Partners, policy and fertility.

A study of childbearing behaviour in Canada

Benoît Laplante
Laboratoire d'études de la population
Centre Urbanisation Culture Société
Institut national de la recherche scientifique (Montreal, Canada)

Jean-Dominique Morency
Demography Division, Statistics Canada[1] (Ottawa, Canada)

María Constanza Street
Laboratoire d'études de la population
Centre Urbanisation Culture Société
Institut national de la recherche scientifique (Montreal, Canada)

[1] The authors are sole responsible for the content of this paper and of the opinions expressed in it, which may not be reflect the views of Statistics Canada.

Abstract

We assess how Canadian working couples take policies into account in their childbearing decision process. We use data from a panel survey that provides information about both partners' income and estimate the effect of labour market and state intervention variables on the hazard of giving birth to the first, second, and third child among Canadian couples in their childbearing years. We focus on the effects of the tax system and of maternity benefits. Results show that the decision of having the first child mainly depends on the economic condition of the woman whereas the decision to have the second child mainly depends of the man's income. Low-income couples tend to take into account the amount of financial assistance they would receive if they had the next child, whereas middle-income couples seem to take into account the value of maternity benefits.

Partners, policy and fertility.
A study of recent childbearing behaviour in Canada

Reviews of research on the effects of public policy measures on fertility typically conclude that measures may have an effect on fertility, but that their effect is limited, and that they probably have more impact on the timing of births than on completed fertility (e.g. Gauthier 2007; Hoem 2008; Thévenon and Gauthier 2011). On the contrary, comparative research typically shows that the evolution of fertility over the last decades varies across developed countries in relation to their family policies taken as a whole (e.g. D'Addio and d'Ercole 2005; Thévenon 2011). Thévenon (2011, p. 57) summarizes such findings as follows: 'the countries with the highest fertility and lowest poverty rates have been those where a high percentage of women perform paid work […]. In these countries pro-family policies seem to strike a balance that is favorable to both women's employment and fertility.' Based on similar results, Feyrer, Sacerdote, and Stern (2008) conclude that high-income countries having the lowest fertility and low women labour participation should experience an increase in fertility in the coming decades as their level of women labour participation increases. Such results are commonly interpreted using the typology of welfare regime types developed by Esping-Andersen (1990) and revised by Ferrera (1996) and Gauthier (1996). From this perspective, the countries having a Scandinavian or social-democratic welfare state regime and those having a liberal welfare state regime are the ones which achieve women labour participation rates and the highest total fertility rates.

However, understanding *how* family policies are related to fertility is complicated by the fact that the differences between welfare regime types are intertwined with different levels of women labour force participation and different models of gendered family roles. According to Matysiak, and Vignoli's (2008) meta-analysis, the Nordic countries are characterized by a dual breadwinner/state carer model in which mothers typically work part-time, the liberal countries by a dual breadwinner/marketised female carer model whereas in the conservative countries, the male breadwinner/female carer has developed into a male breadwinner/female part-time carer. Furthermore, the same authors stress that, as the decision to have a child is usually made a couple, not taking the characteristics of both partners into account when studying this process may lead to biased estimates.

In this paper, we try to assess how Canadian working couples take into account policies in their childbearing decision process. We use data from a panel survey that provides information about both partners' income and estimate the effect of labour market and state intervention variables on the hazard of giving birth to the first, second, and third child among Canadian couples in their childbearing years. We focus on the effects of the tax system and of maternity benefits.

We start by providing background information on family policies and previous research in Canada. We overview briefly current ideas on the relation between the labour force participation of women and fertility and we review research on the effects of partners' characteristics on the decision to have a child We then proceed to our theoretical framework, drawing on Esping-Andersen (1990, 1999) and Neyer and Andersson (2008).

