

The impact of family policies on fertility in industrialized countries: a review of the literature

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Abstract This paper examines the theoretical propositions and empirical evidence linking policies and fertility. More specifically, the analysis presented in this paper draws attention to the complex mechanisms that theoretically link policies and demographic outcomes: mechanisms that involve imperfect information and decisions that are rationally bound by very specific circumstances. As to the empirical evidence, studies provide mixed conclusions as to the effect of policies on fertility. While a small positive effect of policies on fertility is found in numerous studies, no statistically significant effect is found in others. Moreover, some studies suggest that the effect of policies tends to be on the timing of births rather than on completed fertility.

Keywords Demography · Fertility · Public policy

Introduction

Public policies have an undeniable effect on families. Among other things, they regulate the conditions of employment, define eligibility to welfare benefits, provide education and health services, and define the rights and responsibilities of parents. Public policies thus shape family life in defining rights, responsibilities, opportunities, and constraints. Yet public policies have been claimed to have a much more pervasive effect on families. They have been claimed to be encouraging some types of family structures over others, and to be providing incentives or disincentives to cohabit, marry, divorce, and to have children in or outside wedlock. For instance, according to Popenoe (1988), generous social and welfare policies have destroyed

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traditional family values, have encouraged nontraditional family forms, and have thus contributed to the decline of families.

The links between public policies and demographic behavior are, however, very complex. They depend on the type of policies, the levels of benefits, the conditions of eligibility, and the income and opportunity sets of individuals, as well as the norms, stigma, and sanctions associated with the receipt of benefits. Isolating the impact of social and welfare benefits on demographic behavior (from other determinants) is therefore a difficult exercise, and not surprisingly, one that has led to contradictory findings.

This paper reviews the theoretical premises and empirical evidence linking policies and demographic behavior. As such, the paper expands and updates the reviews by Chesnais (1996), Demeny (1987), Gauthier (1996), Hecht and Leridon (1993), McNicoll (1998) and Sleebos (2003). Because of the vastness of this field of research, I confine the discussion to the impact of policies on fertility. I consequently leave aside the impact of policies on other demographic phenomena including marriage, divorce, immigration, and mortality. I also leave aside the impact of policies on fertility in the context of high fertility. As to female labor force participation, I examine it as an intermediate mechanism in the process linking policies and fertility.

As to the type of policies covered in this paper, I restrict the review to policies directly targeted at families with children such as direct and indirect cash transfers for families with children, means-tested child welfare benefits, maternity and parental leave benefits, and childcare facilities and related subsidy programs.¹ I thus exclude other labor market policies, monetary and fiscal policies, education policies and subsidies, social security policies, family law, etc., even though some of these policies (including policies without a specific demographic target) may potentially affect demographic behavior (see Ermisch 1986).

The paper is divided into four main sections. In Section 1, I discuss the theoretical framework at the basis of the analysis of the impact of policies on families. In Section 2, I review the empirical literature on the impact of policies on fertility, focusing on studies that have relied on public opinion data and on descriptive statistical analyses. In Section 3, I then move to the review of multivariate analyses, first focusing on the impact of cash benefits on fertility, and then on the impact of work-related policies. In Section 4, I conclude the paper by reflecting on various methodological issues and by identifying future avenues of research.

Theoretical framework

In their analysis of the determinants of below-replacement fertility, Rindfuss and Brewster (1996) argue that: “insofar as labor force participation acts as a constraint on fertility, we would expect fertility to rise in response to any easing of the worker-mother conflict” (p. 263). By extension, they furthermore argue that: “We would

¹ I use the term family policies to encompass these different types of policies. However, one should bear in mind that very few countries have in place an explicit and comprehensive family policy. Instead, the responsibility for these various policies tends to be scattered across various ministries or departments.

expect, other things being equal, that improvements in childcare availability, acceptability, and quality, and decreases in its cost would have a positive impact on fertility” (p. 271). At the core of these hypotheses is the assumption that childbearing is a rational decision, and that parents weigh the costs and benefits of having children against their income, career expectations, own standards concerning the quality of care for children, etc.

Variants of rational choice theory, including the new home economics theory, have in fact been used by most authors to study the relationship between policies and fertility. Thus, according to the neoclassic economic theory of fertility, the decision to have a child is subject to an economically rational decision (a utility maximization process), and is a function of the economic cost and benefits of children, subject to an income constraint and to individuals’ preferences for children (as opposed to other goods). According to this model, any reduction in the cost of children (as a result of public subsidy) or any increase in income (as a result of transfer payments) is therefore expected to increase the demand for children (Becker 1981; Cigno 1991). Policies such as child and family cash allowances, tax relief for children, subsidies to childcare, and maternity and parental leave benefits are consequently all expected to have a positive impact on fertility by reducing the direct or indirect (opportunity) cost of children or by increasing individuals’ income.

This economic model has been very influential in the literature and is at the core of the assumed relationship between policies and demographic behavior.² It relies however on five key assumptions; each having potential implications for the relationship between policies and fertility, and each possibly explaining some of the unexpected or inconsistent findings in the empirical literature.

First, while in its original formulation an increase in income was expected to result in an increase in the demand for children (i.e., the number of children), as discussed by Becker and Lewis (1973), an increase in income may alternatively result in children of higher quality (i.e., higher cost). The consequence for policies is important as it suggests that a measure, such as a child benefit, while increasing income, may not necessarily result in an increase in fertility. For instance, a parent who is receiving monthly child benefits for his/her only child may decide to use this money to buy more expensive toys or clothes or to send the child to a higher quality childcare instead of having a second child.³ As will be seen in the empirical section of the paper, this quality–quantity tradeoff may explain why cash benefits are usually found to have a very small impact on fertility.

The second assumption behind the economic model of fertility is that individuals make the decision to have or not to have children based on full information on the cost and benefits of various alternatives. This assumption has been questioned by

² From the onset, the economic theory of fertility has also been criticized for its consumerist view of children. The discussion of this aspect of the theory is beyond the scope of the paper. For more information, see Blake (1968).

³ The model is unclear with regard to the actual sequencing of events. In the above case it could be argued that the individual had a first child knowing that by becoming parent he/she would start receiving child benefits. Alternatively, it could be argued that once the individual has a child and is receiving benefits, he/she could decide to have a second child because he/she is already receiving benefits.

numerous scholars on the basis that it is doubtful that individuals have full information concerning the cost and benefits of children (Goldthorpe 2000).⁴ Imperfect information is more likely to be the case. Consequently, more recent variants of rational choice theory have relaxed the full information requirement, and have formulated a “milder” requirement, namely, that individuals make their decisions based on the situational information available to them, regardless whether or not this information is accurate or complete (Goldthorpe 2000). For example, it could be argued that individuals make their decisions to have or not to have children based on the perceived cost of children, which may not necessarily correspond to the actual cost of children. While rational choice theory may easily accommodate the relaxation of the information assumption, the consequence for the possible impact of policies is unclear: it may increase the impact of cash benefits if individuals are underestimating the real cost of children (cash benefits may appear to be more generous than they actually are), or it may decrease the impact of cash benefits if individuals are overestimating the real cost of children.

