.2 | 17.9 |
| Switzerland | 0.7 | 7.3 | 11.1 | 10.8 |

Source: Wennemo (1994, appendix). As read from her figures.

3. What does economic theory of the family predict?

The main reason why family policy could affect the level of completed fertility is that such policies cut the cost of having a child. For a discussion about family policy and the cost of a child, it is useful to follow the Walker (1995) analysis. His model breaks the cost of having a child into three components. The first cost component is foregone earnings for the parent who must abstain from paid work to care for the child. This cost component is reduced by the earning-related parental-leave benefit and the benefit from staying home to care for a sick child. One can also consider subsidised child care as a way of reducing the cost of having a child.

The second cost component consists of direct costs when raising the child, e.g., costs for food, clothes, housing, and child care. These costs are lowered, but probably not eliminated, by the universal child allowance and subsidised child care.

The third cost component is loss of human capital accumulation due to interruption of labour market participation. No part of Swedish family policy compensates for such costs of having a child. Of course, child care arrangements help parents combine children with labour market participation and thus reduce this cost of having a child. But the generous parental-leave benefits stimulate parents to stay home at least for slightly over a year.

The policies could also affect timing of childbearing, i.e., the age at which women decide to have children. To be eligible for the bulk of benefits that Swedish family policy offers, it is important to have become reasonably well established on the labour market. The parental-leave system is earnings related. So women, who have not worked full time or women who have had a low monthly salary the year before childbearing, receive lower benefits for the entire parental-leave period. Much anecdotal evidence suggests that a typical strategy for women in Sweden who plan to have children is:

1. Complete your education.
2. Get a job and work full time for at least half a year; ensure that you get a permanent position so that you can return to your employer after parental leave.
3. Get the first child
4. Work part time for a while, and use subsidised day-care until you get the next child.

Because of the legislation, I expect that in Sweden, the average age for first births became higher than it would have been without implementation of the legislation.

Finally, one could expect that the policies have affected the spacing of children, in instances when women planned to have more than one child. The spacing effect could be enhanced by the way in which the authorities implemented the law – the *speed premium* discussed earlier.

Note also that these rules made it even more important for women to work full time and get a decent salary before having the first child. By qualifying at a high benefit level once, before the first child, it is possible to keep the high benefit level for several periods of parental leave.

1. The empirical strategy

Massive expansion of family policies from [the mid-1960s to around 1980](#) obviously implied a marked change in economic incentives that women (and men) in Sweden faced when planning for children. The difference is particularly large between those who planned childbearing according to the pre-1963 policy and those who did so according to the post-1980 policy. Women born during the 1920s and the first part of the 1930s belong to the first group. Women born in the 1950s belong to the second group. **We can consider women born in the 1940s as a middle case.**

Because of rapid policy change, one could argue that a simple before-after comparison would be useful for inferring effects of policy changes. But during the 1965-80 period, many other changes occurred, and these changes could have had effects on fertility patterns. For example, new birth control methods such as the pill and the IUD became more prevalent. Abortion laws were liberalised as were laws governing divorce.⁷ One

⁷ See Hoem & Hoem (1997) for an informative account of such policy changes.

could also imagine that 1965-80 was a period of marked changes in "attitudes" toward the family and having children.

Now, it could be argued that most of these changes also occurred in other countries, but remember: at the same time, family policy changes were particularly striking in Sweden. So it then follows that a difference-in-differences approach for estimating family policy impact on fertility would make sense.⁸ This approach allows each country to have its own country-specific fertility level. Such differences in fertility levels could be deeply rooted in traditions and religious attitudes. Further, the countries share common time effects, for example, because of general changes in birth control methods and abortion laws. Finally, there is a difference in the evolution of family policies, the impact of which we want to infer.

A second feature of my empirical strategy is that I use completed cohort fertility rates. The typical disadvantage of using this fertility concept is that one must wait until the cohort of women has become old enough to have completed childbearing, i.e., reached the age at which they have become infertile. In my case, this disadvantage is not that strong because I can observe the completed fertility of cohorts of women in Sweden born through the late 1950s. In this way, I include cohorts who could plan their childbearing according to the extended Swedish family policy. More specifically, I use data for the cohorts born through 1958 and their fertility is observed through 2000. Women in Sweden, born between 1945-1955, gave birth to less than one percent of their children after age 42.