Background information

Family policies, tax reliefs and benefits in Canada

Tax reliefs. Canada offers a tax credit for a dependent spouse, married or not; its value decreases as income increases. Another credit is provided for eligible dependants, including children under 18; again, its value decreases as income increases. The 'Goods and Services Tax' credit provides an additional amount for low-income families. However, the most salient family-related feature of the Canadian tax system is the 'Canada Child Tax Benefit', which provides a benefit for each child under age 18, with additional amounts for a third and subsequent child. This benefit consists of a base benefit

for low- and middle-income families and a supplement for low-income families. The value of the benefit decreases as income increases. The OECD assesses the overall effect of the tax reliefs and cash transfers on reducing the gap between gross and net income induced by family structure by comparing the gross and net income gaps of the two types of households (OECD 2005, p. 22). Compared to the USA and UK, Canada is not bad at closing the gap due to family structure for low income single parents family, but does less than UK and even less than USA at closing it even for modest two-earner families. Given than most of the tax reliefs and cash transfers are means tested and decrease as earned income increases, they are likely to be of little value for moderate or high incomes. Although variations across the Canadian provinces are not taken into account in the OECD report, they do exist and are significant (more below).

Maternity, paternity, and parental benefits. Canada introduced its first paid maternity leave in 1971; it offered 15 weeks paid at two thirds of earnings. This proportion was reduced to 60% in 1979, 59% in 1993, and 55% in 1995. One province, Quebec, introduced a completely different program in 2006. The new program covers the self-employed as well as employees, and offers maternity, paternity, and parental leaves. Parents may choose among various combinations of duration (from 18 to 32 weeks) and replacement value (from 55% to 75% of earnings). Compared to those offered in other liberal countries where they exist, Canada's maternity benefits are 'average': they are not paid as long as they are in Australia or the UK, but one week more than in New Zealand; they are not as generous as in New Zealand, but more than in Australia or the UK.

Previous research in Canada

Research on childbearing behaviour in Canada is constrained by the availability of appropriate data. Many Canadian studies on the relation between public policy and fertility use aggregated or cross-sectional data and focus on a single policy or a narrow set of policies. Most are aimed at evaluating the effect of policies on fertility.

Lefebvre, Brouillette, and Felteau (1994) use cross-sectional survey data and a polytomous hierarchical discrete choice model based on the McFadden model. They conclude that, overall, tax exemptions and family allowances foster fertility. More specifically, significant family allowances for the first child could foster its birth, whereas family allowances related to the birth order could favour fertility among couples who have already chosen to have children. Zhang, Quan and Van Meerbergen (1994) use time-series data from 1921 to 1988 to estimate an aggregate fertility equation for Canada in order to assess the effect on fertility—measured as TFR—of the personal tax exemption for children, child tax credit, family allowances, and maternity leave benefits. They find that each of the three former programs has a significant and positive effect, but that a large increase in the value of such tax-transfer programs would be needed to increase fertility to the replacement level. Maternity leave benefits, actually modelled as a binary variable reflecting the introduction of the policy, apparently have no effect. Phipps (2000) uses data from the Labour Market Activities Survey to estimate the effect of eligibility to partial wage replacement through unemployment insurance in case of birth on the probability of a birth in 1990. She finds no such effect. However, some aspects of her analysis may have attenuated the estimate of the effect: her probit equation includes both eligibility and the rate of replacement, which are presumably highly correlated, and is estimated using data from all women aged 16 to 64 assuming the effect of eligibility is not conditional on age. McNown and Ridao-Cano (2004) use times series data on fertility, women's labour force participation, women's wages, men's income, women's education, and child benefits to model the relationships between policy, other economic changes, and fertility and to evaluate the effects of the first two on the third in a historical perspective. Their model leads them to conclude that child benefits policies are unlikely to raise fertility, but that raising women's wages could actually raise it through a combination of income and substitution effects. Milligan (2005) uses vital statistics, census data, and a quasi-experimental strategy to show that

the introduction of pronatalist tax incentives had an effect on fertility; the strategy does not allow ascertaining whether the effect really was solely on the timing of births or rather on completed fertility. He also finds traces of heterogeneity in the effect of tax incentives, but his strategy does not allow modelling it. Parent and Wang (2007) use census data and a variety of regression like models (probit, ordinary regression and tobit) and show that tax incentives are likely to have had a tempo effect rather than an effect on completed fertility. They conclude that the tax incentives were probably too small to have an effect on family size. Frenette (2011) uses census data to study the relationship between fertility and the allocation of paid and unpaid labour among couples. He shows that, for women, additional children lead to a reduction of paid hours, an increase in unpaid hours, and a decline in the proportion of women working full-time, whereas no such effects are found for men.

Few studies have been realised using individual longitudinal data whereas analyses based on such data are the only way to study properly processes that lead to or not to an event such as the birth of a child. Beaupré and Turcotte (2005) study the effect of the employment of women on their fertility with such data, but the retrospective biographical survey they use (GSS 2001) does not collect information on income or on spouse's employment.