The third assumption is that having a child, marrying, or divorcing is the result of an economically rational decision. Again, scholars have questioned this assumption and have framed it in more general terms. As argued by Goldthorpe (2000), an action may be rational “simply in the sense of being ‘appropriate’ or ‘adequate’ given actors’ goals and given their situation of action which is taken to include their beliefs” (p. 120).⁵ If this is the case, the actual level of child benefits, or the actual duration of parental leave, may not necessarily be assessed at face value by individuals (in terms of their dollar amount), but may be assessed more generally in terms of whether or not they are adequate or sufficient to allow them to reach their goals (for example, family size goals and/or career goals). It is not clear a priori whether such a decision-making process would increase or decrease the possible impact of policies, but it is likely to introduce some noise in the relationship between policies and fertility (because individuals will vary in their perception of what constitute adequate benefits).

Fourth, in its original formulation, the economic model of fertility assumed that policies can impact fertility by reducing the cost of children or by increasing income. Preferences for children, in this model, are taken for granted and are not seen as being potentially influenced by policies. Recent work on the formation of preferences has however questioned this assumption and has instead stressed the importance of factors such as peers, neighbors, habits, traditions, and publicity in the formation of preferences and values (see, for example, Becker 1996; Becker and Murphy 2000). Drawing from this work, it could be posited that certain types of family policies (e.g., cash bonus) may be influencing fertility by valorizing children, and thus by influencing individuals’ preferences for children. Similarly, policies

⁴ Goldthorpe (2000) does not raise the issue of imperfect information in the context of fertility decision. His argument applies generally to rational action theory.

⁵ In the case of teenagers, this may mean that having a child may be a rational decision, not in economic terms, but because it provides the teenage mother with a sense of personal worth and responsibilities, and may provide her with a higher status in her immediate neighborhood. This appears to be the case in some deprived communities. For example, the high teenage pregnancy rate in remote communities of Northern Canada has been linked with the perceived elevated social status of being a mother (George 2000).

such as parental leave may be influencing fertility by making it more socially and professionally acceptable to take time off to look after newborns.

The final assumption of the economic model of fertility is that preferences regarding children are homogeneous among household members. This unitary assumption has been questioned by numerous scholars who have instead proposed that preferences may differ among household members (Rasul 2002). Without entering into the details of the other theoretical models proposed, suffice it to say that the heterogeneity of preferences has potentially large implications on the effect of policies on fertility in allowing spouses to have different preferences for children and, by extension, different perceived costs of childbearing and different views about family, careers, etc. The gender theory proposed by McDonald (2000) makes a similar point in arguing that gender inequalities are responsible for countries' low levels of fertility. While this theory suggests that policies that promote gender equality could have an impact on fertility, it has not been systematically tested empirically.

It follows from the above discussion that family policies may therefore be posited to affect fertility through three different channels: through their influence on the cost of children (e.g., subsidies), individuals' income (e.g., cash transfers), and/or individuals' preferences. Such a model also allows for the possibility of "imperfect" information, noneconomic costs and benefits, and the role of societal or community norms and sanctions (see Goldthorpe 2000; Hechter 1994; Blossfeld and Prein 1998; Brewster 1994; Sucoff and Upchurch 1998). As will be seen below, it is not easy to test this model empirically, especially due to a lack of a consistent and comprehensive database on family policies.⁶

Empirical evidence I

I begin the review of the empirical literature by first examining the empirical evidence linking policies and fertility, which is based on public opinion data and descriptive statistical analyses. While these studies are based on relatively simple methodologies (not controlling for other possible determinants of fertility), they continue to be widely cited in the literature as evidence of the positive impact of policies on fertility. In the next section, I then move to studies based on multivariate analyses.

Evidence based on public opinion data

The discrepancy between the ideal and the actual number of children has often been used to identify the window of opportunity of policies. People, it has been argued, have fewer children than what they considered as being ideal because of barriers to fertility, including the high cost of children and the incompatibility between family

⁶ It should be noted that numerous studies on the impact of policies on fertility do not discuss in detail their theoretical model and underlying mechanisms. Some of the complex mechanisms described above may account for some of the unexpected findings.

and work responsibilities.⁷ For example, Chesnais (1996) states that: “the gap between the ideal and the reality (in terms of number of children) demonstrates that public policies have failed to remove the obstacles to the realization of fertility desires” (p. 736). Relevant data collected in the European Communities in the late 1980s suggest that the gap between ideal and actual fertility is around 0.55 children per woman, a gap that has been interpreted by some scholars as the possible window of opportunities of policies (European Commission 1990). This line of argument is convincing, to some extent, when we consider the fact that the gap between ideal and actual fertility is highest in countries such as Greece and Italy, where limited governmental support for family is provided, and lowest in countries such as France with more supportive family policies. It is less convincing in view of numerous counterexamples, for instance, the fact that the gap between ideal and actual fertility is also low in the UK despite a much less supportive family policy than in France.

Obviously, there are well-known problems associated with the use of data on the ideal number of children in order to capture the possible impact of policies (Bongaarts 1998). Among other things, data on the ideal or expected number of children tend to be highly volatile (Goldberg et al. 1959; Westoff and Ryder 1977). Furthermore, when asked about the ideal number of children, people tend to refer to global norms and expectations rather than what they themselves consider as ideal (Livi Bacci 2001). In particular, responses to questions about the ideal number of children tend to cluster around the two-child norm, and very few people tend to report having zero or one child as the ideal. Interestingly, a recent study by Goldstein et al. (2003) reports evidence of the beginning of a decline in ideal family size below the two-child norm. This is important as it suggests that the window of opportunity that some saw in the gap between ideal and actual fertility may be decreasing.⁸

The other type of data that has been used to assess the possible impact of policies on fertility is public opinion on the perceived causes of low fertility and about preferred family policy measures. For instance, in a Eurobarometer survey carried out in 1989, about one third of respondents stated that reasons related to housing and childcare can influence fertility, and about one fifth gave reasons related to the level of child allowance (European Commission 1990). If inadequate policies are identified by respondents as the cause of low fertility, more generous policies could potentially motivate individuals to have an additional child, but there is no assurance in these data that it would be the case. Interestingly, respondents in the nine-country Population Policy Acceptance Survey carried out in the early 1990s were asked whether or not they would have an additional child if their preferred family policy measures were introduced. Results suggest that only one or two respondents out of ten would have another child if their preferred policy measures

⁷ For example, such an argument has been used in Japan to explain the gap between ideal and actual number of children (Japan Ministry of Health, Labor, and Welfare 1999). The gap between ideal and actual number of children was also noted in Switzerland although without reference to policies (Switzerland Statistics 1997).

⁸ Aware of the measurement biases associated with the use of fertility ideals, the data used by Goldstein et al. (2003) attempted at better distinguishing between perceived societal ideals and the respondents' own personal ideals.

were introduced, thus translating in an increase in fertility of 0.1–0.2 children per woman (Kamaras et al. 1998).⁹ This impact of 0.1–0.2 children per woman may in fact be a much more realistic estimate of the policies' window of opportunity than the 0.5–0.6 children per woman estimated on the basis of the gap between ideal and actual number of children.¹⁰

Evidence based on descriptive time-series analyses

The other type of studies that has attempted to assess the impact of policies on fertility is studies that have examined the historical trends in fertility in relation to the countries' policies. For example, the higher level of fertility observed in France as compared to other Western European countries in recent decades has been argued to be the result of France's higher level of support for families (Dumont and Descroix 1988). For example, fertility rates in France remained higher than those observed in Belgium and Germany, especially in the immediate post-World War II period. Between 1940 and 1999, France's total fertility has exceeded that observed in Belgium by an average of 0.2 children per woman. This figure matches that estimated by Ekert (1986), who concluded that the higher family benefits provided in France have resulted in a higher fertility of about 0.2 children per woman.

