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FOREWORD

The old age dependency ratio in the EU is projected to increase from 25 percent in 2005 to 39 percent in 2030, and 54 percent in 2050. This is the result of an increased life expectancy and lower fertility rates. This will put a great deal of strain on public finances, through increased pension payments and increased healthcare costs. This is one of Europe's main economic challenges, according to many the biggest challenge.

Policy-makers and researchers have put a great deal of effort into finding ways to meet the challenge of an aging population, for example by reforming pension systems. The possibility of alleviating the problem by increasing fertility rates has so far received rather less attention. This report, written by Anders Björklund, surveys the research on the effects of family policies on birth rates.

The aim of the report is to give policy-makers the opportunity to evaluate the research results in this area. The pros and cons of different methodological approaches are discussed. The reader will therefore be able to independently decide how far to trust the research results that have been arrived at using different methodologies.

Fertility rates vary widely between European countries. In cross-country studies generous family policies are associated with about a 0.4 increase in fertility rates. Also comparatively minor reforms, such as changes in the parental leave system and child allowances have been associated with substantial increases in fertility rates. The policy relevant question is whether this is a causal effect of family policy on birth rates? This we cannot know for sure, but this report offers an up-to-date overview of the best evidence available.

SIEPS conducts and promotes research and analysis of European policy issues within the disciplines of political science, law, and economics. SIEPS strives to act as a link between the academic world and policy-makers at various levels. By issuing this report SIEPS hopes to make a contribution to the European debate on how to tackle demographic change.

Stockholm, April 2007
Jörgen Hettne
Acting Director
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Anders Björklund is Professor of Economics at the Swedish Institute for Social Research, Stockholm University. His research is focused on family policy, the effects of family background, determinants and measurement of income inequality, and economics of education. His work has been published in journals such as *American Economic Review, Quarterly Journal of Economics, and Journal of Labour Economics.*

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EXECUTIVE SUMMARY

The background to this report is the demographic trends that contribute to the aging of Europe's population: continuing increases in longevity, continuing growth of workers over the age of 60, and continuing low birth rates far below the level needed for the reproduction of the population. These trends place a heavy burden on public finances in European countries.

One of several proposed remedies for this development is a generous family policy that supports families with children in different ways: parental leave benefits, subsidised childcare and child allowances. The purpose of the report is to scrutinize the empirical evidence on what we know about the causal effects of family-friendly policies on fertility. The main question we seek to answer is whether a country that introduces more generous family-friendly policies can expect to obtain a higher *level* of fertility in the long run. Ideally, we would like to know about the separate effects of different types of family policies.

However, we also consider the impact of family policies on the *stability* of fertility patterns and on the parents' *timing* and *spacing* of their childbearing, in other words at what age and how close in time they have their children. These dimensions of fertility also have implications for policy, e.g., the planning of schools and housing.

A first and rather firm conclusion is that economic incentives such as those created by modern family policies really have an impact on fertility behaviour. There is rather compelling evidence that suggests that there is "at least" an effect on the *spacing* of childbearing. When policies have been changed in such a way that the closer spacing of children has become more advantageous, researchers have generally found clear responses in data on child spacing. For example, when the rules concerning the renewal of parental leave benefits in Sweden and Austria were changed to make it easier to maintain a high benefit level without qualifying with a long spell of full time work, researchers found a clear change in micro data on the time intervals between subsequent births. Cross-national data for the Nordic countries also reveals a reduction in the time interval between subsequent births for the cohorts who were fully affected by the new rules; it was not possible to find the same reduction as in Sweden in the other Nordic countries whose policy otherwise had become quite similar to Sweden's. Finally, two convincing natural experiments, in which policies had been changed in a way that generated comparable treatment and control groups, suggest strong responses to incentives to space children more closely.

The available evidence regarding effects on the fertility *level* is more uncertain, however, and a summary of this evidence must be attached with more reservations. This is not to say that the available evidence suggests small effects on the level of fertility. Rather the opposite, the effects appear to be quite substantial. We report three different pieces of evidence that support the claim that the impact might be quite substantial. First, the experience of the Nordic countries is consistent with the view that the difference between the generous family policy packages of these countries and the less generous ones in other North European countries accounts for a roughly 0.4 difference in fertility levels. Most strikingly, completed cohort fertility rates of Swedish women born starting from in the last century through to 1962 were very stable at around 2.0 without any decline as in continental Europe. The corresponding rates in Denmark, Finland and Norway fell in cohorts born around 1930 to the early 1950s but have been stable since, also around 2.0. The introduction of family policies has perhaps prevented the decline in the Nordic countries.

While the experience of the Nordic countries is mainly like one case study, some econometric studies that have used a larger number of countries (around 20) in combination with time-series data on each country's fertility rates and family policies, allow us to make such a statistical inference. These studies have also produced estimated coefficients for the family variables included that imply statistically significant differences in fertility rates between countries with a generous family policy with those with a less generous one. Furthermore, the estimates imply that the effects are of a substantial economic magnitude. The essence of these combined cross-national and time-series econometric models is that they identify the estimated effect of a specific family policy from the correlation between on the one hand the changes over time in the generosity of family policy and on the other the changes over time in fertility rates. It might, of course, be that the changes in the included family policy variables pick up effects of something else, or even of other family policies than those included. It might also be that some countries responded to a temporary dip in annual fertility rates, for example due to a delay in childbearing, by expanding its family policy. The natural recovery of fertility rates might then erroneously be attributed to family policy. It is hard to evaluate these weaknesses of the cross-national approach, so the best you can do is to take the estimates at face value.

The evidence from the two convincing natural experiments also suggests quite a strong effect on the level of fertility. The author of the Canadian study, however, cautions that that it is yet too early to say with a great degree of certainty that the fertility level was also affected.

Finally, you might wonder what research has to say about specific policies. If a country is considering extending its family policy or introducing new ones in order to stimulate its fertility rates, what policy design offers most "bang for the buck"? Does research suggest any specific policy instruments, or is it the whole policy package – a specific family policy model – that is important. Indeed, the Nordic package of childcare and parental leave is often considered a specific family policy model with an emphasis on helping both parents combine parenthood with a long-term attachment to the labour force. No doubt there are strong a priori reasons for believing that the effects of various policies interact in such a way that the presence of one policy makes another one more (or less) effective in raising fertility. Thus it might be that the seemingly strong fertility effects of the family policy model adhered to in the Nordic countries are the total effects of a set of policies that complement each other in a useful way (from the perspective of raising fertility). Some scholars strongly argue that the effect of a specific policy depends on the institutional setting into which it is implemented.

It is worthwhile bearing such arguments in mind when you consider alternative policies, and they call for care if results of a study in one country are going to be imported to another country with a different history and cultural background. Nonetheless, the most compelling evidence suggesting that economic incentives have an impact on fertility behaviour comes from isolated changes in one specific policy instrument. In Quebec, an increase in child benefits for the second and subsequent children had a strong impact. In Austria, extended parental leave benefit had a strong impact. And in Sweden, the change in a rule for parental leave enabling parents to retain their benefit level between the birth of two children without another spell of full time work had a strong impact on the spacing of children and maybe also on the level of fertility. Thus it makes sense that a country, which believes that family policy might spur its fertility, should look for the specific instrument(s) that appear feasible and reasonable in that particular country. The fact that three studies out of four on the impact of day care on fertility indicate insignificant effects does not change this conclusion or rule out childcare as a useful instrument. The four day care studies have namely not been able to use any strong quasi-experimental variations in day care quality or availability.

The interaction of alternative policies may also be important in other respects than the impact on the fertility level. For example, a number of policies make it advantageous for Swedish families to postpone their childbearing until they have a stable and good job. Furthermore, it is these policies in combination that make Swedish fertility rates sensitive to the business cycle and thus create swings in the fertility rate.

1 BACKGROUND AND PURPOSE[1]

"Europe is facing today unprecedented demographic change". This is the starting sentence of the European Commission Green Paper entitled "Confronting demographic change: a new solidarity between the generations" from March 2005. The background is a set of demographic trends that contribute to the aging of Europe's population: continuing increases in longevity, continuing growth of workers over the age of 60, and continuing low birth rates far below the level needed for the reproduction of the population. Taken together, these trends place a heavy burden on the public finances in countries all over Europe.

The discussion about appropriate remedies for this development has been intense in recent years. The discussion includes topics such as immigration policy, pension policy but also family policy. It has been argued that more generous support for families with children might help boost fertility and thus counteract the strong forces working towards aging populations. A concrete example is the recent policy initiative in Germany to introduce a parental leave benefit scheme that offers two thirds of previous earnings for a period of one year for parents who stay home to care for their newborn child. A major goal for this initiative was to raise fertility. German politicians referred to the experience in Sweden and other North European countries when this decision was made.