Theory

Labour force participation of women and fertility

The reversal of the correlation between fertility and women's employment in industrialized countries is widely acknowledged at least since Brewster and Rindfuss (2000). Reference to the institutional context of fertility has become commonplace since Ahn and Mira (2002) examined the reversal of the between countries correlation between total fertility rates (TFR) and labour force participation rates of women (LFP) among OECD countries. They show that, over the 1970-1996, the curve of OECD countries average TFR decreases whereas the curve of average LFP increases, and then process to show that the annual correlation between TFR and LFP reversed its sign around 1986. This made them willing to test the hypothesis that fertility is countercyclical, i.e. higher when unemployment is higher, women make use of unemployment spell to have a child; this hypothesis was then a commonplace assumption. Their analysis shows that fertility was procyclical for 15 out of 21 countries. They conclude that there is little evidence for fertility being anticyclical and suggest that, given business cycles affect families through unemployment rather than through wage reduction, fertility is more likely to be procycle than anticycle. A recent review of research on the effect of business cycles on fertility concludes that fertility is indeed procyclical and that recessions have an impact on the timing of births rather than on completed fertility (Sobotka, Skirbekk and Philipov 2011).

Adserà (2004) pushed further the examination of the variation of fertility and participation across OECD countries. Her main argument is that 'labour market arrangements' mould childbearing and participation decisions or, more precisely, that women's childbearing decisions are driven by the level of employment uncertainty they are exposed to, which is related to labour market arrangements. She finds that 'whenever unemployment is low and institutions easily accommodate the entry-exit of the labor market, fertility rates are around replacement rate' but that 'whenever the costs of childbearing in terms of loss of present or future income are intensified by high unemployment and rigid labor markets, fertility rates are very low'. She gets to similar conclusions using individual data from several European countries (Adserà 2005, 2011).

Adserà's analyses are of special interest for us because, while rooted in standard microeconomics rather than in political science, they make clear that the State may mould decisions through family related policies as well as through labour market related policies. However, although it provides a coherent model of the relation between women labour force participation and fertility, this models

leaves out the role of the partner. This is not a trivial limitation, as, in Canada, most children are born from couples in which both partners work and have an income.

Partners' work and income and fertility

Until recently, research on the effect of both partners' work and income on fertility has been scarce, mainly due to the lack of data sources that gather this information in a longitudinal fashion. The studies collected in Blossfeld and Drobninullc (2001) examine the careers of partners in 12 countries, but do not deal with fertility or childbearing as a dependent variable. The articles on childbearing and policies edited by Frejka, Sobotka, Hoem, and Toulemon (2008) do not address explicitly the relation between partners' work and income and childbearing. Presser (2003) examines the relation between working conditions and several components of family dynamics, but not childbearing or fertility decisions.

We find three recent studies on fertility that use longitudinal data and explore the relation between partners' work and income and childbearing.

Aassve and Lappegård (2009) use data from population and tax registers to study the effect on fertility timing of a cash benefit for parents with young children introduced in Norway in 1998. This benefit is aimed at compensating the parents who either prefer to care for their children at home or are not offered external childcare provision. Their data include information about the labour and income of both partners, but they use these as predictors of the decision of taking or not the benefit, not as predictors of the timing of the second birth.

Haan and Wrohlich (2011) use labour and income data about both partners from the German Socio Economic Panel to develop a model of female employment and fertility decisions. Although the model is aimed at evaluating the effect of potential policies rather than at explaining the behaviour of women, its parameters are estimated from actual data and thus provide insights about the preferences of women in German society. According to the model, increasing child care subsidies, conditional on employment, would increase the labour supply of all women as well as the fertility rates of the childless and highly educated women.

Santarelli (2011) uses data from the European Community Household Panel, a prospective survey which provide information on labour, income, and fertility histories of both partners, to study the effect of income and job instability on the birth of the first child in Italy. Her analysis is limited to married couples and compares dual earners to single earners couple, given that in her sample, couples are almost equally divided between these two categories. Her results show that single earner couples had the highest first birth rates, that employed women had much lower first birth rates than non-working women, while male earnings and job instability apparently do not have any effect.