The case of Germany has often been cited as evidence of a positive effect of policies on fertility. The evidence lies in the fact that until 1976 the fertility rates in East and West Germany followed similar trends. But starting in 1977, the difference between them, which was until then negligible, began to increase to reach 0.4–0.5 children per woman. It is argued that the higher fertility observed in East Germany was the result of a series of family policy measures introduced from 1976–1977, including an extended maternity leave and a paid childcare leave (Chesnaï 1987; Vining 1984). More recent analyses carried out by Monnier (1990) and Buttner and Lutz (1990) confirmed the positive impact of the East German family policy package on fertility: an impact corresponding to an increase of roughly 20% of the total fertility rate. As noted by Buttner and Lutz (1990), part of this increase was however the result of earlier births rather than additional births, but the impact was still significant five to ten years after the implementation of policies. Interestingly, since the end of the socialist regime and the country's reunification, not only has the East German state support for families been substantially reduced, fertility has also plummeted to unprecedented low levels (Witte and Wagner 1995).

While the above examples provide convincing evidence of a positive impact of policies on fertility, other examples are less convincing. For example, fertility in Britain has been tracking very closely that of France in recent decades, despite a much less supportive family policy. Similarly, while the province of Quebec in Canada provides a much more supportive family policy than the other provinces, its

⁹ For a discussion of policy acceptance and their potential impact on fertility, see also Palomba et al. (1989).

¹⁰ Results from the second round of the Population Policy Acceptance Survey (PPA2) in Slovenia suggest a potentially larger impact of policies. However authors such as Stropnik (2001) have been critical of these results arguing that the hypothetical nature of the questions on policies make them an unreliable source of information to capture their potential effect on policies.

fertility has remained either at a level that is lower or equal to that of the rest of Canada since the mid-1960s—and this despite the adoption of a series of pronatalist measures from the late 1980s including a generous baby bonus for the second and third child. However, econometrics evidence discussed in the next section suggests that fertility in Quebec may have been even lower in the absence of policies (Milligan 2002). Of course, numerous other factors may explain the similarity in fertility trends in France and Britain, and the lower fertility in Quebec as compared to the rest of Canada. What these counterexamples suggest however is that cross-national and cross-provincial differences in policies do not completely match differences in fertility, and that other determinants of fertility have to be taken into account in order to isolate the impact of policies.

Evidence based on bivariate cross-sectional analyses

Cross-national differences in the level of state support for families provide a natural experiment to test the impact of policies on fertility. From a cross-sectional perspective, and using countries as the unit of analysis, some studies have shown a positive relationship between policies and fertility. For example, Finch and Bradshaw (2003) showed the relatively strong bivariate correlation between an index of child benefit package (which includes various cash benefits and tax relief for children) and the total period fertility rate for 2000, and between the child benefit package for a poor family and the total period fertility rate.¹¹ No statistically significant correlation was found however between the child benefit package for a large family and fertility. A series of bivariate correlation analyses between various policy indicators and fertility for twenty OECD countries by Castles (2003) revealed no statistically significant correlation between indicators of cash benefits and fertility but a statistically significant one with a composite index of work and family reconciliation policies.

The other piece of evidence provided in the literature in support of the thesis of a positive impact of policies on fertility has come from the bivariate correlation between female labor force employment and fertility. As has been documented in the literature, while this correlation was negative in the 1970s, it became positive in the 1990s. In other words, countries that display a high level of female labor force participation nowadays are also those that display a higher level of fertility (Brewster and Rindfuss 2000; Billari and Kohler 2004). This positive correlation between female employment and fertility runs counter to the economic model of fertility discussed earlier, which posits that when women are active in the labor market, they face a higher opportunity cost of children and should consequently have a lower fertility—unless of course their opportunity cost is reduced by specific policies. This is exactly what numerous authors have argued, namely, that the reversal of the correlation between fertility and female employment provides evidence that policies can ease the incompatibility between work and family

¹¹ The analysis was based on 17 OECD countries but excluded Austria, New Zealand, and the USA. While the reasons for excluding these three countries are unclear in the study, it is clear that their inclusion would have considerably altered (i.e., weakened) the correlation between fertility and policies.

responsibilities and can indirectly affect fertility (Rindfuss et al. 2003). Such a conclusion has however been refuted by Kogel (2004) on the basis of econometrics evidence. Using panel data techniques with data from 21 OECD countries over the period 1960–2000, he concluded that the negative relationship between fertility and female labor force participation persisted throughout the period. The apparent reversal in sign was instead explained by “the combination of country effects and country-heterogeneity in the magnitude of the negative time-series association” (p. 50). And while the time-series association between fertility and female labor force participation appeared to have weakened in some countries after 1985, he nonetheless concluded that “changes in public policies or labor market developments cannot have caused that a rising female labor force participation increases the total fertility rate within countries over time” (p. 47).

To summarize, while descriptive styles of studies provide some evidence of a positive impact of policies on fertility, and while they have been widely cited in the literature, their lack of statistical controls for other determinants of fertility make their case much less reliable. In the next section, I turn to studies based on multivariate statistical analyses in an attempt at better isolating the impact of policies on fertility from other possible determinants.

Empirical evidence II

I first review the literature regarding the impact of cash benefits on fertility, and then review the literature regarding the impact of work-related benefits (e.g., parental leave and childcare). The studies reviewed here use either macro-level or micro-level data. And as will be seen, although most of these studies suggest a positive relationship between policies and fertility, the impact tends to be small.

The impact of family cash benefits on fertility

I begin with studies based on macro-level data, that is, studies that exploit cross-national and/or historical variations in family policies in order to assess their impact on fertility.¹² These studies are summarized in Table 1. They typically use a global measure of fertility, such as the total period fertility rate, as the dependent variable and various independent variables including specific policy indicators, male and female wages, etc. All of the studies listed in Table 1 have concluded that there is a positive impact of policies on fertility, that is, higher family or child benefits are associated with higher levels of fertility. This is the case for studies based on a cross-national design, and for those based on a single-country design. Family cash benefits, such as family and child allowances and tax credit for dependent children, appear to have a positive impact on aggregate indices of fertility. This impact tends however to be small. On the basis of a pooled time-series and cross-national dataset,

¹² There is a large literature (mainly American) on the impact of means-tested benefits on teenage fertility, births outside wedlock, and births by welfare recipient mothers. I am not covering this subtopic here. Interested readers are referred to Duncan and Hoffman (1990), Plotnick (1990), Tanisha Dyer and Fairlie (2005) and Joyce et al. (2005) for more information.