Needless to say, it is very hard to say what the design of an optimal policy response to this demographic challenge should look like. The current discussion at the European level needs a great deal of input to inform this important debate. The overall purpose of this report is to scrutinize the empirical evidence on what we know about the causal effects of family-friendly policies on fertility. The main question we would like to answer is whether a country that introduces more generous family-friendly policies can expect to obtain a higher *level* of fertility in the long run. Ideally, we would like to know about the separate effects of different types of family policies such as universal child allowances, parental leave benefits and subsidized childcare on long-term fertility levels.

However, we will also consider the impact of family policies on the *stability* of fertility patterns and on the parents' *timing* and *spacing* of their

[1] The author is most grateful to Rickard Eriksson, Yvonne Fredriksson, Mårten Palme and Elizabeth Thomson for their comments on previous versions of this report. Thanks also to Karin Ørum Elwert (Denmark), Timo Nikander (Finland), Trude Lappegård (Norway), and Lotta Persson (Sweden) for the quick delivery of data on completed fertility from population registers. Louise Ratford's editing greatly improved the readability of the text.

childbearing, in other words at what age and how close in time they have their children, and that for two important reasons. First, the stability, timing and spacing of children are of policy interest in their own right. Obviously, if the design of family policies makes fertility more vulnerable to labour market fluctuations, there will be also be fluctuations in cohort sizes and thus consequences on the planning of childcare and schools, and possibly also on the labour market outcomes of children from small and large cohorts (see Klevmarken 1993 for evidence suggesting effects of the latter type). Moreover, if policies influence families to have their children later but closer in time, this is likely to have societal consequences on, for example, the housing market. The second reason for considering all these dimensions of fertility is methodological. As we will see, it might be difficult to determine whether, for example, a decline in overall fertility rates is a permanent decline in the fertility level or a postponement of births to a higher age. Another example, which we will come across, is that a policy initiative with more generous benefits of some kind seemingly raises fertility rates in the short to medium term, but it might be impossible to say whether this represents a permanent or only a temporary rise due to the closer spacing of children.

Of course, there is an enormous amount of research literature on how various policies and incentives might affect fertility. Our focus is on the current European discussion and the topic of whether broad family policies are likely to raise fertility levels or not. Thus there are two main areas of literature that we have ignored in this report. First, we have ignored the enormous amount of literature on fertility in developing countries (see e.g. Schultz 1997). Second, we have ignored an area of literature that is particularly important in the United States, namely whether targeted policies to support single mothers have an impact on fertility (see e.g. Moffitt 1992). The selection of research reflects the author's view of the type of studies that are informative to the discussion on whether policy initiatives such as the recent one in Germany are likely to help European countries cope with their demographic challenges or not.

The report is structured as follows. Section 2 consists of a methodological discussion about the prospects of inferring the causal effects of family policies on fertility. One approach is to compare countries with different policies, and we will discuss the conditions under which this is a feasible approach. Section 3 discusses the cost of having a child and how family policies of different types might counteract these costs and thus create incentives to change fertility patterns. We also present the main components of Sweden's family policy and emphasise the rapid expansion of

this policy from around 1965 to 1980, a change that we use for our analysis in section 4.2.

Section 4 contains the main empirical analysis. We start in section 4.1 by describing the evolution of fertility rates in a number of European countries; we report both so-called total fertility rates that are defined for a specific year and completed fertility rates for cohorts of women who have become old enough to have completed their fertility. Then, in section 4.2, we look specifically at the experience of Sweden and the other Nordic countries since family policy in these countries has been more generous than in the rest of Europe/in other European countries for several decades. Section 4.3 summarizes the results of econometric studies using cross-national data. Section 4.4 offers a similar summary of the results of some particularly useful within-country variations in family policy. The results of studies using micro data before and after changes in policy in a specific country are reported in section 4.5. Finally, section 5 offers a summary of the main conclusions of the report.

2 HOW CAN THE TRUE CAUSAL EFFECT OF FAMILY POLICY BE ESTIMATED?

In order to empirically infer the causal impact of family policy on fertility, we need to observe fertility outcomes in different family policy regimes, i.e. in situations where there are certain differences in policy. Such policy variations may appear in different ways. One dimension is *time*. In the case of a one-time change in policy, it is possible to observe the *before-after* variation in fertility. In the case of frequent changes over time, we get *time-series* observations on family policy and fertility. Although this provides an insight, the before-after or time-series variations seldom offer credible information for a convincing inference about causal effects. The changes in fertility over time might very well have been caused by other factors that have changed over time.

Another dimension of policy variation is *jurisdictions or areas*. In a federal country, independent *states* might have implemented different policies and thus generated some potentially useful variations in data. Another unit is the *country*; obviously different countries pursue different policies so there is always some variation to exploit in this dimension. However, just as with the time dimension, the area dimension on its own has clear limitations. Other differences in areas (be it states or countries) other than those related to family policy might have caused the fertility differentials.

A clear improvement is to combine the dimensions time and areas. When such combined data are available, the typical approach is to let each area have its own permanent level of fertility; such area-specific intercepts in a regression model may represent the cultural inheritance from the past. With these so-called fixed effects for each area in the statistical model, the estimates are obtained from (or "identified by") the variation in family policy within areas over time and the corresponding variation in fertility rates. Do countries that have expanded their policy more than other countries experience higher increases (or less of a decrease) in fertility rates than other countries?

However, not even data information of this kind is always sufficient for a credible study. You have to also ask *why* policy has changed. The extreme case, which is often implicitly assumed by researchers, that policies (or even policy changes) are randomly assigned among countries, or states, or over time is obviously not realistic. Changes in family policy do not take place in a political vacuum. To use the jargon of economists, changes in family policy could be "endogenous". This means that changes in family

policy are caused by, or closely related to, the fertility process that is being studied. A clearly complicated case would be a country (or state), which has found that fertility prospects have deteriorated and which therefore makes family policy more generous. Another complicated case would be a sudden fall in annual fertility rates due to a rapid postponement of childbearing among women in the country. If politicians consider this a sign of permanently falling fertility rates and expand family policies accordingly, this policy expansion will coincide with a natural recovery of fertility rates. The source of family policy variation must consequently be considered in order to evaluate the usefulness of a study.[2]

A third dimension in which family policy sometimes varies is by *family type*. For example, some policies only offer benefits to families who already have one or two children or to families who fulfil certain specific conditions. In such cases you would expect a greater impact on those who are eligible for the extra benefits than on other families. In combination with the time and/or area dimensions, such policy variation might prove very useful. A study that includes variations in both family types and over time can compare changes in fertility in affected family types with changes in unaffected ones. The difference is likely to be attributable to the policy of interest.

When the data variation at hand for a specific study is very useful and speaks in favour of a credible estimate of causal policy effects, the researcher often (and enthusiastically) claims that he or she has a *natural experiment* at his disposal. The exact definition of a natural experiment varies between different fields of research in the area of social sciences.[3] The general idea, however, is that data variation quite closely mimics what would have been obtained from a "pure" experiment in which there is random policy variation. Whether a specific study is reliable or not, is always a matter of judgement. It is important that comparable groups are compared, and that the variation in policy is not related to, or caused by, the fertility process per se. A good study should be very clear about the information that is used to identify the effects in order to help the reader evaluate the evidence. The purpose of this report is to help the reader understand and evaluate the empirical evidence on the effects of family policy on fertility.

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[2] See Besley and Case (2000) for a perceptive discussion about policy endogeneity in cross-national and cross-regional studies of the impact of policy. They also illustrate their claims with an application for workers' compensation benefits.

[3] For discussion in economics, see e.g. Meyer (1995) and Besley and Case (2000).

3 THE COST OF HAVING A CHILD AND FAMILY POLICY

In order to evaluate studies on the impact of family policy on fertility, we need to have an idea about how family policy affects the decision to have a child. We must also have a clear idea about the variations that exist in family policy across countries and over time to understand how we can estimate the effects in a credible way. In this section, we start with a rudimentary economics approach to the problem by discussing the components of the cost of having a child. Then we take a look at how family policy has varied over time and across countries.

For a very long time, economists have stressed that a woman[4] who is considering having a(nother) child faces an opportunity cost. Since the child prevents the woman from working in the labour market for at least a certain period of time, this opportunity cost is closely related to the wage that the woman is able to earn in the labour market. This wage is, in turn, affected by the education of the woman. Rising female wages and education will, according to this argument, lead to lower fertility levels, the reason being that a woman and her family must sacrifice more consumption in order to have a further child. Indeed, economists have considered the increase in female wages to be a major driving force behind the fall in fertility rates that started in the Western world in the mid-1800s and that form a part of the so-called demographic translation. The evidence that backs this claim is not only that there is a simple correlation between aggregate female wages and fertility. In addition, e.g., Schultz (1985) has shown that regions which were affected by changes in world market prices in such a way that the female wages increased more than in other regions experienced a particularly strong decline in fertility rates; see also Schultz (2001) for an excellent and readable survey.