*Framework and objectiv*e

Neyer and Andersson (2008) reflect on the research on policy and fertility as it has been conducted over the last decades. They contrast the sense of inconclusiveness that emerges from several important overviews with findings from 'in-depth micro-level studies that show that family policies can have an impact on childbearing behaviour'. They argue that the contradiction can be attributed to theoretical and methodological issues. Their main argument is that 'the *consequences* of family policies on childbearing and fertility can be properly assessed only if we study the impact of family policies on individual behaviour' (emphasis added) and, in a more specific way, that the relationship between childbearing and fertility would be better understood if research focused on childbearing behaviour and its context, rather than on the effect of any specific fertility related measure. They go on discussing three different conceptualisations of the relation between policy and childbearing behaviour, based respectively based on work by Kamerman and Khan, Bourdieu and several feminist welfare-state researchers. This leads them to develop their own analytical framework, in which the key concepts are

‘time’ (the timing of a new policy), ‘space’ (the local implementation of policies) and ‘uptake’ (whether or not individuals are covered or make use of it). They use their framework to look at a few examples from Sweden, using register data.

The framework developed by Neyer and Andersson is stimulating because it is firmly rooted in a conception of fertility as a behaviour occurring as the outcome of a decision making process involving individual level and contextual characteristics as well as the policies, which is quite different from the stimulus-response mechanism implicit in many studies of piecemeal measures. However, the framework itself can hardly be used for our study. We are interested in behaviour as it occurs in the current policy setting rather than in the changes in behaviour that can be related to changes in policy; for us, ‘timing’, in the restricted sense they use, is out. Furthermore, as we will explain, the available sources of Canadian data for such a study are not large enough to allow for a serious analysis of differences across locations or jurisdictions. Finally, our data allow modelling of childbearing as the outcome of a decision process: with such a view, entitlement seems a more appropriate notion than uptake.

Nevertheless, it is possible to use a different framework best suited for our study, while retaining the strong point of the one developed by Neyer and Andersson, which is that the relation between policy and fertility is best understood by studying the childbearing behaviour at the micro level and that behaviour happen within a context shaped by policies.

Esping-Andersen (1990, 1999) provides a basis for such a development. The framework he is famous for has been designed to study social policies in a comparative perspective, but it is not limited to a typology of welfare systems. On the contrary, his typology is based on an analysis of the policy environment in which people live their lives. The market, the State and the family are viewed as sources of welfare provision aimed at protecting individuals against social risks, and each country is analysed as a combination of the three. Although the analysis was originally developed to compare countries, it can be used to conceptualise the relation between childbearing behaviour, as a step in the family formation process, on one side and the State and the market on the other side. The State provides entitlements and services. The labour market is the main source of income for people in their childbearing years, and may provide some entitlements and services through job related benefits such as employer’s pension plan and supplemental health insurance plan. The level of an entitlement varies across individuals, as well as income and job-related benefits. In a practical and admittedly restricted way, this leads to study the childbearing behaviour of couples and families as a function of prevailing policies and of job related income and benefits. The effects of policy measures on childbearing behaviour are estimated net of the labour market variables, or conditional of them if needed.

We focus our analysis on couples in which both partners are employed while they are at risk of having the next child. This choice is motivated by conceptual and methodological considerations. In Canada, most children are born from parents who live together, whether as spouses or cohabiting partners. Children born to lone women are comparatively few and the decision process that leads these women to have a child is certainly different from the one that governs the decisions of couples. Controlling for this difference through a binary variable would miss the point whereas the sample size does not allow estimating all effects as conditional on this difference or estimating separate models. A similar reasoning leads us to limit further our study to the subpopulation of couples in which both partners are employed. In Canada, according to data from SLID (see below), 85% of childless couples in their childbearing years are made of two employed partners. Childless couples in their childbearing years in which one of the partners is not working are few and again, the decision process that leads these couple to have a child is likely to be different from the one that governs the decisions of couples in which both partners are employed. We further limit our focus to the couples in which none of the partner is self-employed. Self-employed people are a minority and many of the employment characteristics we need are not collected from self-employed people in Canadian household surveys.

Method

Data

The Survey of Labour and Income Dynamics (SLID) is a household panel survey conducted by Statistics Canada since 1993 in which members of the sampled households are interviewed each year over a six-year period. It is the only Canadian data source that allows studying the relationship between demographic events, employment, and income at the family level and in a longitudinal perspective (Statistics Canada N.D.).