Table 1 Overview of studies on the impact of policies on fertility—Macro-level (aggregate) data—Cash benefits and general indices of family policy

Country	Authors (year)	Data	Methods of analysis	Dependent variable	Policy variables	Findings
International	Gauthier and Hatzius (1997)	Official statistics, 22 OECD countries, 1970–1996	Pooled cross-national and time-series regression	Total period fertility rate	Family cash benefits	Small positive effect of cash benefits on fertility
International	Castles (2003)	Official statistics, 21 OECD countries, 1998	Correlation and ordinary least squares regression	Total period fertility rate	Various measures of family policies	The average level of formal childcare has a positive impact on fertility
International	Blanchet and Ekert-Jaffé (1994)	Official statistics, 11 Western European countries, 1969–1983	Ordinary least squares regression and two-stage least squares regression	Total period fertility rate	Index of family policy	Positive and significant effect of family policy on fertility
International	Ekert (1986)	Official statistics, 8 Western European countries, 1971–1983	Ordinary least squares regression	Total period fertility rate	Index of family policy	Positive effect of family policy on fertility
Canada	Brouillette et al. (1993)	Survey of consumer finances, 1985–1988	Maximum likelihood method	Conditional fertility probabilities	Direct and indirect cash transfers to families	Direct and indirect cash transfers to families have a positive but small effect on fertility
Canada	Zhang et al. (1994)	Official statistics, 1971–1983	Generalized least squares	Total period fertility rate	Tax exemption, child tax credit and family allowances, maternity leave	Tax exemption, child tax credit and family allowances have significant positive effects on fertility
Canada	Duclos et al. (2001)	Vital statistics and Survey of Consumer Finances, 1981–1997	Ordinary least squares	Proportion of women giving birth to a first, second, or third child	Cash benefits measured indirectly through a dummy variable for the province of Quebec	Cash benefits have an effect on fertility transition rates. However, it is unclear whether the effect is on the tempo of fertility or on the total family size
Germany	Buttner and Lutz (1990)	Official statistics, 1964–1987	Age-period-cohort analysis	Age specific fertility rates	Promaternalist policy introduced on 1976	Statistically significant positive effect of policy on birth rate up to 5 years after implementation

Table 1 continued

Country	Authors (year)	Data	Methods of analysis	Dependent variable	Policy variables	Findings
Sweden	Walker (1995)	Official statistics, 1955–1990	Time-series analysis	Total period fertility rate	Sweden's social insurance programs	Parental benefits, public child care availability, and child allowances have reduced the price of fertility since the early 1970s and thus, had a pronatalist effects. However, these effects were small compared to the larger and negative effects of trends in female wages and return to human capital
Sweden	Bjorklund (2006)	Official statistics, cohort born 1917–1958	Difference-in-differences approach	Completed cohort fertility rate	Overall measure of family policy measured indirectly by comparing Sweden's fertility rates with those of other countries	Positive effect of family policy on fertility, although stable fertility for women born 1930-60 could be explained by other factors
UK	Ermisch (1988)	Official statistics, 1971–1986	Time series regression	Parity- and age-specific birth rates	Child allowances	More generous child allowances increase the chance of third and fourth births, and also encourage early motherhood
USA	Georgellis and Wall (1992)	Official statistics, 1913–1984	Generalized least-squares method	Birth rate	Real tax value of dependent exemption	Tax exemption has a positive impact, but small, on fertility
USA	Whittington et al. (1990)	Official statistics, 1913–1984	General least-squares regression	General fertility rate	Real tax value of the personal exemption	Personal exemption has a positive and significant effect on the birthrate

Blanchet and Ekert-Jaffé (1994), for instance, estimate the impact of family policies to be 0.2 children per woman. Using a similar research design, Gauthier and Hatzius (1997) estimate that a 25% increase in family allowances would result in an increase of the total fertility rate of 0.07 children per woman.

Very importantly, studies using macro-level data have furthermore concluded that the impact of policies on fertility is most likely on the timing of births rather than on the total number of children. For example, Ermisch (1988) using data on age- and parity-specific fertility rates, found that more generous child allowances in Britain increased the likelihood of higher-parity births, but also encouraged young motherhood. A tempo effect of policies was also observed in Sweden by Hoem (2005) and Andersson et al. (2006) with respect to parental-leave allowance. According to Lutz and Skirbekk (2005), such a tempo effect of policies should not be neglected. Instead, they argue that policies that may increase the period fertility rate may also eventually have an indirect effect on cohort fertility. This hypothesis has not been tested empirically in the literature, especially its connection to a possible threshold effect, the so-called “low fertility trap” (Lutz and Skirbekk 2005).

Studies based on micro-level data have also generally concluded that policies have a positive impact on fertility (see Table 2). The results are, however, more complex, showing varying impact of policies by birth order. For example, a comparison of French and British family policies by Ekert-Jaffé et al. (2002) showed that the French family policy appears to have a positive impact on the probability of a third birth. In contrast, a study by Laroque and Salanie (2004) based on Labor Force Survey data concluded that cash benefits in France have an effect on the probability of having a first birth but not on the probability of having a third one. Inversely, a study of the impact of the Finnish child home care allowance concluded that the take-up of the allowance increases the probability of having a third birth, but not a second one (Vikat 2004). I have already referred to the case of the province of Quebec with its generous family policy. The study by Milligan (2002) and based on census data revealed that the cash benefits offered in Quebec significantly increased the probability of having a second child. Interestingly, while the strong support provided to large families in France could be viewed as evidence of the positive impact of policies, counterexamples are significant. As pointed out by Breton and Prioux (2005), proportions of births of parity three and above close to the French ones were also observed in Finland, Norway, Sweden, and the UK—despite policies targeted at large families.

These results are obviously complex and likely reflect differences in the nature and design of policies by birth order (e.g., level of benefits, eligibility criteria) but possibly also differences in the processes associated with the decision to have a first, second, or third child, including the cost of birth of different parities.

The impact of work-related policies on fertility

Studies summarized in Table 3 use fertility as the dependent variable; as independent variables they use various work-related policies such as maternity or parental leave and childcare characteristics. All of these studies, with one exception,

Table 2 Overview of studies on the impact of policies on fertility—Micro-level—Cash benefits and general indices of family policy

Country	Authors (year)	Data	Methods of analysis	Dependent variable	Policy variables	Findings
Canada	Milligan (2005)	Canadian 1991 and 1996 Census Public Use Microdata Files on Families	Probit regression	Presence of a child under the age of six	The Allowance for Newborn Children measured indirectly through a dummy variable for the province of Quebec	The cash benefits increases the probability of having a second child by 20.5 percentage point
Finland	Vikat (2004)	Register data, 1988–2000	Proportional hazard model	Probability of first, second, and third birth	Child home care allowance	The take-up of child home care allowance is related to a higher risk of third birth but not to a second-birth risk
France	Laroque and Salanie (2004)	Enquête Emploi (Labor Force Survey) in January, 1999–2000	Log-likelihood function and probit model	Probability of giving birth	Cash benefits	Cash benefits have an effect on the probability of having a first birth, but not the probability of having a third birth
France	Laroque and Salanie (2005)	Enquetes Emploi (Labor Force Surveys), 1997, 1998, 1999	Full information maximum likelihood	Probability of first, second, and third birth	Cash benefits	Cash benefits have an impact on all parities, but especially for parity 2 and higher
France and UK	Ekert-Jaffé et al. (2002)	France: INSEE échantillon démographique permanent (EDP); UK: ONS Longitudinal Study	Logistic regression	Probability of first, second, and third birth	Overall family policy measured indirectly by comparing French and UK probability of birth	The French family policy appears to have an impact on the probability of a third birth

Table 2 continued

Country	Authors (year)	Data	Methods of analysis	Dependent variable	Policy variables	Findings
Sweden and	Hungary	Oláh (2003)	Swedish Survey of Family and Working Life of 1992/93 and Hungarian Fertility and Family Survey of 1992/93	Piecewise-constant proportional-hazards model	Probability of second birth	Overall family policy measured indirectly by comparing Swedish and Hungarian probability of birth
Couples who share	family responsibilities more equally have higher second-birth intensity than others in Sweden					
UK	Cigno and Ermisch (1989)	1980 Women and Employment Survey	Ordered probit model	Completed fertility	Tax and child benefits	Increases in women's hourly earnings net of tax reduce birth rates, higher child benefits raise completed fertility

Table 3 Overview of studies on the impact of policies on fertility—work-related policies (maternity and parental leave and childcare)