This opportunity cost is, however, not the only cost associated with having a child. As elaborated on by Walker (1995), there are at least two more components in the total cost of having a child in an explicit lifecycle framework. One component might be considered as the direct cost of raising a child, i.e. the cost of items such as food, clothes, housing, and childcare. Finally, Walker stresses a third cost, namely the loss of the accumulation of skills relevant to the labour market ("human capital") due to interruptions in labour market participation.

[4] We realize that the decision to have a(nother) child is a matter for both a man and a woman and that the decision is generally made within the framework of the family. To simplify the text, we regard the woman as the decision-making unit.

From an economic perspective, it is natural to consider the potential of a family policy to raise fertility from the point of view of the policy's impact on these three cost components. The first cost component can be reduced, or even eliminated, in two ways. One alternative is to offer earnings-related parental leave benefits so that at least one parent is able to stay at home to care for the child. With a 100 percent replacement rate, the whole opportunity cost is eliminated. Such a policy is, maybe, most natural for very young children, say during a child's first year. Another way to counteract this cost component is to offer public childcare at a low and subsidised price.

For the second cost component, it is more natural to consider universal child allowances as the remedy. By offering families with children allowances that cover reasonable expenses for extra food, clothes, housing etc., this cost component can also be eliminated.

The third cost component, however, is very difficult to avoid with a feasible family policy. Naturally, an emphasis on childcare in family policy enables both parents to work full time with only short interruptions in their labour market activity. Nonetheless, some interruptions, or shorter working times, are in general needed with potentially negative consequences on career development and wage growth. It would only be possible to completely eliminate this cost component by intervening in the recruitment and career decisions of firms.

The notion that a family-friendly policy might raise fertility is obviously quite a natural one. In the European discussion, the experience of Sweden and the other Nordic countries are often referred to as suggestive evidence that such policies also have a real impact on fertility. Before looking at the fertility data in order to scrutinize the empirical evidence backing such claims, let us take a closer look at the structure and evolution of Swedish family policy.

3.1 Swedish family policy and how it could affect fertility behaviour

In order to understand the lessons that can be learnt from the Swedish experience, we emphasize three aspects of Swedish family policy.[5] *First*, the specific policies that form Swedish family policy were expanded very

[5] See Björklund (2006) and references therein for more detailed information.

quickly from around 1965 to 1980. For that reason, women who were planning their childbearing before and after this period faced very different economic incentives. Women born in the first part of the 1930s were not able to benefit very much from these policies, whereas women born in the mid-1950s could in practice count on very generous policies. For this reason, we will compare the completed fertility patterns of Swedish women born from 1930 to 1962 in our subsequent analysis.

Second, the Swedish family policy that was formed in this relatively short period of time strongly emphasised a reduction in the first cost component of having a child, namely the opportunity cost. Another way of putting it is that the policies aimed at helping women to combine a long-term attachment to the labour market with having children.

Paid parental leave is a cornerstone of Swedish family policy. In the early 1960s, a maternity leave system offered pay for three months at a replacement rate of around 60 percent. After some expansions in the mid-1960s, the system was changed to a parental leave system in 1974. The benefit level was raised to 90 percent of foregone earnings, with eligibility based on earnings during the 240 days prior to giving birth. The system change in 1974 also made benefits taxable and the benefits counted as a source of income that gave future pension rights. In subsequent years, the duration of parental leave benefits was gradually extended so that in 1989 it was 12 months with a 90 percent replacement rate plus three additional months at a low flat rate.

The Swedish rules that determine parental leave benefits also include elements that create a kind of "speed premium" on further childbearing. Since parental leave benefits are earnings-related, a period of no work or only part-time work after a birth would reduce the benefit level after a subsequent birth. However, during the late 1970s and early 1980s, the rules became successively more generous, allowing the parent to retain the right to the benefit level that she or he had once obtained by working full time before the first (or any previous) birth. From 1974 to 1979, the parent could abstain from earnings for 12–18 months (depending on local application of the rules) and yet retain the right to a previous benefit level for subsequent births. From 1980 to 1985 the interval became 24 months, and this was prolonged to 30 months in 1986. From 1980 onwards, there was no local variation in the rules. The effect of these rules was that the mother did not have to work full time to qualify for benefits for the second child or for subsequent children, the condition being the close spacing of the births, thus the label "speed premium".

Municipality-subsidised childcare in care centres is another important feature of Swedish family policy. In the early 1960s only some part-time options were available, but from the late 1960s onwards there was a major extension in childcare provision. For example, from 1974 to 1982 the number of slots per child for the ages 0–6 increased from 0.12 to 0.40. Childcare at these centres has been heavily subsidised, with fees covering only 10–20 percent of total costs. Both parents must work or study to be eligible for this type of childcare. Apart from care for preschool children, municipalities also provide subsidised before and after school care for children up to the age of 10.

In most municipalities, the structure of the childcare fees also creates a kind of speed premium. In general, families with more than one child in the municipality-run day care system are offered much lower fees for their second child and for subsequent children. Thus, the total costs of raising a certain number of children are much lower for closely spaced children than more widely spaced ones.

A valuable, but sometimes forgotten, part of Swedish family policy is also compensation for the care of sick children. This benefit was introduced as part of the changes introduced in 1974. At first, 10 days of paid leave for the care of a sick child was compensated at 90 percent of foregone earnings. But in 1980 the number of days was increased to 60 a year, and later to as many as 90 days. This benefit most likely helps alleviate the stress associated with having a young child and a job in the labour market. For example, parents do not have to use their granted holiday time to take care of sick children any longer.

Sweden also used industrial relations legislation to facilitate the combination of childbearing and the mothers' participation in the labour market. In 1979, the Parliament decided to give parents with young children the right to cut back their working hours to 75 percent. Parents may exercise this right until their children reach the age of 8.

Although this focus on eliminating the opportunity cost of having children is typical for the Swedish case, universal child allowances have also been part of the policy package. Indeed, the real value of this benefit has increased a great deal over time as well. Thus, you can cannot say that other countries have expanded this type of policy more than Sweden did during the same period of time; see Björklund (2006) for data backing this claim.

This set of family policies obviously affects the incentives facing women who are contemplating having children. In order to benefit from the

policies, it has become natural for Swedish women to follow the following strategy:

Strategy for Swedish women

1. Complete your education
2. Get a job and work full time for the time needed to qualify for a high benefit level. Make sure that you get a permanent position so that you can return to your employer after you have been on parental leave.
3. Have your first child and receive a full year of paid parental leave.
4. Work part time for a while and use subsidised childcare until you have your next child within 24 (30 after 1986) months. Go back to work after another year of paid parental leave and use public childcare combined with benefits for the care of sick children when needed.

There is also a *third* aspect of the extension of Swedish family policy that makes Sweden an interesting case to study. The sudden expansion of the policies was in general not motivated by pronatalistic arguments. In particular, it was not triggered by a sudden fall in birth rates. Instead, the main argument was to promote gender equality in the labour market and help women combine a long-term attachment to the labour market with having children. This is not to say that the expansion of Swedish family policy can be considered "truly exogenous" with respect to the fertility process. However, it makes the Swedish experience more relevant than it otherwise might have been.

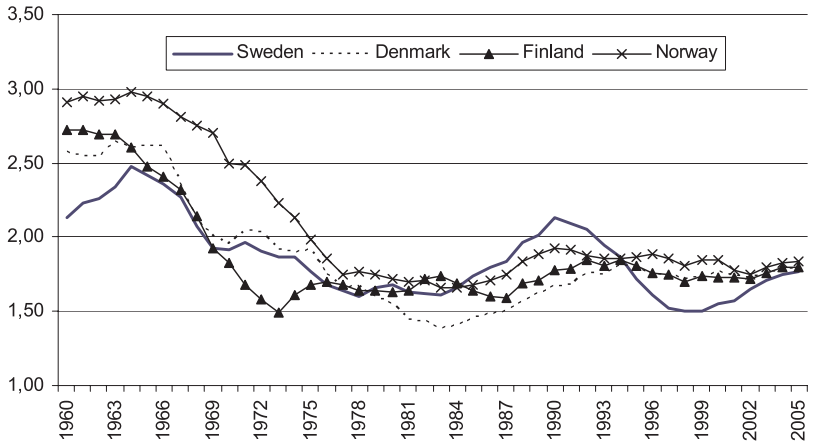
4 EMPIRICAL EVIDENCE

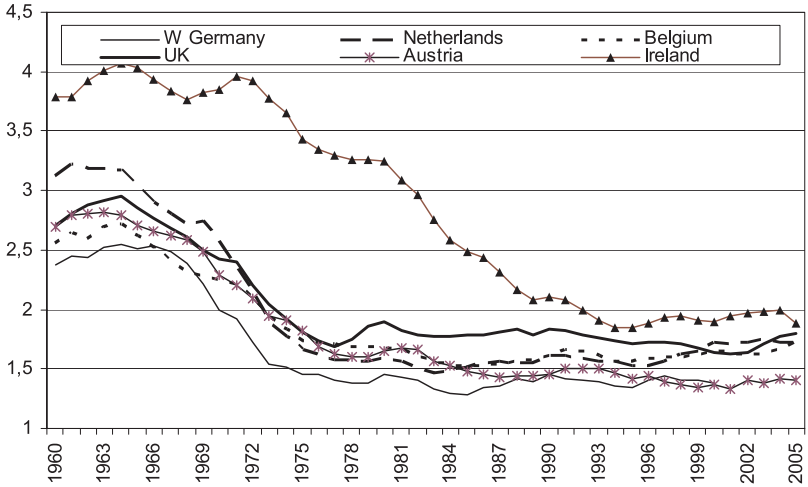
4.1 Fertility from a cross-national perspective: descriptives