⁸ See, e.g., Angrist & Krueger (1999) for a formal presentation of the difference-in-differences approach.

For my purposes, the main advantage from using completed fertility rates is that I eliminate all complications caused by changes within countries and differences between countries regarding childbearing age. It is well known that noticeable childbearing-age changes occurred over the period that I study.⁹ It is also noteworthy that a standard static model of the demand for children abstracts from the timing and spacing of children.

A final methodological consideration concerns the causal relationship between fertility, on one hand, and family policy, on the other. My analysis is based on the assumption that a generous family policy has a causal effect on fertility. But there could also be causal effects in the other direction. One possibility is that a large electorate of families with children votes for a policy that is generous to these families. Another is that low period fertility rates motivate a pronatalistic policy. In the former case, there would be a positive association between family policy and fertility rates. In the latter case, there would be a negative association.

Wennemo (1994) discusses these issues and performs a statistical analysis of 18 OECD countries covering the 1947-1985 period. She regresses the size of family support on potential determinants such as GDP per capita, left-wing party power, religious party power, and the fertility indicator: *average, gross-reproduction rate*. The fertility variable gets positive coefficients in an equation that explains family cash support and in an equation for tax allowances, but a significant one only in the latter case. If interpreted causally, Wennemo's result suggests that a large electorate of families with children vote for a family-friendly policy. But the reverse causal structure, namely, that family-friendly policy affects fertility is also compatible with her findings.

⁹ See, e.g., Gustafsson (2001).

Wennemo's result does not support the view that low fertility rates trigger a more generous family policy. This judgement is strengthened by the fact that pronatalistic arguments seldom were used in Swedish political discussion when major extensions of family policy were decided. Instead, promotion of gender equality in the labour market was the major goal for these policies.

2. Results

The level of fertility

We start with the most central issue, namely, impact on the level of completed fertility. Figure 1 shows (in three separate parts) the evolution of cohort fertility rates for women born between 1925 and 1958 (or somewhat shorter periods for some countries). The Swedish rates are remarkably stable around 2.0 over this period. And a before-after perspective suggests that there were no effects from the distinct extension of family policies.

By adopting a difference-in-differences approach, however, we reach another conclusion. In all other countries, cohort fertility rates declined, and in some countries, they declined considerably. We start by comparing Sweden with its Nordic neighbours. An application of the difference-in-differences approach means that the stable cohort fertility rate in Sweden is compared with declines from the early 1930s to the 1950s by about 0.4 in Finland and Norway and 0.5 in Denmark. So these are the magnitudes of the estimated effects on the level of fertility of the more generous family policy in Sweden compared to the other countries.

The similar comparison with the other European countries gives somewhat larger magnitudes of the estimated effects: from 0.45 for Switzerland to 1.0 for Austria.

The basic assumptions behind these estimates are obviously strong. In particular, one could suspect that there are additional time-varying factors that have been favourable to fertility in Sweden but not in the other countries. But it is somewhat striking that Sweden is the only country with stable cohort fertility over this period.

A digression on the low fertility rates in Sweden in the 1990s

The conclusion in the previous section might sound strange for those who have followed the Swedish experience and discussion since the early 1990s. After a peak at 2.14 in 1990, the period total fertility rate declined sharply to 1.50 in 1999 and showed only a minor recovery to 1.55 in 2000.¹⁰ (See Figure 7.) Is this development really consistent with the conclusion that Swedish family policy has permanently raised the completed fertility rate?

To shed light on this issue, Figure 2 shows cohort fertility rates of women born in Sweden through 1965. Children born through 2000 are also accounted for in these data. The figure shows that women born as late as 1965, whose childbearing through age 35 is captured in the data, have already reached the quite high level of 1.70. So it seems reasonable that the prospects of reaching a completed fertility rate close to 2.0 are quite good for women born through 1965. But low fertility rates during the 1990s suggest that cohorts born after 1965 must space their children very closely to reach the fertility level of the preceding generations of women.

¹⁰ Monthly data through July 2002 suggest that the recovery has continued, but at a slow pace.