Country	Authors (year)	Data	Methods of analysis	Dependent variable	Policy variables	Findings
<i>Macro-level data</i>						
Sweden	Hoem (1993)	Official statistics 1961–1990	Indirect standardization	Parity-specific birth rate	Parental leave policy	Positive impact of policies on the total fertility rate
Canada	Hyatt and Milne (1991)	Official statistics, 1948–1986	Ordinary least-squares regression	Total period fertility rate (log)	Maternity benefits	Maternity benefits have a significant but small effect on fertility. A 1% increase in maternity benefits would result in a 0.26% increase in fertility
<i>Micro-level data</i>						
Austria	Hoem, Prskawetz, and Neyer (2001)	Austrian Family and Fertility survey, 1995–1996	Hazard regression	Probability of third birth	Parental leave	No overall effect of changes in parental leave on fertility apart from an increase in the tempo of third births following the changes in parental leave in the mid-90s
Austria	Lalive and Zweimuller (2005)	Austrian social security dataset, 1990	Regression discontinuity analysis	Probability of having a child within the 3 years following the change in policies	Parental leave	The extension of the parental leave in 1990 increased the probability of having an additional child (both the tempo of birth and completed fertility)
Denmark, (West) Germany, Italy, UK, USA	Diprete et al. (2003)	Panel surveys	Descriptive analysis	Parity progression ratio	Cost of childcare	Institutionally driven child care costs affect the fertility pattern
Denmark, Italy, Netherlands, Spain	Del Boca et al. (2003)	European Community Household Panel	Fixed effect and random effect models	Whether or not the woman had a child in the last two years	Childcare availability	Childcare availability has a positive effect on fertility

Table 3 continued

Country	Authors (year)	Data	Methods of analysis	Dependent variable	Policy variables	Findings
Finland and Norway	Ronsen (1999)	1988 Norwegian Family and Occupation Survey and the 1989 Finnish Population Survey (cohorts 1943–1965)	Hazard-rate analysis	Probability of birth	Parental leave	Parental leave has had a small positive effect on fertility in these two countries. The impact is stronger in Finland
Finland and Norway	Ronsen (2004)	Norwegian Family and Occupation Survey and the 1989 Finnish Population Survey	Hazard model	Probability of first, second, and third birth	Parental leave, public day-care coverage, and child benefits	Parental leave has a positive effect on fertility. The provision of day care has no effect on fertility. Child benefits have no effect on fertility
Germany	Hank and Kreyenfeld (2003)	German Socio-Economic Panel Study (GSOEP), 1984–1995	Multilevel discrete-time logit models	Probability of a first birth	Availability of public day care	No statistically significant effect
Italy	Del Boca (2002)	Bank of Italy's Survey of Households' Income and Wealth, 1991–1995	Cross-sectional and pooled logit model	Whether or not the woman had a child in the last two years	Child care availability	The availability of childcare increases the probability of having a child
Norway	Kravdal (1996)	Family and Occupation Survey 1988	Logistic regression	Probability of first-, second-, and third-birth	Day care facilities	The provision of day care facilities has a weak positive effect on fertility. A 20-percentage point increase in childcare enrolment rate would result in an increase in cohort fertility of .05 children per woman
Sweden	Andersson, Duvander, and Hank (2004)	Register data, 1997–1998	Event-history analysis	Probability of second and third birth	Regional childcare characteristics	No effect
USA	Blau and Robins (1989)	Employment opportunity pilot projects, 1980	Hazard rate model	Birth probability	Childcare cost	Higher child-care costs result in a lower birth rate for non-employed women but not for employed women

use micro-level data. Results are mixed, with some concluding that work-related benefits have a small positive impact on fertility, and others finding no evidence of an impact of policies on fertility.¹³

With regard to parental and maternity leave, Hyatt and Milne (1991) estimated, on the basis of Canadian data, that a one-percent increase in the real value of maternity benefit would result in an increase in the total fertility rate between 0.09% and 0.26%. Studies by Ronsen (1999, 2004) on Finland and Norway and by Hoem (1993) on Sweden also concluded there was a positive impact of parental leave on fertility. In contrast, a study by Hoem et al. (2001) on Austrian data revealed no overall effect of changes in parental leave on fertility apart from an increase in the tempo of third births.

With regard to childcare cost and availability, mixed results are also found. On the basis of Norwegian macro-level data, Kravdal (1996) estimated that a twenty percentage point increase in the provision of childcare would result in an increase of no more than 0.05 children per women in completed cohort fertility. A positive impact of reduced childcare cost and increased childcare availability on fertility was also observed by Diprete et al. (2003) and Del Boca et al. (2003) on the basis of their multi-country analyses. No statistically significant impact of childcare characteristics (cost and availability) on fertility was however reported by Ronsen (2004) for Norway and Finland, by Hank and Kreyenfeld (2003) for Germany, and by Andersson et al. (2004) for Sweden. The explanations given for these mixed findings are varied including the concomitant increase in female labor force participation and childcare supply (in some countries), the heterogeneity of parents in terms of childcare needs, the structure of the childcare system in terms opening hours, and the relationship between the public daycare system and other social and welfare state institutions.

Discussion and conclusion

I started this paper by referring to beliefs by some scholars and politicians that policies have an undeniably negative impact on families, in encouraging single-parenthood and births outside wedlock, and in discouraging employment. The analysis presented in this paper suggests that policies may indeed have an effect on families, but that the effect tends to be of a small magnitude and that it may possibly have an effect on the timing of fertility rather than on completed family size. In view of these results, the popularity of baby bonus schemes among governments, as a way of encouraging fertility, is difficult to understand. While the additional financial support is bound to be welcomed by parents, the overall effect on fertility is likely to be small.¹⁴

¹³ There is a substantial literature on the impact of family policies on female labor force participation. This literature is not discussed here in view of our focus on fertility. Examples include Gustafsson and Stafford (1992) on Swedish data, and Kreyenfeld and Hank (2000) on German data.

¹⁴ In recent years, baby bonus schemes were introduced in Australia, Italy, and Poland (Mathieson 2003; Kennedy 2003; Easton 2005). In the UK, a child savings scheme (the Child Trust Fund) was introduced in 2005, but with no pronatalist motive (Ross 2005).

What is also clear from this review of the literature is that it is very difficult to accurately measure policies and to adequately model the various ways by which policies may impact fertility. In this last section of the paper, I reflect further on some of these methodological challenges in an attempt at outlining some future avenues of research (including data collection).

The measurement of family policies

The measurement of policies is a major challenge in all studies. As pointed out, and because of data limitations, studies tend to be restricted to only some type of policies and to neglect others that may be equally—if not more—important. In particular, because of data limitations, studies seldom include a comprehensive measure of the total support provided by government to families. For example, while not providing econometrics evidence, Hoem (2005) claims that it is the whole political culture of Sweden, as opposed to specific policies, that makes the country more family-, child-, and woman-friendly, a situation that may have an impact on fertility. Calls for the adoption of a system of monitoring and of comprehensive reporting of governmental expenditures on families and children have in fact been made (the so-called family impact statement), but few countries have adopted such a system (Cuyvers and Kiely 2000). This means that governmental support for housing is often excluded from empirical analysis of the effect of policies on fertility, as is governmental support for health and education.