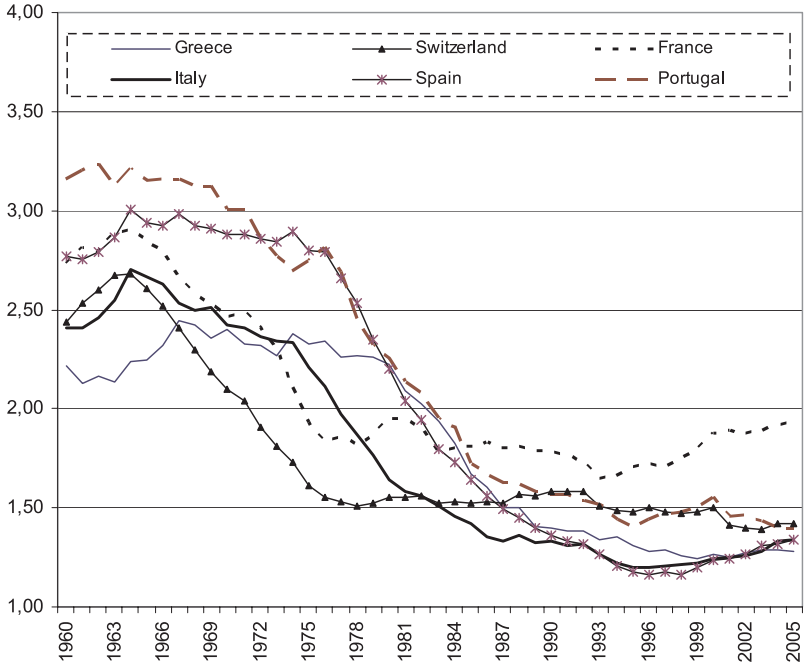
We start by looking at the evolution of fertility rates in 16 European countries. Figure 1 reports the total fertility rate in three parts during the period 1960–2005. The total fertility rate in a specific year, which is regularly reported by statistical agencies and commented upon in the media, is a measure of the total number of children a woman would have in her life if she were to give birth at the same rate as women did during the year in question. It is thus a measure of the intensity of fertility in a specific year, and in the long run the measure should be around 2.1 in order to sustain the current population without relying on immigration.

The figure reveals some basic common patterns for all countries from the northern to the southern part of Europe. In the early and mid-1960s, these fertility rates were well above replacement levels in all countries. Then they started to fall rapidly and after around 1990 the rates have been below 2.0 in all 16 countries. The Nordic countries, Ireland and France, have had the highest rates in recent years, in the range 1.75–1.95, whereas Austria, Germany and the most southern countries Greece, Italy, Spain and Portugal have experienced rates clearly below 1.5.

Figure 1. Total fertility rates 1960–2005





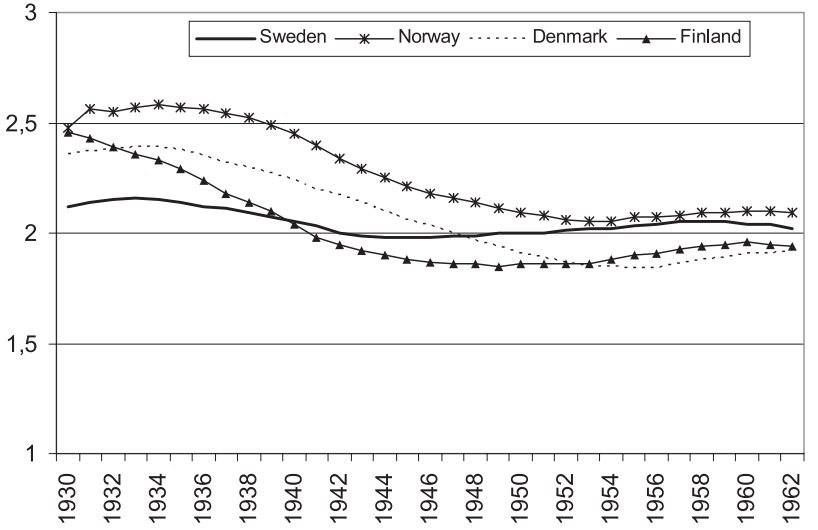


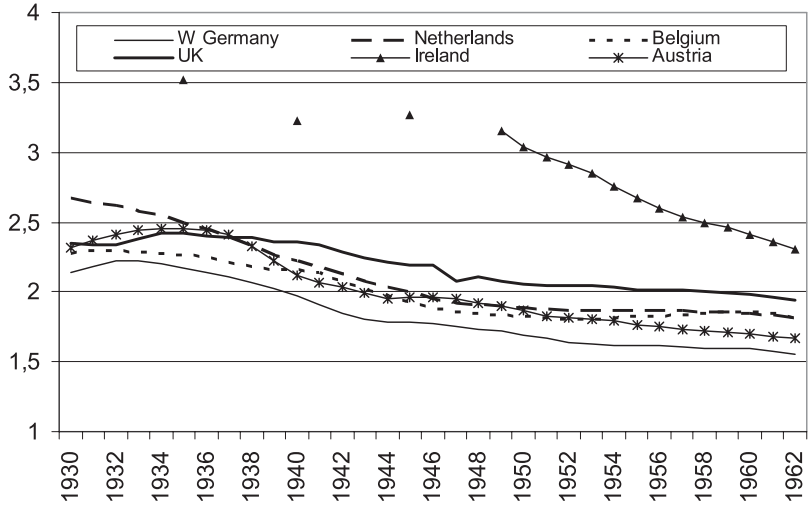
Source: Council of Europe. Recent demographic developments in Europe, various issues.

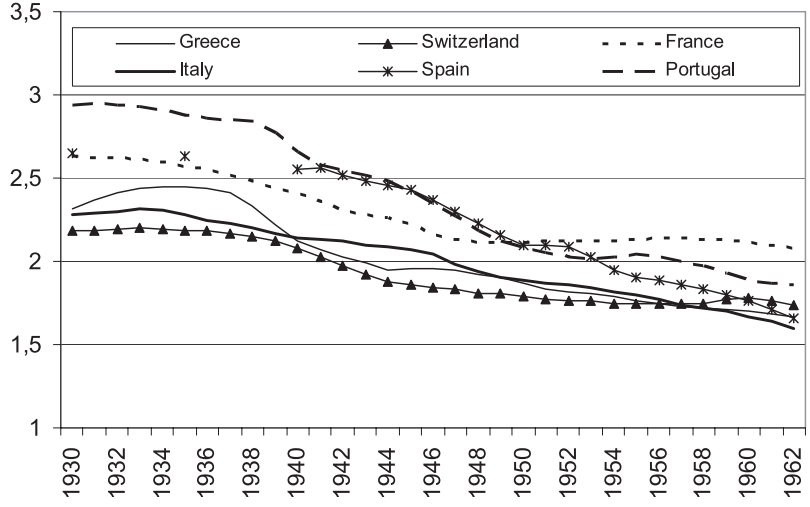
Another useful, but less commonly reported, measure of fertility is the completed fertility rate of a cohort of women. In practice, most births are captured if women are followed through the age of 42 years. A major advantage of this measure for analysis of the impact of family policy is that it eliminates all complications caused by changes in the childbearing age. If you want a to focus on the impact of family policy measure on the long-run level of fertility, it is an advantage to use such a measure. The disadvantage is that one has to wait quite long until a cohort of women has reached the age of 42.

Figure 2 shows completed fertility rates for women born 1930–1962 in the same 16 countries as in figure 1. In general, this measure reveals a smoother pattern than the total fertility rates. However, all countries reveal a decline over time. Sweden is almost an exception in this case; there is only a small decline from around 2.1 for the early 1930s cohorts to around 2.0 through 1962. Moreover in all countries, the level of fertility for the last cohort, born in 1962, is clearly higher than the current total fertility rates in the last 10–20 years. Indeed, in France, Norway and Sweden, women born through 1962 have more or less reached the critical 2.1 level that is needed for reproduction. No country displays levels below 1.5.

Figure 2. Completed fertility by birth cohorts, 1930–1962.