Fertility by educational level

Because Swedish family policies facilitate labour force participation for women, the policies help reduce costs that are associated with forgone earnings. Thus the policies can be expected to be particularly valuable for women with high earnings capacity. In this section, I use educational level as an indicator of earnings capacity. My main purpose is to investigate whether the fertility rates among highly educated women in Sweden, compared to less-educated women have evolved differently from those in other countries.

Figure 3 presents a series of graphs (and one table) with completed cohort fertility rates by education groups for women in Sweden and six comparison countries. In interpreting this information, two complications should be considered. First, there might be a two-way causation process involved, because a woman's educational level might affect subsequent childbearing and an early-born child could affect subsequent education plans. To reduce this problem, I tried to acquire data on women's educational level around age 45. See the appendix for more details. Second, women's educational achievement has increased a lot over time, so in all countries, the number of women in the higher education group has increased.

A general pattern for all countries, including Sweden, is that completed fertility is negatively associated with educational level. So this seems to be a very robust pattern. It is also consistent with the negative effect of women's wage rates on the fertility level, found by Heckman and Walker (1990). For Sweden, Norway, West Germany, Belgium, and France, we can also note that this educational pattern is stable over time. The long-

run decline in completed fertility rates in Belgium and France is found among all women – regardless of education level.

Timing and spacing

By offering an entire year of earnings-related parental-leave benefits, Sweden's system creates incentive for women to first finish their education and then get established in the labour market before having children. Thus, we would expect cohorts of women born in the 1950s to have delayed childbearing, compared to the cohorts of women born in the 1930s.

Data on age at first birth (Figures 4 and 5) show that a before-after perspective on the Swedish experience strongly supports this hypothesis. Figure 4 shows that the average age of women who gave birth for the first time increased from about age 24 in the mid-1940s to more than age 26 for the cohort born in 1958. Figure 5 confirms that this increase occurred for women who have one, two, and three children. The increase is somewhat stronger for women who only have one child; around three years in contrast to an increase of around two years for women who have three children.

The conclusion that family policies of the Swedish type lead to postponement of childbirth would be strengthened if a difference-in-differences approach also supports this hypothesis. But a closer glance at the data in Figure 4 suggests that there is no striking difference between the evolution in Sweden and in the other countries for which I was able to acquire data. There is a U-shaped pattern in data for all six countries with lows in the mid-1940s. Since then, the age at first birth has increased.¹¹ In particular, the

¹¹ This is also a main message in Gustafsson (2001), who in turn, stresses the analysis by Bosveld (1996).

increase in the Netherlands is marked despite a family policy that is very different from Sweden's.

Because cohort fertility rates have decreased in all countries except Sweden over the period considered in Figure 4, the analysis would benefit from parity-specific data on first-birth age. Figure 5 confirms that first-birth age falls with rising parity for the three countries (Sweden, Norway, and France) for which I was able to acquire data. Crudely, the age falls 1.5-2.0 years for each parity.

Because of this pattern, one could expect that for all countries except Sweden, a composition effect partly drives the numbers in Figure 4. Data in Figure 5 for the Netherlands show that first-birth also increased for parity one. There is, however, a weak pattern in which the parity-specific age at first birth in Norway has not increased as much as in Sweden.

But in all, this analysis has not confirmed that postponement of first birth has been particularly strong in Sweden.

Finally, one could expect that the speed premium created by the Swedish legislation has stimulated women in Sweden to space children more closely. We would expect that the intervals between births declined more for women in Sweden than for women in other countries, and we would expect to see the decline when we study cohorts of women born from the 1940s to the late 1950s.

Data in Figure 6 show that the time interval between a woman's first and last child declined from 1950-54 to 1955-58. The magnitudes are about 0.3 year for women who had two children, 0.6 year for women who had three children, and 0.9 year for women who had four children. So the before-after comparison lends support for the hypothesis.

Unfortunately, I could not get data for other countries (for the same period), so I cannot use the difference-in-difference approach. When the spacing of children by women in Sweden born in the latter part of the 1950s is put a longer historical, or in a cross-national, perspective the dip in spacing is not that striking. The figure shows that the dip roughly corresponds to a return to the spacing intervals of women born in the 1930s. And the spacing intervals of women in Sweden born during the 1950s is not that close to the ones that French and Norwegian women born during the 1930s and 1940s had.