Another limitation is that studies usually rely on global measures of family policies while failing to consider individual variations in access to, and receipt of, benefits. Eligibility criteria, benefit caps, etc. are often overlooked and flat rate benefits instead assumed. For example, maternity cash benefits are subject to ceilings in several countries, but these ceilings are often ignored in demographic studies. Similarly, studies often ignore employer-provided benefits, which tend to highly vary within and between countries. For example, data from the OECD suggests that a non-negligible proportion of employees have access to extra-statutory maternity and parental leave, employer-provided childcare, and flexi-time and/or part-time work opportunities (OECD 2001). Such benefits may also have an effect on fertility and on the combination of work and family responsibilities, but they are usually not included in demographic analyses.

The modeling of family policies and demographic behavior

In the theoretical section of this paper, three channels by which policies may be influencing fertility were identified: one channel operating through a reduction of the cost of children (e.g., governmental subsidies or the provision of services), another operating through an increase in families' incomes (e.g., cash benefits), and a third one operating through an increase in the preference for children. Other factors may, however, be operating through the same channels, thus making it very difficult to isolate the impact of policies from other determinants. For instance, in his analysis of the impact of public policies on fertility in Sweden, Walker (1995) concludes that: "Its (parental benefit) strong connection to the female wage,

combined with the large movement in income tax rates and other factors connected to wages, makes it impossible to estimate the separate effects of parental benefits” (p. 246). Concomitant variations, and strong links between policies, wages, and female labor force participation, thus complicate the modeling of family policies and demographic behavior.

Another modeling issue that has not been fully discussed in the literature is the possibility of a non-linear effect of policies on fertility. For example, instead of the assumed linear effect, it may be possible that fertility is subject to a threshold effect, which either requires benefits to reach a certain minimum level before having an effect, or which implies that the effect of benefits reaches a plateau beyond a certain level. None of the studies reviewed above explored this possibility.

The possible polarization of families

All of the econometric evidence reviewed in this paper acknowledges the heterogeneity in the population and consequently controls for various individual-level factors that may affect the cost of children and/or the preference for children including personal wages. However, one may question whether or not these statistical controls are sufficient to capture heterogeneity and whether or not more complex interaction models are instead needed. For example, it is possible that individuals located at different points of the income distribution may respond differently to flat-rate child benefits simply because such benefits increase household income differently in relative terms. Similarly, the ceiling often imposed on maternity and parental leave benefits may make them more or less attractive depending on the parents’ income. In fact, studies that have documented the take-up rate of paternity and parental leave conclude that it varies significantly with the parents’ socioeconomic status. For example, the take-up rate of parental leave by Finnish fathers tends to be curvilinear, being lowest at the low and high ends of the income distribution (Salmi and Lammi-Taskula 1999).

This possible polarization of families is further complicated by the fact that in numerous countries high earners and those in high-level occupations are also those who are more likely to have access to supplementary employer-provided benefits (Evans 2002).

Social and economic differences in fertility behavior and in response to policies have been extensively examined in the USA for welfare mothers. However, this has not been examined for the entire population and especially with respect to individuals’ positions in the income distribution and their types of occupation. A recent study by Ekert-Jaffé and others (2002) points to large occupational inequalities in fertility behavior in England, more so than in France. In their study, the link with policies was, however, examined only indirectly. Interestingly, recent changes announced by the French government to its cash benefit scheme have been interpreted by the press as having a strong socioeconomic bias in offering incentives to middle-class women to have more babies (Randall 2005).¹⁵ And while it may be

¹⁵ “Middle-class French women are to be offered cash incentives to have third babies amid growing concern that too few children are being born to professional couples” (Randall 2005).

politically sensitive to examine social class differences in fertility behavior and in policy response, this is an area of research that warrants more study, especially if policy schemes contribute to the polarization of families.

Conclusion

This paper provides some evidence of the impact of family policies on fertility. However, the impact tends to be small and also to vary highly depending on the type of data used and on the type of policies. For example, while data on ideal and actual fertility suggest a policy's window of opportunity of around 0.5 children per woman, multivariate analyses suggest instead an impact of less than 0.2 children per woman. The results of the empirical literature are however often contradictory, especially when it comes to the magnitude of the impact of policies and on the differential impact by birth order. The results are also puzzling, if not disconcerting, in view of numerous counterexamples including the persistence of higher fertility levels in some countries despite lower levels of state support for families and/or despite the absence of policies targeted at higher-parity births.

What this paper has also made clear is that the absence of a comprehensive database on state support for families has prevented researchers from identifying which type of public policy has had the largest impact on fertility, and what would be the price tag of such a policy. Similarly, little is known about the impact of employer-provided policies on fertility (and on the inequalities that they introduce).

During the last decade, governments in industrialized countries have tended to pursue two main directions in policies: a move away from universal cash benefits in order to tackle child poverty, and a greater emphasis on policies that reduce the barriers to the combination of work and family responsibilities (Gauthier 2005). The studies reviewed in this paper provide some information as to the potential impact of such policies on people's fertility desires, timing of fertility, and completed family size. However, knowledge on this matter is still limited and calls for complex modeling of the causal relationship between policies, female labor force participation, and fertility.

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References

- Andersson, G., Duvander, A.-Z., & Hank, K. (2004). Do child care characteristics influence continued childbearing in Sweden? An investigation of the quantity, quality and price dimension. *Journal of European Social Policy*, 14, 407–418.
- Andersson, G., Hoem, J. M., & Duvander, A.-Z. (2006). Social differentials in speed-premium effects in childbearing in Sweden. *Demographic Research*, 14(4), 51–70.