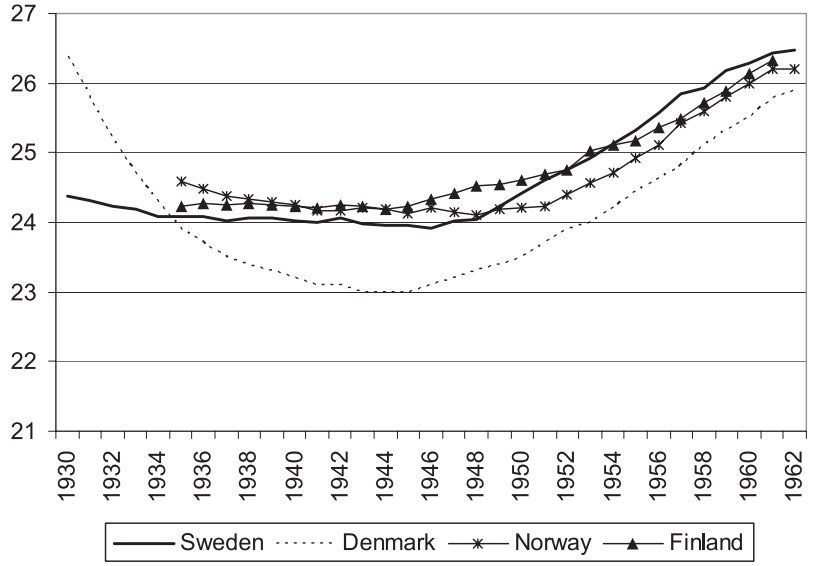




Source: Council of Europe. Recent demographic developments in Europe, various issues.

The underlying reason for the slightly diverging patterns for fertility in a special year and completed fertility for a whole cohort is, of course, postponement of childbearing to higher ages. All European countries have in recent decades had an evolution towards older and older mothers; see, e.g., Gustafsson (2001) for data and analysis for many countries. We report, in Figure 3, the mothers' average age at the birth of the first child by cohorts for the four Nordic countries. For these countries, there is a clear increase from cohorts born in the late 1940s to those born in 1962. Needless to say, this age cannot continue to rise too long without negative consequences for completed fertility rates.

Figure 3. Average age of mothers at the birth of their first child by birth cohorts.



Source: Council of Europe. Recent demographic developments in Europe, various issues. National population registers.

4.2 An informal analysis using Sweden as a special case

We now use the data in figures 1–3 for an informal analysis of the impact of family policy using Sweden as a special case. The main idea is that Swedish family policy expanded very quickly from the mid-1960s to around 1980. The expansion was both earlier and stronger than in the neighbouring Nordic countries. Furthermore, the aim of this policy expansion

was not mainly a concern for – and response to – low fertility rates but to promote gender equality in the labour market. As a consequence, Swedish women who were born in the 1950s experienced markedly stronger incentives to have children than for example those who were born in the 1930s. Thus the study compares the change in Swedish completed fertility rates from the 1930- to the 1950-cohorts to the corresponding changes in the other Nordic countries that were slower to introduce these policies or did not go as far. This will be a so-called difference-in-differences approach but without any standard errors since it is only a case study of Sweden.[6]

The level of fertility

A naive analysis of the Swedish case – a before-after comparison of women born in the early 1930s and those born in the 1950s – would suggest that family policy has no positive impact on the level of fertility. As seen in Figure 2, completed fertility rates were slightly lower for women born in the 1950s than for women born in the 1930s. If we stick to women born in the first part of the 1930s, there is a decline of about 0.1, from around 2.1 to around 2.0. This decline occurred despite the fact that the women of the 1950s had so many more benefits.

Now, it can be argued that there were some general changes in the determinants of fertility that were shared by all Nordic countries, and possibly also by other European countries. If Sweden also were affected by these trends, but that these in Sweden were counteracted by the expansion of family policy, a different conclusion emerges. In that case, it is more natural to compare the changes in fertility in Sweden with changes in the other Nordic countries. This is a so-called difference-in-differences approach to analysing the effects of family policy. Such an approach implies that the decline in Sweden by 0.1 (from 2.1 to 2.0) should be compared with the declines of around 0.5 for the other Nordic countries. The difference becomes 0.4 and this will be a point estimate of the total positive effect of the expansion of the family package in Sweden compared to other Nordic countries. Indeed, this is a large effect.

Timing of childbearing

We can perform a similar analysis of the effects of the expansion of Swedish family policy on the timing of childbearing. The incentives shaped by the policies are such that one could expect that Swedish women delayed their childbearing more than in the neighbour countries. The data

[6] The subsequent analysis is an update of the analysis in Björklund (2006).

in Figure 3 can be used to test this hypothesis. The general impression, however, is that there is no clear difference in these changes between Sweden, on the one hand, and the other Nordic countries on the other. The rise in the age at the birth of the first child for cohorts born in the late 1940s to those born in the early 1960s, is slightly stronger in Sweden than for Norway and Finland. In Denmark, women has had an even stronger increase.

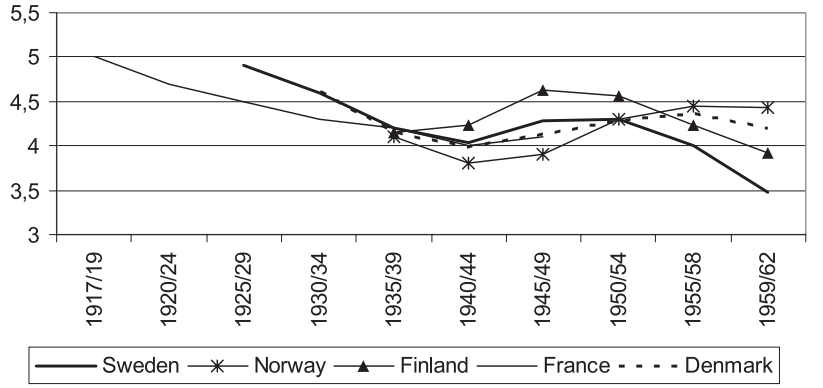
Spacing of childbearing

The incentives to space children closely have been particularly strong in Sweden since 1980. If these incentives really have an impact on actual childbearing, we would expect women born in the late 1950s and around 1960 to have had their children more closely spaced than women born some 10–15 years earlier. To test this hypothesis, we report in Figure 4 the average time interval between the first and last child by cohort and by final parity for Swedish women and compare these figures with women from the other Nordic countries, where there have been no corresponding incentives to the Swedish ones. Starting with the cohorts born 1945–49 and ending with the cohorts born 1959–62, we can see a very clear decline in the average time interval between the first and the last child for Swedish women, consistent with the hypothesis that these incentives make a difference. The decline is around 0.8 years for women who had two children in all, and 1.5 years for women who had three or four children in all. There is no corresponding change for women in Denmark and Norway. In Finland, however, the spacing interval also narrowed during the same period, but the magnitude was slightly lower than in Sweden. Thus, we are inclined to interpret these figures as support for the hypothesis that spacing is affected by economic incentives. However, the figures do not suggest that the spacing of childbirth in Sweden is exceptionally low from a historic perspective. Note, for example, that French women born in the 1930s and 1940s, who had three or four children, spaced their children even more closely.

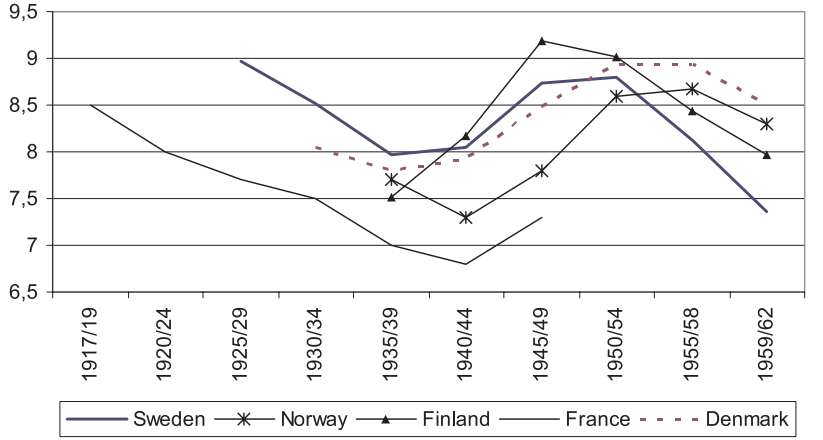
Fluctuations in aggregate fertility rates

We have already noted that Sweden's time-series pattern of total fertility rates reveal more marked fluctuations than all other European countries. As we said in the introduction, such fluctuations are of interest in their own right since they will generate fluctuations in cohort sizes of the population with likely labour market consequences and resulting in an impact on the planning of day care and schools by the municipalities. A closer inspection of Figure 1 shows that Swedish fertility rates rose during the prosperous 1980s and fell dramatically during the severe recession in

Figure 4. Average time interval (years) between the first and the last child by cohort and final parity.
Two children.