Fluctuations in total fertility rates

The data presented so far suggest that there are some noticeable fluctuations in Swedish fertility rates. Such fluctuations are of interest in their own right. There is ample evidence in the literature, which states that fluctuations in fertility rates have important consequences for the rest of society. For example, most studies indicate that size affects labour market prospects of a cohort (see, for example, Klevmarken 1993). So we should consider whether there are reasons to believe that the fluctuations are related to family policies.

The total fertility rates (Figure 7) definitely suggest that there is something special with Sweden in this respect. Swedish fertility rates rose during the prosperous 1980s and fell dramatically during the severe recession in the 1990s. The decline lasted through 1999, followed by recovery in 2000, 2001, and 2002 when the labour market had improved. Among other Nordic countries, Denmark shows some fluctuations in its fertility rates but these fluctuations are not as closely related to the labour market as in Sweden. Also note that Finland's fertility rates did not respond to the severe labour

market shock in the 1990s; the rise in unemployment was higher than in Sweden. Further, there are no signs that the period's total fertility rates in other North European countries responded to the labour market shocks in these countries during the 1980s and 1990s (see the lower panel in Figure 7).

The hypothesis that family policies cause (or at least aggravate) fluctuations in Sweden's fertility rates cannot be tested with high statistical power. There are too few marked labour market cycles during the period (with generous family policies) for a powerful test. Nonetheless, this hypothesis makes sense and is consistent with the data. In a poor labour market, it takes longer to get a permanent job with a good salary that qualifies for full benefits offered to parents by Swedish family policies. In the 1990s Finland's family policy had become quite similar to Sweden's, but there were some important differences in policy design. For example, in Finland, benefits for parents who had not worked full time before having a child were not dramatically lower than for a family that had done so.

3. Conclusions

When I started collecting the data I presented in this lecture, I had expected to see some noteworthy deviations between Sweden and its neighbours. I must also admit that these expectations were formed by the belief that economic incentives, such as those created by Sweden's family policy, really affect the level and structure of fertility. But in retrospect, I am much more struck by cross-national similarities than by the differences. There are at least three striking similarities. First, fertility patterns based on educational level are very similar in all countries for which I was able to find data. Evolution over time, according

to educational level, is also stable; the decline in completed fertility rates in countries other than Sweden can be seen in all education groups. Second, postponement of the first birth can be found in all countries for which I have data. Third, spacing patterns for women who have given birth to two, three, or four children are not very different in Sweden, France, Norway, and the Netherlands.

Of these three similarities, I am most struck by the last one. Although there is a pattern that is consistent with an effect of the *speed premium* in the parental-leave system, the similarities among the countries are more marked than the differences. How could it be that the estimates of hazard models on micro data – see especially Hoem (1993) – suggest such strong effects from these incentives but that the final patterns in spacing pattern (as shown in Figure 6) are so similar? One explanation could be that the apparent effects on spacing in the micro data are primarily not pure spacing effects but rather effects on the level of fertility. If some of those women, who gave birth to two or more children in short succession because of the parental-leave rules, with other rules would have waited a longer time before trying to get additional children, they might have failed to get these children. In that case, the effect of the parental-leave rules is rather on the fertility level than on spacing conditional upon a final number of children. More research would be needed to find out if this is a reasonable explanation.

I can also report two quite noteworthy deviations between Sweden and the comparison countries. The first one is the difference-in-differences (between Sweden and the other countries) that shows up when one compares changes in completed fertility for women born in the 1930s with women born in the 1950s. The stability of Swedish rates and the decline in the other countries is consistent with the hypothesis that the generous family

policy raised Sweden's overall fertility level. The second one is the more marked fluctuations in total (period) fertility rates in Sweden compared to other countries. Sweden's fertility rates seem to be sensitive to (at least) the severe labour market shocks that occurred in the 1980s and 1990s. The contrast to Finland, which suffered from similar (or even stronger) labour market fluctuations during the same decades, is particularly strong. My interpretation is that this instability is enhanced by the family policy that creates very strong incentive to wait with childbearing until the woman (and in a few cases the man) has worked full time for almost a year.

So even though my expectations were not fulfilled, I am still convinced that the economic approach to studying fertility is a fruitful one.

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