- Becker, G. S. (1981). *A Treatise on the family*. Cambridge, MA: Harvard University Press.
- Becker, G. S. (1996). *Accounting for tastes*. Cambridge, MA: Harvard University Press.
- Becker, G. S., & Lewis, H. G. (1973). On the interaction between the quantity and quality of children. *Journal of Political Economy*, 81(2), S279–S288.
- Becker, G. S., & Murphy, K. M. (2000). *Social economics: Market behavior in a social environment*. Cambridge, MA: Harvard University Press.
- Billari, F., & Kohler, H.-P. (2004). Patterns of low and lowest-low fertility in Europe. *Population Studies*, 58(2), 161–176.
- Bjorklund, A. (2006). Does family policy affect fertility? Lessons from Sweden. *Journal of Population Economics*, 19(1), 3–24.
- Blake, J. (1968). Are babies consumer durables? A critique of the economic theory of reproductive motivation. *Population Studies*, 22, 5–25.
- Blanchet, D., & Ekert-Jaffé, O. (1994). The demographic impact of fertility benefits: Evidence from a micro-model and from macro-data. In J. Ermisch & N. Ogawa (Eds.), *The family, the market and the state in ageing societies* (pp. 79–104). Oxford, England: Clarendon Press.
- Blau, D. M., & Robins, P. K. (1989). Fertility, employment, and child care costs. *Demography*, 26(2), 287–299.
- Blossfeld, H. P., & Prein, G. (Eds.). (1998). *Rational choice theory and large-scale data analysis*. Boulder, CO: Westview Press.
- Bongaarts, J. (1998). Fertility and reproductive preferences in post-transitional societies. *Population Council*. Retrieved from <http://www.popcouncil.org/pdfs/wp/114.pdf>.
- Breton, D., & Prioux, F. (2005). Deux ou trois enfants? Influence de la politique familiale et de quelques facteurs socio-démographiques. *Population*, 4(Juillet-août), 489–524.
- Brewster, K. L. (1994). Race differences in sexual activity among adolescent women: The role of neighborhood characteristics. *American Sociological Review*, 59(June), 408–424.
- Brewster, K. L., & Rindfuss, R. R. (2000). Fertility and women's employment in industrialized nations. *Annual Review of Sociology*, 26, 271–296.
- Brouillette, L., Felteau, C., & Lefebvre, P. (1993). The effects of financial factors on fertility behavior in Quebec [Les effets de la fiscalité sur les comportements de fécondité au Québec]. *Canadian Public Policy/Analyse de Politiques*, 19(3), 260–278.
- Buttner, T., & Lutz, W. (1990). Estimating fertility responses to policy measures on the German Democratic Republic. *Population and Development Review*, 16(3), 539–555.
- Castles, F. G. (2003). The world turned upside down: Below replacement fertility, changing preferences and family-friendly public policy in 21 OECD countries. *Journal of European Social Policy*, 13(3), 209–227.
- Chesnais, J.-C. (1987). When one people becomes two: One Germany and the other [Quand un peuple en devient deux: Une Allemagne et l'autre]. *Population et Sociétés*, 209, 1–4.
- Chesnais J.-C. (1996). Fertility, family, and social policy. *Population and Development Review*, 22(4), 729–739.
- Cigno, A. (1991). *Economics of the family*. Oxford, England: Clarendon Press.
- Cigno, A., & Ermisch, J. (1989). A microeconomic analysis of the timing of births. *European Economic Review*, 33, 737–760.
- Cuyvers, P., & Kiely, G. (2000). The family roller-coaster ride. *Family Observer*, 2, 4–12.
- Del Boca, D. (2002). The effect of child care and part time opportunities on participation and fertility decisions in Italy. *Journal of Population Economics*, 15(3), 549–573.
- Del Boca, D., Aaberge, R., Colombino, U., Ermisch, J., Francesconi, M., Pasqua, S., & Strom, S. (2003). Labour market participation of women and fertility: The effect of social policies. Paper presented at the FRDB Child conference. Alghero (June).
- Demeny, P. (1987). Pronatalist policies in low-fertility countries: Patterns, performance, and prospects. In K. Davis, M. S. Bernstam, & R. Ricardo-Campbell (Eds.), *Below-replacement fertility in industrial societies: Causes, consequences, policies*. *Population and development review* (Vol. 12, Supplement, pp. 335–358).
- Diprete, T. A., Morgan, P. S., Engelhardt, H., & Pacalova, H. (2003). Do cross-national differences in the costs of children generate cross-national differences in fertility rates? *Population Research and Policy Review*, 22(5–6), 439–477.
- Duclos, E., Lefebvre, P., & Merrigan, P. (2001). A natural experiment on the economics of storks: Evidence on the impact of differential family policy on fertility rates in Canada. Center for Research

- on Economic Fluctuations and Employment, working paper no. 136. Université du Québec à Montréal.
- Dumont, G.-F., & Descroix, P. (1988). La spécificité du comportement démographique de la France: Mesure de la surfécondité relative de la France par rapport aux autres pays industriels à faible fécondité précoce de 1963 à 1986. *Histoire, Economie et Société*, 419–432.
- Duncan, G. J., & Hoffman, S. D. (1990). Welfare benefits, economic opportunities, and out-of-wedlock births among black teenage girls. *Demography*, 27(4), 519–535.
- Easton, A. (2005). Polish women offered baby bonus. *BBC News*. Retrieved from <http://news.bbc.co.uk/1/hi/europe/4567224.stm>.
- Ekert, O. (1986). Effets et limites des aides financières aux familles: Une expérience et un modèle. *Population*, 2, 327–348.
- Ekert-Jaffé, O., Joshi, H., Lynch, K., Mougin, R., & Rendall, M. (2002). Fécondité, calendrier des naissances et milieu social en France et en Grande-Bretagne: Politiques sociales et polarisation socioprofessionnelle. *Population-F*, 57(3), 485–518.
- Ermisch, J. (1986). Impacts of policy actions on the family and household. *Journal of Public Policy*, 6(3), 297–318.
- Ermisch, J. (1988). The econometric analysis of birth rate dynamics in Britain. *The Journal of Human Resources*, 23(4), 563–576.
- Evans, J. M. (2002). Work/family reconciliation, gender wage equity and occupational segregation: The role of firms and public policy. *Canadian Public Policy*, 28(Supplement), 187–216.
- European Commission. (1990). European public opinion on the family and the desire for children. Eurobarometer 32. Brussels, Belgium: Commission of the European Communities.
- Finch, N., & Bradshaw, J. (2003). Fertility and supporting the costs of children. Paper presented at the conference Recent fertility trends in Northern Europe, Oslo, Norway, May 2003.
- Gauthier, A. H. (1996). The measured and unmeasured effects of welfare benefits on families: Consequences for Europe's demographic trends. In D. Coleman (Ed.), *Europe's population in the 1990s* (pp. 297–331). Oxford, England: Oxford University Press.
- Gauthier, A. H. (2005). Trends in policies for family-friendly societies. In M. Macura, A. L. MacDonald, & W. Haug (Eds.), *The new demographic regime: Population challenges and policy responses* (pp. 95–110). New York: United Nations.
- Gauthier, A. H., & Hatzius, J. (1997). Family benefits and fertility: An econometric analysis. *Population Studies*, 51, 295–306.
- George, J. (2000). Babies having babies: An explosion of infants born to teenage mothers. *Nunatsiaq News*, May 19, 2000. Retrieved from http://www.nunatsiaq.com/archives/nunavut000531/nvt20519_01.html.
- Georgellis, Y., & Wall, H. J. (1992). The fertility effect of dependent tax exemptions: Estimates for the United States. *Applied Economics*, 24(10), 139–145.
- Goldberg, D., Sharp, H., & Freedman, R. (1959). The stability and reliability of expected family size data. *The Milbank Memorial Fund Quarterly*, 37, 368–385.
- Goldstein, J., Lutz, W., & Testa, M. R. (2003). The emergence of subreplacement family size ideals in Europe. *Population Research and Policy Review*, 22, 479–496.
- Goldthorpe, J. (2000). *On sociology; Numbers, narratives, and the integration of research and theory*. Oxford, England: Oxford University Press.
- Gustafsson, S., & Stafford, F. (1992). Child care subsidies and labour supply in Sweden. *Journal of Human Resources*, 27(1), 204–230.
- Hank, K., & Kreyenfeld, M. (2003). A multilevel analysis of childcare and women's fertility decisions in Western Germany. *Journal of Marriage and the Family*, 65(3), 584–596.
- Hecht, J., & Leridon, H. (1993). Fertility policies: A limited influence? In D. Noin & R. Woods (Eds.), *The changing population of Europe* (pp. 62–75). Cambridge MA: Blackwell.
- Hechter, M. (1994). The role of values in rational choice theory. *Rationality and Society*, 6, 318–333.
- Hoem, J. M. (1993). Public policy as the fuel of fertility: Effects of a policy reform on the pace of childbearing in Sweden in the 1980s. *Acta Sociologica*, 36(1), 19–31.
- Hoem, J. M. (2005). Why does Sweden have such high fertility?. *Demographic Research*, 13(22), 559–572.
- Hoem, J. M., Prskawetz, A., & Neyer, G. (2001). Autonomy or conservative adjustment? The effect of public policies and educational attainment on third births in Austria, 1975–96. *Population Studies*, 55(3), 249–261.