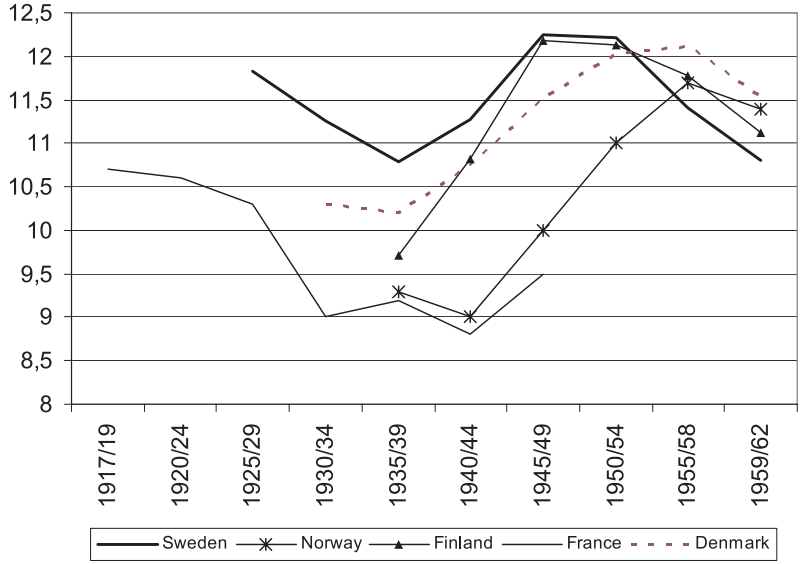


Three children.



the 1990s. The decline lasted until 1999 and was followed by a strong recovery which has been maintained since then. The rate for 2006 was 1.85. If we take the other Nordic countries, Denmark shows certain fluctuations in its total fertility rates, but these 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 of the early 1990s; the rise

Four children.



Source: Special extracts from national population data. France: Daguet (2000).

in unemployment was even greater in Finland than in Sweden. Finally, Figure 1 show that there are no signs that the total fertility rates in other European countries reacted to the labour market shocks in these countries in the 1980s and 1990s.

The hypothesis that family policies make Sweden's total fertility rate sensitive to the business cycle cannot be tested with high statistical power. There are too few marked labour market cycles during the period with a generous family policy for a strict statistical test. Nonetheless, the hypothesis makes sense and is consistent with both data and a simple economic theory of fertility behaviour. In a poor labour market, it takes a longer time to get a permanent job with a good salary that qualifies for the full benefits offered by Swedish family policy. 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. This is a likely explanation for the fact that Finland's fertility rate was not affected by the deep recession of the 1990s (see Vikat 2004 for more analysis).

4.3 Econometric studies using cross-national variation

It is appealing to use data on family policy and fertility for a number of countries and estimate a statistical model that combines data for countries and time. To do so, however, requires family policy variables that are comparable in both dimensions, namely between countries and over time, and to construct such data series for many countries is easier said than done.

During the 1990s a few studies using this approach were carried out and there have been others since then. The two most elaborate studies with the most up-to-date data are the following:

Gauthier and Hatzius (1997)

This study employs annual fertility data from 22 industrialized countries during the period 1970–1990.[7] Using these 21 annual observations in 22 countries, Gauthier and Hatzius estimate a model in which the (logarithm of the) annual fertility rate is related to three family policy variables plus other potential determinants of annual fertility. The three policy variables are (i) the value of cash benefits, (ii) the level of maternity benefits and (iii) the duration of maternity benefits. The other determinants are men's wages, women's wages, the level of unemployment and the change in unemployment.[8] The model also allows each country to have its own level of fertility. A consequence of this model specification is that the estimates are generated by variations in family policy *within* each of the 22 countries.

The major result is that none of the two maternity benefit coefficients is statistically significantly different from zero, but the cash benefits coefficient is and positively so. In order to illustrate the magnitude of the coefficient, the authors compute the effect of a 25 per cent increase of cash benefits, from the mean value in all countries in 1991. The estimate implies that such an increase would raise the long-term level of fertility by 4.24 percent or 0.07 from the average level of 1.71 in 1990. The authors consider this effect to be "of limited magnitude". From a Swedish perspective you may, however, question whether the effect really is of limited

[7] The countries are Australia, Austria, Belgium, Britain, Canada, Denmark, Finland, France, Germany, Greece, Luxembourg, the Netherlands, Ireland, Italy, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, and the United States.

[8] More specifically, the model uses the logarithm of the fertility rate as the dependent variable and includes the one-year lag of the dependent variable as an additional explanatory variable to allow for the distinction between long and short-term effects of the family policy variables. Further, the cash benefit variable is measured as a fraction of men's average wages in manufacturing.

magnitude. The simulated 25 per cent increase of cash benefits starts from a rather low level. The benefit variable is defined as the benefits for a family with two children as a fraction of men's average wages, and the simulated increase is from 5.3 to 6.6 per cent of men's wages. For a country with a monthly male wage corresponding to SEK20000 and a monthly universal child allowance per child amounting to SEK500, an increase in the child benefit to SEK625 would raise the country's fertility rate by 0.07 per women. This seems like a sizeable effect.

A specific limitation of the study, carefully discussed by the authors, is that potentially important family policy variables other than cash and maternity benefits are not included in the analysis due to the lack of data for all countries. For example, no childcare variable is included, and if the within-country variation in cash benefits is correlated with the within-country variation in the provision of childcare slots, the cash benefit variables might instead capture the effects of childcare. This might help explain why the estimated effect is so great.

Ferrarini (2003, 2006):

These two studies are closely related in the sense that the latter is an update of the former. The author uses total annual fertility rates for 18 countries.[9] Two family policy variables are used in the analysis. The first is called "dual earning support" and includes the net value of earnings-related parental leave for a two-earner family, including maternity and paternity insurance, and dual parental insurance. The second is called "general family support" and comprises flat rate and lump sum benefits as well as the value of tax deductions for family support. In addition to these two family policy variables, the statistical model also includes female labour force participation, the rate of GDP growth and unemployment. The model allows each country to have its own level of fertility and thus employs the within-country variation to identify the effects of family policy on fertility.

The main result is that both family policy variables enter with coefficients that are positive and clearly significantly different from zero. Thus, increasing within-country family policy generosity is associated with rising (or less of a fall in) total fertility rates. The magnitude of the two estimated coefficients implies fairly sizeable effects of policy. Suppose that we

[9] The countries are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Iceland, Italy, Japan, the Netherlands, New Zealand, Norway, Sweden, Switzerland, the United Kingdom and the United States.

change either policy with two standard deviations, which implies that we move from the middle of the distribution of one of the policies to the very top; a substantial but not unrealistic increase in generosity. The dual earner support variable would then raise the fertility rate by 0.26 children per woman and year. The general family support variable would raise fertility by 0.12 children per woman and year. Both effects are fairly substantial and you might even suspect that the within-country variation in family policy picks up other changes in society. If, however, the variables pick up the changes in other areas of family policy, such as the supply of childcare slots, it is less of a problem.

To sum up, both these studies using combined cross-national and time-series data suggest that family policy has a substantial impact. The authors have been very careful in constructing informative family policy variables that are comparable over time and between countries. Nonetheless, the variables included might very well capture other changes in the countries. The fact that these studies use total fertility rates also gives rise to a certain amount of caution. We know that during the period 1970–2000 women in Europe postponed their childbearing to a considerable extent. This will have led to a fall in the total fertility rates, but possibly not to the same extent in all countries. An alternative that has not been tried in the literature is to pursue a similar study using completed fertility rates. A problem with such an approach, however, would be that it is not obvious at what age policy has an impact on women's childbearing decisions.

4.4 Policy variations within countries: natural experiments

The introduction of a child benefit system in Quebec

This study exploits a sudden and unexpected introduction of a universal monetary non-taxable transfer for families having a child in Quebec in 1988. The child benefit was designed in such a way that it gave most to those who had their third or more child. When it was initiated in 1988, it gave C$500 at the birth of the first or second child, and 8 quarterly payments of C$375 after the birth of the third or more child. After a couple of increases in subsequent years, it gave from May 1992 until September 1997 C$500 at the birth of the first child, C$500 at the birth and C$500 on the first birthday of the second child, and 20 quarterly payments of C$400 after the birth of the third or more child. The policy was abolished in late 1997.

This policy change introduced useful policy variations in three different dimensions, namely (i) over time or before and after, (ii) between Quebec and the rest of Canada, and (iii) between family types. The first two

dimensions gave the opportunity to form a difference-in-differences approach, namely comparing changes over time in Quebec and the rest of Canada. By also using the third dimension, it was possible to use a triple difference, namely a comparison of whether Quebec's fertility change over time for families with two or more children was greater than its fertility change over time for families with no previous children.

The empirical results based on either vital statistics or micro data from censuses suggest that the effect of the benefit was large and consistent with the pattern of incentives created by the benefit plan. The impact on overall fertility might have been as high as 12 % and the impact on fertility in families with two or more children as high as 25 %. Some of the estimates, however, were a bit lower than these figures.