We use the data from panel 3 (1999–2004) and panel 4 (2002–2007). We use the subsample of couples whose two partners live in the same household and where the woman is as a 'longitudinal individual', i.e. someone who belongs to a sampled household at the beginning of the first year of reference of the panel and is tracked throughout the whole six-year period of the panel. Given that we are interested in people in their childbearing years, we select only couples in which the woman is aged between 16 and 49 years at least during a portion of the period during which she is under observation. For reasons detailed in the previous section, we further restrict the analysis to couples in which both partners are employees, thus excluding couples in which at least one partner is either inactive or self-employed. Finally, we exclude couples whose combined after-tax income is over 150,000 CAD as they are few and outliers.

SLID collects information that allow building retrospective biographies of union formation and breakdown for all unions which began before the individual entered the panel, with the date of each event and the age of the individual when the event occurred. It also collects information that allows tracking the breakdown of current unions and the formation of new unions once the sampled individuals are under observation. We use this information to select the subsample we are interested in and build the risk set.

The SLID questionnaire does not collect a complete fertility history, but it asks women if they ever had a child before entering the panel, and their age when they gave birth to their first child if they did. SLID also collects the date of birth of all the individuals, longitudinal or not, including those who start living in the same household as a longitudinal individual during the panel, such as newborn children. This information allows selecting women who never had a child before they became under observation and compute their age at the time they give birth to their first child if this event occurs while they are under observation; it also allows selecting women who have had one or two children, as well as their age at the birth of their first or second child.

SLID collects detailed information about employment, income sources, benefits, and taxes from all longitudinal individuals and all other individuals who live with a longitudinal individual. Depending on its nature, this information is available on a weekly, monthly or annual basis. We use this information to build the build the variables we need to assess our hypotheses.

The decision to have a child may depend not only on the actual socio-economic condition of the couple, but also on expectations about the stability of this condition. We control for the prevailing economic context using the current local unemployment rate by age and sex

Variables and operationalisation of hypotheses

We operationalised our general hypothesis by estimating the effect of a series of labour market related variables and of state intervention related variables on the hazard of having the first, the second and the third child. We also estimated the effect of two variables that are known or suspected to be related to the hazard of giving birth: education and housing tenure. Given that the variables refer either to the condition of the woman, to that of her partner, or to the couple or family, we review them according to the unit for which each is defined.

Women's labour market related variables include job permanency (temporary or permanent), job sector (private or public), union protection, work schedule (full time or part time), employer's pension plan, after tax income, education (high school or less, non-university postsecondary diploma, university degree or certificate) and unemployment rate (current local unemployment rate by age for women). Women's state intervention related variables include entitlement to maternity leave, entitlement to maternity benefits, and the amount of expected maternity benefits. In most provinces and over the period under study, entitlement to maternity benefits was linked to entitlement to employment (*sic*) insurance benefits; therefore, the effect of entitlement to employment insurance benefits cannot be estimated separately from entitlement to maternity benefits for women.

Partner's labour market variables are the same as for women. State intervention related variables are different: they exclude entitlement to maternity leave and to maternity benefits as well as expected maternity benefits, but include entitlement to employment insurance benefits. Paternity leave was an exceptional benefit during the period we are studying. In January 2006, the province of Quebec introduced a new parental insurance program that allows couples to share parental leave and parental benefits between both parents. This important change occurred at the end of the period we are studying and we cannot study its effect with our data.

Two labour market related variables are defined for the couple rather than for the individuals: the family adjusted after tax total income and the number of benefits offered by employers (none, one or two, three).

One state intervention related variable is defined for the couple: the expected increase in annual financial assistance following the birth of a child. We estimate this amount using an updated version of the simulation software developed and maintained by K. Milligan (2008). The simulator takes into account all social programs related to the presence of children, whether provincial or federal (see Annex 1).