- Hyatt, D. E., & Milne, W. J. (1991). Can public policy affect fertility? *Canadian Public Policy/Analyse de Politiques*, 27(1), 77–85.
- Japan, Ministry of Health, Labor and Welfare (1999). Annual reports on Health and Welfare 1998–1999: Social Security and National Life. Tokyo, Japan. Retrieved from <http://www.mhlw.go.jp/english/wp/wp-hw/vol1/p2c5s1.html>.
- Joyce, T., Kaestner, R., Korenman, S., & Henshaw, S. (2005). Family cap provisions and changes in births and abortions. *Population Research and Policy Review*, 23(5–6), 475–511.
- Kamaras, F., Kocourkova, J., & Moors, H. (1998). The impact of social policies on reproductive behavior. In R. Palomba & H. Moors (Eds.), *Population, family and welfare: A comparative survey of European attitudes* (Vol. 2, pp. 242–261). Oxford, England: Clarendon Press.
- Kennedy, F. (2003). Italy offers families baby cash. *BBC News*. Retrieved from <http://news.bbc.co.uk/01/pt/fr/-/2/hi/europe/3252794.stm>.
- Kogel, T. (2004). Did the association between fertility and female employment within OECD countries really change its sign?. *Journal of Population Economics*, 17, 45–65.
- Kravald, O. (1996). How the local supply of day-care centers influences fertility in Norway: A parity-specific approach. *Population Research and Policy Review*, 15(3), 201–218.
- Kreyenfeld, M., & Hank, K. (2000). Does the availability of child care influence the employment of mothers? Findings from Western Germany. *Population Research and Policy Review*, 19, 317–337.
- Lalive, R., & Zweimuller, J. (2005). Does parental leave affect fertility and return-to-work? Evidence from a “true natural experiment”. IZA (Institute for the Study of Labor). Discussion paper no.1613. Retrieved from <http://www.iza.org/publications/dps/>.
- Laroque, G., & Salanie, B. (2004). Fertility and financial incentives in France. *CESifo Economic Studies*, 50(3), 423–450.
- Laroque, G., & Salanie, B. (2005). Does fertility respond to financial incentives? Retrieved from <http://www.crest.fr/pageperso/lei/slanic/p140205.pdf>.
- Livi Bacci, M. (2001). Comment: Desired family size and the future of fertility. In R. A. Bulatao & J. B. Casterline, J.B. (Eds.), *Global fertility transition*, Supplement to *Population and Development Review* 27, 282–289.
- Lutz, W., & Skirbekk, V. (2005). Policies addressing the tempo effect in low-fertility countries. *Population and Development Review*, 31(4), 699–720.
- Mathieson, S. (2003). Labor pledges new baby bonus plan. *The Age*. Retrieved from <http://www.theage.com.au/articles/2003/12/14/1071336812201.html>.
- McDonald, P. (2000). Gender equity, social institutions and the future of fertility. *Journal of Population Research*, 17(1), 1–16.
- McNicol, G. (1998). Government and fertility in transitional and post-transitional societies. Population Council Working Paper. Retrieved from <http://www.popcouncil.org/pdfs/wp/113.pdf>.
- Milligan, K. (2002). Quebec’s baby bonus: Can public policy raise fertility? C.D. Howe Institute. *Backgrounder*. Jan 24, 2002. Retrieved from: http://www.cdhowe.org/pdf/Milligan_Backgrounder.pdf.
- Milligan, K. (2005). Subsidizing the stork: New evidence on tax incentives and fertility. *Review of Economics and Statistics*, 83(3), 539–555.
- Monnier, A. (1990). The effects of family policies in the German Democratic Republic: A re-evaluation. *Population: An English Selection*, 2, 127–140.
- Oláh, L. S. (2003). Gendering fertility: Second births in Sweden and Hungary. *Population Research and Policy Review*, 22(2), 171–200.
- Organization for Economic Cooperation and Development [OECD]. (2001). Balancing work and family life: Helping parents into employment. *OECD Employment Outlook*, June, 129–166.
- Palomba, R., Bonifazi, C., & Menniti, A. (1989). Demographic trends, population policy and public opinion. *Genus*, 45(3/4), 37–54.
- Popenoe, D. (1988). *Disturbing the nest: Sweden and the decline of families in modern society*. New York: Aldine de Gruyter.
- Plotnick, R. (1990). Welfare and out of wedlock childbearing: Evidence from the 1980s. *Journal of Marriage and the Family*, 52, 735–746.
- Randall, C. (2005, September 20). Educated French paid to have more babies. *The National Post*.
- Rasul, I. (2002). Household bargaining over fertility: Theory and evidence from Malaysia. Job market paper, London School of Economics.
- Rindfuss, R. R., & Brewster, K. L. (1996). Childbearing and fertility. *Population and Development Review*, 22(Suppl), 258–289.

- Rindfuss, R. R., Guzzo, K. B., & Morgan, S. P. (2003). The changing institutional context of low fertility. *Population Research and Policy Review*, 22(5/6), 411–438.
- Ronsen, M. (1999). Impacts on fertility and female employment of parental leave programs: Evidence from three Nordic countries. Paper presented at the European Population Conference, the Hague, Netherlands, August/September 1999.
- Ronsen, M. (2004). Fertility and public policies—Evidence from Norway and Finland. *Demographic Research*, 10, 143–170.
- Ross, C. (2005). Saving for your children. *BBC News*. 21 September 2005. Retrieved from: <http://news.bbc.co.uk/go/pr/fr/-/1/hi/business/3112942.stm>.
- Salmi, M., & Lammi-Taskula, J. (1999). Parental leave in Finland. In P. Moss & F. Deven (Eds.), *Parental leave: Progress or pitfall?* (pp. 85–122). Brussels, Belgium: CBGS.
- Sleebos, J. (2003). *Low fertility rates in OECD countries: Facts and policy responses*. OECD social, employment and migration working papers no.15. Paris, France: OECD.
- Stropnik, N. (2001). Reliability of a policy acceptance and attitude survey for formulating family and population policy. Paper presented at the IUSSP General Population Conference, Salvador, Bahia, Brazil, 20–24 August 2001.
- Suocoff, C. A., & Upchurch, D. M. (1998). Neighborhood context and the risk of childbearing among metropolitan-area black adolescents. *American Sociological Review*, 63, 571–585.
- Switzerland Statistics. (1997). La famille en Suisse: Tradition et transitions. Press release. 13 February 1997. Retrieved from: <http://www.statistik.admin.ch/news/archiv97/fp97005.htm>.
- Tanisha Dyer, W., & Fairlie, R. W. (2005). Do family caps reduce out-of-wedlock births? Evidence from Arkansas, Georgia, Indiana, New Jersey and Virginia. *Population Research and Policy Review*, 23(5–6), 441–473.
- Vikat, A. (2004). Women's labor force attachment and childbearing in Finland. *Demographic Research*, Special collection 3, article 8.
- Vining, D. R. Jr. (1984). Family salaries and the East German birth rate: A comment. *Population and Development Review*, 10(4), 693–696.
- Walker, J. R. (1995). The effect of public policies on recent Swedish fertility behavior. *Journal of Population Economics*, 8(3), 223–251.
- Westoff, C. F., & Ryder, N. B. (1977). The predictive validity of reproductive intentions. *Demography*, 14(4), 431–453.
- Whittington, L. A., Alm, J., & Peters, H. E. (1990). Fertility and the personal exemption: Implicit pronatalist policy in the United States. *The American Review*, 80(3), 545–556.
- Witte, J. C., & Wagner, G. G. (1995). Declining fertility in East Germany after unification: a demographic response to socioeconomic change. *Population and Development Review*, 21(2), 387–397.
- Zhang, J., Quan, J., & Van Meerbergen, P. (1994). The effect of tax-transfer policies on fertility in Canada, 1921–88. *The Journal of Human Resources*, 29(1), 181–201.