The general impression of this study is that it exploits very useful policy variations and that the results are thus quite compelling. The fact that the family benefit was introduced suddenly and unexpectedly implies that it is unlikely that it is possible to attribute the estimated effects to the postponement of births for families who expected such a policy change. The magnitude of the estimated effects is also striking. From the perspective of a young family in Quebec, the new benefit might have seemed like a major change. Nonetheless, from a Swedish perspective it makes sense to compare the level of the benefit with the universal child allowance (*barnbidrag*). A third child in Sweden entitles the parents to child allowance at a much higher level than in Quebec. In Quebec, the benefit for a third or more child was C$1600 a year for altogether five years. In Sweden the annual child allowance is higher than that and paid until the child reaches (at least) the age of 16.

An important reservation with regard to the study is, however, that it is impossible to tell with reasonable certainty whether the effect was a transitory one on the spacing of children, or a permanent one on the final level of completed fertility. Milligan reports some sensitivity in his analysis suggesting that the effect is mainly permanent, but ends with a final reservation that a firm conclusion would require a longer follow-up period than he had at his disposal.

Longer parental leave in Austria

In their study, Lalive and Zveimüller (2005) exploit a sudden and unexpected policy change that was implemented in Austria on July 1, 1990 and that extended the maximum duration of parental leave by one year from the child's first to its second birthday. Parental leave in Austria was at this time a universal flat rate transfer corresponding to about 31% of the

median earnings of female workers. Since the benefit was not subject to tax, the actual net replacement rate was above 40%. Women taking parental leave for the first time had to have worked for at least 52 weeks during the two years prior to the birth. A specific feature of the system was also the possibility of automatically renewing parental leave if the mother was still on leave with a previous child. The rules before July 1, 1990 implied that such an automatic renewal required that a subsequent child was born within one year plus 14 weeks after the previous one. Obviously, that was in practice very difficult for biological reasons. After the policy change, however, this period was extended to two years plus 14 weeks, a clearly feasible period of time. The policy change generally made parental leave more attractive but also enhanced the incentives to space children more closely.

The analytical approach taken by the authors is to compare the fertility outcomes between a control group of those who had a child in June 1990, and a treatment group of those who had a child in July 1990. There are three strong advantages to using this comparison to infer the causal effect of the policy change. First, the two groups were very equal in background characteristics, a fact that is also documented in the paper. Second, members of both groups knew nothing about the policy change when they were planning their childbearing, because it was very unclear until 3 months prior to the policy change whether and under what conditions it would take place. Third, the two groups experienced more or less the same environmental conditions after the policy change apart from the group that is the subject of the study.

When the authors followed up the fertility history of the women in the control and treatments groups they found that the probability of having an additional child within the following three years was 4.9 percentage points (or 15 %) higher in the treatment group and 3.9 percentage points higher within the following ten years.

It is important, however, to stress that the analytical design implies that the study's reported estimates are only informative about the causal effect created by the automatic parental leave renewal. Both the control and the treatment groups were eligible to two years of parental leave if the mother decided to fulfil the special working conditions in between the two births. Thus there is also the direct effect of the extension of parental leave that might add to the total effects of the policy change.

In conclusion, this study has a very convincing design. One limitation is that the reported effect is only a lower bound of the total effect of the policy change, but since this lower bound is quite substantial the results

are striking nonetheless. Another limitation is that the study is restricted to Austrian women working in the private sector.

Day care in four countries

Kravdal (1996) adds municipality-level data on the availability of day care places to a Norwegian micro data set. He estimates separate models for first, second and third-birth probabilities with this availability variable along with a set of control variables. He convincingly argues that the policy variable of interest is determined jointly with other explanatory variables such as the aggregate employment rate for women at the municipal level, and that these variables in turn could both affect and be affected by fertility. Thus, the variation exploited in the study cannot be regarded as truly quasi-experimental. The estimated results are that the availability variable is insignificant when all the controls are used in the regression equation. Kravdal is very cautious about the interpretation of these results.

A study on West German data and one on Italian data have been carried out in much the same spirit as Kravdal's study on Norway; regional variations in the availability of childcare slots are added to panel data on individuals. Kreyenfeld and Hank (2003) find no effects of the variations between municipalities in the availability of state-run childcare in their study on West Germany. They argue, though, that one reason could be that Kindergarten care in Germany is only part-time care and no solution for a mother who wishes to work full time. Del Boca (2002), however, finds some impact on fertility in Italy with a similar approach. However, neither of these studies carries out the same control for the female aggregate employment rate as Kravdal does, so a great deal of caution is called for when interpreting the results.

Andersson, Duvander and Hank (2004) exploit regional variations in the price, quality (measured as child-to-staff ratio) and availability (places per 100 children) of childcare between Swedish municipalities in 1996 and 1997. Using micro data on all couples with at least one common child, they estimate models of second and third-birth probabilities on childbearing in 1997 and 1998 with the three childcare characteristics alongside some personal characteristics as explanatory variables.

The estimates imply very small and statistically insignificant fertility differences between couples living in municipalities that scored high or low on prices, quality and the availability of childcare. Although, the study was carried out at a time when municipalities had been given the freedom to go in different directions regarding price and the quality of day care, the basic variation in the three policy variables was rather low. As emphasised

by the authors, this might explain the lack of significant results. It might also be that it is difficult for parents to evaluate the quality of day care properly, or that their notion of quality is not a simple function of the child-to-staff ratio. Thus one cannot, from this study alone, rule out that more marked variations in childcare provision may bring about changes in fertility.

4.5 Before-after variation in micro data

To simply rely on the before-after dimension in family policy might at this stage appear as a rather naive approach. We have seen that even studies that exploit variation in more dimensions than that face problems and need reservations of various kinds when the policy conclusions are formulated. However, some convincing results have been generated using this approach combined with more detailed information on fertility patterns.

The most common approach to studying fertility patterns employed by demographers is the use of longitudinal data on women that describe their birth history over time. Such data are particularly appropriate for estimating the propensity to move from one parity to the next. For example, such studies yield estimates on the propensity for one-child mothers to have their second child and for two-child mothers to have their third child and so on. These propensitieis are also estimated as a function of time so that one can see how the propensity to have another child evolves over time.

Speed premiums in Sweden and Austria

In order to study the impact of the change in the rules on parental leave benefits that created the so-called speed-premium, researchers have estimated such propensities for samples of women before and after the changes in the rules that create such premiums.

Hoem (1993) is the seminal study, and he investigates the evolution of Swedish women's propensities to have a second, third and fourth child over the years when the changes in the rules governing parental leave benefits created a speed premium on further childbearing. The basic result is that the propensity to have a further child increased strongly after the change in the rules. Even more, the increase was particularly strong within the time limit needed to benefit extra from the benefit.

Subsequent analysis of Swedish data by Andersson et al. (2006) has looked at socio-economic differentials in such effects. They find them among native women at all educational levels, but not among immigrant women.

Hoem et al. (2001) employ similar statistical techniques to estimate the propensity to have a third child in Austria. The analysis covers the period with the changes in the rules for parental-leave benefits that was also analysed by Lalive and Zweimuller in their study discussed above. They find a clear and statistically significant pattern that the spacing of the third child became closer after the changes that created a so-called speed premium.

Although these studies in one sense are simple before-after comparisons of fertility patterns and in this respect are quite simple, they offer additional credible evidence that the spacing of fertility is affected by the economic incentives created by the rules in the parental leave systems. The authors have found a very specific change from before to after the changes in the rules, and it is hard to point at any other specific factors that might have caused the changes. In particular, in combination with the cross-national differences in spacing reported above, the conclusion that spacing is affected by economic incentives appears very solid.

5 CONCLUSIONS

So what are the summarizing conclusions about the impact of family-friendly policies on fertility patterns and fertility rates? A first and rather firm conclusion is that economic incentives such as those created by modern family policies really have an impact on fertility behaviour. There is rather compelling evidence that suggests that there is "at least" an effect on the *spacing* of childbearing. When policies have been changed in such a way that the closer spacing of children has become more advantageous, researchers have generally found marked responses in data on child spacing. For example, when the rules concerning the renewal of parental leave benefits in Sweden and Austria were changed to make it easier to maintain a high benefit level without qualifying with a long spell of full time work, researchers found a clear change in micro data on the time intervals between subsequent births. The patterns in micro data clearly changed from *before* the policy change until *after*. Cross-national data for the Nordic countries also reveal a reduction in the time interval between subsequent births for the cohorts who were fully affected by the new rules; it was not possible to find the same reduction as in Sweden in the other Nordic countries whose policy otherwise had become quite similar to Sweden's. Finally, two convincing natural experiments, in which policies had been changed in a way that generated comparable *treatment* and *control* groups, suggest strong responses to incentives to space children more closely.