Variables that reduce uncertainty in any way are expected to have a positive effect on having a child. Thus we expect that having a permanent job rather than a temporary one, working in the public sector rather than in the private sector, being protected by a collective agreement and benefiting from an employer's pension plan all have a positive effect. We expect also entitlement to maternity leave and entitlement to maternity benefits to have a positive effect, as is entitlement to unemployment insurance benefits. The hazard of having a child is expected to increase with the amount of expected maternity benefits and with the amount by which annual financial assistance would increase following the birth of a child. It is also expected to increase with net income, at least up to a point. High income protects from social risks by itself, but this effect is likely to reach a maximum at some level of income: people who have little income may postpone or give up having a child because of the cost of a child, but people who have 'enough' income are likely to base their decision on some other criterion. The hazard of having a first child is assumed to decrease as unemployment rate increases given that the risk of losing one job usually increases with it.

Fifty-five per cent of the couples in our sample come from panel 3 and 45 per cent from panel 4. Table 1 provides a description of the partners whereas Table 2 provides a description of the couples. Most of our independent variables are time-varying. Given that the estimation of the effects of such variables is based on time spent at risk in each of their categories, we based their description on time spent at risk and proportion of total time spent at risk rather than on absolute and relative frequencies at the beginning of observation or at chosen durations.

Model

We used Cox's proportional hazard model. We measured time to event from age 15 for the first birth and as time elapsed since the previous birth for the second and third births. We controlled for the type

of union (marriage or cohabiting union) and the province of residence, and for women's age in the study of the second and third births.

Given that we were using data from six-year panels, no woman was observed over the entire age range of childbearing years. We built the risk group using delayed entry, each woman entering the risk group at the age she was when she entered the panel in the study of the first birth, and when she was first observed after the previous birth in the study of the second and third births (see Korn and Graubard 1999, p. 118). The resulting baseline hazard is a continuous life table based on averaging events occurring over nine calendar years (1999 to 2007) where time at risk is spread over nine calendar years. This baseline hazard is best understood as the baseline hazard function of the theoretical superpopulation assumed to have generated the real population from which the women have been sampled (see Korn and Graubard 1999, pp. 62, 89-94; Binder and Roberts 2003, pp. 31-34), but it can also be interpreted as the baseline hazard of a fictitious cohort reflecting the process leading to having the first, second or third child among Canadian women living in a couple made of two employed partners as it existed from 1999 to 2007. Laplante, Santillán and Street (2009) provide examples of the use of such an approach in family demography.

Some continuous independent variables whose effects are likely to be non-linear were specified as cubic regression splines (Royston and Sauerbrei 2007): logarithm of after tax income, unemployment rate, amount of expected maternity benefits, logarithm of family adjusted after tax total income, and amount of expected additional annual financial assistance. We provide information on cubic regression splines in Annex 2.

We tested proportionality using the statistical tests developed by Grambsch and Therneau (1994). We specified non-proportional effects as time-dependent by adding the product of the variable and time to the equation.

SLID's sample design involves stratification and clustering. Complete missing data was imputed using the hotdeck method, which amounts to transferring the sampling weight of a missing individual to some other individual assumed to be similar. Estimations were weighted using the longitudinal weights provided by Statistics Canada (Laroche 2007). Conventional standard errors relying on the assumption of simple random sampling are not suited for data from complex survey designs; we estimated the standard errors through resampling using a set of 1,000 bootstrap weights provided by Statistics Canada (Rao and Wu 1988; Rao, Wu, and Yue 1992).

Results

We realised the analyses by estimating several sets of equations. We used a similar strategy for each birth. We estimated one set of equations using the characteristics of the women, one set using the characteristics of their partners, and one set combining some characteristics of both partners and of the family. We estimated the gross effect of each variable, intermediate models that allow examining the relationships between the independent variables, controlling for subsets of independent variables, and finally net effects. We report only net effects from 'full' models in the tables, but comment gross effects and intermediate results when they are meaningful.

Table 3 reports the net effects of the characteristics of the women on the hazards of each of the three births.

Job permanency is the only variable that has significant gross and net effects on the hazard of giving birth to the first child: having a permanent rather than a temporary job almost increases threefold the hazard. Preliminary analyses had shown that the effects of entitlement to maternity leave and of entitlement to maternity benefits are never significant. However, the net effect of the expected amount of maternity benefits is significant.

None of the variables related to labour market or to state intervention has a significant gross or net effect on the hazard of giving birth to the second child. Education level has a gross effect: having no postsecondary education rather than a university degree or diploma reduces the hazard of giving birth to the second child by a third. This effect fades away when controlling for the expected amount of maternity benefits. As expected, the hazard varies according to age.