The available evidence regarding effects on the fertility *level* is more uncertain, however, and a summary of this evidence must be attached with more reservations. This is not to say that the available evidence suggests small effects on the level of fertility. Rather the opposite, the effects appear to be quite substantial. We report three different pieces of evidence that support the claim that the impact might be quite substantial. First, the experience of the Nordic countries is consistent with the view that the difference between the generous family policy packages of these countries and the less generous ones in other North European countries accounts for a roughly 0.4 difference in fertility levels. Most strikingly, completed cohort fertility rates of Swedish women born starting from in the last century through to 1962 were very stable at around 2.0 without any decline as in continental Europe. The corresponding rates in Denmark, Finland and Norway fell in cohorts born around 1930 to the early 1950s but have been stable since, also around 2.0. The introduction of family policies has perhaps prevented the decline in the Nordic countries.

While the experience of the Nordic countries is mainly like one (or four) single cases to which it is impossible to attach any conventional statistical significance levels, some econometric studies that have used a larger number of countries (around 20) in combination with time-series data on each country's fertility rates and family policies, allow us to make such a statistical inference. These studies have also produced estimated coefficients for the family variables included that imply statistically significant differences in fertility rates between countries with a generous family policy with those with a less generous one. Furthermore, the estimates imply that the effects are of a substantial economic magnitude. The essence of these combined cross-national and time-series econometric models is that they identify the estimated effect of a specific family policy from the correlation between on the one hand the changes over time in the generosity of family policy and on the other the changes over time in fertility rates. It might, of course, be that the changes in the family policy variables included pick up effects of something else, or even of other family policies than those included. It might also be that some countries responded to a temporary dip in annual fertility rates, for example due to a delay in childbearing, by expanding its family policy. The natural recovery of fertility rates might then erroneously be attributed to family policy. It is hard to evaluate these weaknesses of the cross-national approach, so the best you can do is to take the estimates at face value. Thus we are able to conclude that they add to the evidence provided by the simple Nordic vs. continental Europe comparison, albeit that the Nordic countries contribute to the estimates as well.

The evidence from the two convincing natural experiments mentioned above in this concluding section also suggests quite a strong effect on the level of fertility. The author of the Canadian study, however, makes the reservation that it is still too early to say with a great degree of certainty that the fertility level was also affected.

Finally, you might wonder what these studies have to say about specific policies. If a country is considering extending its family policy or introducing new ones in order to stimulate its fertility rates, what policy design offers most "bang for the buck"? Does research suggest any specific policy instruments, or is it the whole policy package – a specific family policy model – that is important. Indeed, the Nordic package of childcare and parental leave is often considered a specific family policy model with an emphasis on helping both parents combine parenthood with a long-term attachment to the labour force. No doubt there are strong a priori reasons for believing that the effects of various policies interact in such a way that

the presence of one policy makes another one more (or less) effective in raising fertility. Thus it might be that the seemingly strong fertility effects of the family policy model adhered to in the Nordic countries are the total effects of a set of policies that complement each other in a useful way (fro at perspective of raising fertility). Furthermore, some scholars in the field, e.g. Neyer (2006), strongly argue that the effect of a specific policy depends on the institutional setting into which it is implemented.

It is definitely worthwhile bearing such arguments in mind when you consider alternative policies, and they call for care if results of a study in one country are going to imported to another country with a different history and cultural background. Nonetheless, the most compelling evidence suggesting that economic incentives have an impact on fertility behaviour comes from isolated changes in one specific policy instrument. In Quebec, an increase in child benefits for the second and subsequent children had a strong impact. In Austria, extended parental leave benefits also had a strong impact. And in Sweden, the change in a rule for parental leave enabling parents to retain their benefit level between the birth of two children without another spell of full time work had a strong impact on the spacing of children and maybe also on the level of fertility. Thus it makes sense that a country, which believes that family policy might spur its fertility, should look for the specific instrument(s) that appear feasible and reasonable in that particular country. The fact that three studies out of four on the impact of day care on fertility indicate insignificant effects does not change this conclusion, or rule out childcare as a useful instrument. The four day care studies have namely not been able to use any strong quasi-experimental variations in day care quality or availability.

The interaction of alternative policies may also be important in other respects than the impact on the fertility level. For example, there are a number of policies that make it advantageous for Swedish families to postpone their childbearing until they have a stable and good job. Furthermore, it is probably these policies in combination that make Swedish fertility rates sensitive to the business cycle and thus create swings in the fertility rate. It is also likely that the combination of policies that constitute a country's family policy is important for the overall effects with respect to areas other than fertility, such as gender equality in the labour market. But that is another story that deserves a report of its own.

6 SAMMANFATTNING PÅ SVENSKA

Längre livslängd och fortsatt låga födelsetal bidrar till åldrande befolkningar i de flesta länder i Europa. Detta, i kombination med fortsatt relativt låga pensionsåldrar, sätter press på de offentliga finanserna.

En av flera föreslagna åtgärder för att motverka denna utveckling är att satsa på en generös familjepolitik som stöder familjer med barn på olika sätt: föräldrapenning, subventionerad barnomsorg och barnbidrag. Syftet med denna rapport är att kritiskt granska den vetenskapliga empiriska forskningen kring vad vi vet om effekten på födelsetalen av satsningar på en sådan politik. Den centrala frågan är om ett land som satsar på mer omfattande politik av sådant slag i det långa loppet kan förväntas få högre födelsetal. Vi har också granskat familjepolitikens effekter på födelsetalens stabilitet över tiden och hur tätt föräldrar skaffar barn beroende på utformningen av familjepolitiken.

En första tämligen säker slutsats är att ekonomiska incitament inom familjepolitiken verkligen påverkar beteendet hos föräldrar. Beläggen är starka för att åtgärder som gör det mer lönsamt att skaffa barn i tät följd har effekter. När reglerna ändrades i Sverige och Österrike så att det blev mer fördelaktigt att skaffa barn tätt, kunde man avläsa ett förändrat mönster i data över födelsetalen. Likaså visar en jämförelse mellan de nordiska länderna att barnen föddes tätare i just Sverige när detta blev mer lönsamt. Detta skedde dock inte i Danmark, Finland och Norge. Även förändringar i politiken i Kanada har gett trovärdiga belägg för effekter av detta slag.

Underlaget för att uttala sig om effekterna på födelsetalens nivå är något mer osäkert. Detta betyder dock inte nödvändigtvis att den befintliga forskningen tyder på små effekter. Tvärtom, om vi utgår från resultaten från befintliga studier blir bedömningen snarast att effekterna kan vara tämligen stora. För det första visar en jämförelse mellan de nordiska länderna, samt en jämförelse mellan de nordiska länderna och övriga europeiska länder, att skillnaden i födelsetal mellan länder med en omfattande familjepolitik och länder med en mer genomsnittlig sådan, kan vara i storleksordningen 0,4 barn per kvinna. För det andra visar även ekonometriska studier som relaterat födelsetalens utveckling till utvecklingen av familjepolitiken under flera decennier i flera länder, att effekterna är relativt stora. För det tredje visar erfarenheterna av två plötsliga och kraftiga förändringar av politiken – vad forskare ibland kallar för naturliga experiment – att effekterna kan vara stora. De två sistnämnda studierna är från Kanada respektive Österrike.

Frågan är vad forskningen har att säga om olika specifika familjepolitiska åtgärder. Är några sådana särskilt effektiva, eller är det i första hand frågan om att hitta den rätta kombinationen av föräldraledighet, barnsomsorg och generella barnbidrag med mera? Allmänt sett finns det anledning att tro att olika åtgärder samverkar med varandra så att effekterna inte bara är summan av effekterna av olika åtgärder. Man kan fråga sig om den ”nordiska modellen” med en kombination av föräldrarförmåner som knyts till tidigare arbetsinkomst och subventionerad barnomsorg har särskilt stora effekter på födelsetalens nivå.

Även om det finns anledning tro att åtgärderna samverkar på olika sätt så är det anmärkningsvärt att även förändringar av enskilda åtgärder – som av flerbarnstillägg i Kanada och föräldraledighet i Österrike – uppenbarligen haft påtagliga effekter på födelsetalen. Därför borde det finnas stort utrymme för enskilda länder att utveckla de familjepolitiska åtgärderna så att de passar landet i fråga bäst.

När det gäller samverkan mellan olika åtgärder är det dock troligt att det är helheten i den svenska politiken – med starka ekonomiska incitament att först etablera sig på arbetsmarknaden och sedan skaffa barn – som bidrar till att Sverige är ensamt om att ha tydliga arbetsmarknadsrelaterade fluktuationer i sina födelsetal. I övriga europeiska länder är födelsetalen relativt stabila över konjunkturcykeln.

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The old age dependency ratio in the EU is projected to increase from 25 percent in 2005 to 54 percent in 2050. This is the result of an increased life expectancy and lower fertility rates. The strain this will put on public finances is one of Europe's main economic challenges. However, fertility rates vary widely between European countries and in cross-country studies generous family policies are associated with about a 0.4 increase in fertility rates. This raises the question whether family policy can alleviate the problems of an aging population or not. To answer this question we need to know if there is a causal effect of family policy on fertility, or only a correlation between the two. This report offers an up-to-date overview of the best evidence available on this issue.

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