No variable has a significant effect of the hazard of giving birth to the third child.

Table 4 reports the net effects of the characteristics of the women's partners on the hazards of each of the three births. None of the variables has a significant gross or net effect on the hazard of any birth.

Table 5 reports the net effects of characteristics of both partners and of the family. We report the results from two sets of 'full' models that differ only in the way income is included among the independent variables: the model reported in the left column uses the income of each partner whereas the model reported in the right column uses the family's adjusted after tax income.

Women's job permanency has a significant net effect on the hazard of the first birth. The amount of expected additional annual financial assistance has a significant net effect in the model that uses the family's adjusted after tax income but not in the model that uses the income of each partner. Housing tenure has significant gross and net effects: owning rather than renting almost increases threefold the hazard.

The logarithm of the partners' after tax income and the amount of expected additional annual financial assistance that would follow the birth have significant net effects of the hazard of the second birth.

No variable has a significant effect on the hazard of giving birth to the third child.

The effects of some independent variables are specified using cubic splines. Theses effects are better understood using graphs.

Figure 1 shows the effect of the expected amount of maternity benefits on the hazard of the first birth using the net effect reported in Table 3. The hazard ratio increases in an exponential fashion.

Figure 2 shows the effect of the amount of expected additional annual financial assistance on the hazard of the first birth using the net effect reported in Table 5. The relation is non-linear and non-monotonic. The hazard ratio increases in an almost linear fashion up to 2,500 CAD. It levels out, and may decline, for higher amounts.

Figure 3 shows the effect of the logarithm of the partners' after tax income on the hazard of the second birth using the net effect reported in Table 5 and rescaling the effect so that is be expressed relative to income rather than to its logarithm. The hazard ratio increases in an exponential fashion.

Figure 4 shows the effect of the amount of expected additional annual financial assistance on the hazard of the second birth using the net effect reported in Table 5. The shape of the curve is similar to that of Figure 2, but its maximum lies around 4 rather than around 2 and it reaches it for an amount of 3,000 CAD rather than for an amount of 2,500 CAD.

Intermediate analyses showed that the partners' after tax income and the amount of expected additional annual financial assistance have an inhibiting relation in their relation to the hazard of the second birth: each has no gross effect on the hazard, but each has a significant effect when controlling for the other. Two independent variables may have such a relation between themselves in their relation to the dependent variable when they are correlated and both have an effect on the dependent variable, but the three relations are not all positive or negative. Table 6 shows that the two independent variables

are negatively correlated whereas Figures 3 and 4 show that they both have a positive effect on the hazard of the second birth.

The results can be summed up as follows.

The hazard of the first birth is related to women's job permanency, to the expected amount of maternity benefits, to the amount of expected additional annual financial assistance that would follow the birth, and to housing tenure.

The hazard of the second birth is related to the partners' after tax income and to the amount of expected additional annual financial assistance that would follow the birth.

None of the variables we are interested in seems related to the hazard of the third birth.

Discussion and conclusion

Our results may be interpreted in a variety of ways. We organize the discussion as follows: first by birth order, second focusing on partners' roles, and third with respect to income level and policy.

Only one labour market related variables has a significant effect on the couples' decision to have their first child: a permanent rather than a temporary job for the woman, which increases threefold the hazard of giving birth to the first child.

Two state intervention related variables have a definite effect on the hazard of having the first child: the amount of expected maternity benefits and the amount of expected additional annual financial assistance which would follow the birth of a child. The hazard is low and increases slowly for expected benefits below 300 CAD per week, but it increases steadily beyond that amount. This suggests either that women who earn little on the labour market are not very sensitive to maternity benefits or that the low level of compensation as a proportion of previous earnings—roughly 55% during the period we are studying—does not make maternity benefits attractive for women who earn little. Maybe more to the point, our results support the idea that expected maternity benefits have a positive effect of the hazard of having a child when they are substantial.

The amount of expected additional annual financial assistance is related to the family's after tax adjusted income. According to our results and given this relation, the positive effect of the expected additional annual financial assistance on the hazard of having a child is concentrated among the families whose after tax adjusted income lies between 10,000 and 40,000 CAD. Families having an after tax adjusted income lower than 10,000 or higher than 40,000 CAD do not seem to be sensitive to the additional annual financial assistance in making their decision on having their first child. The effect of this policy seems quite different from the effect of maternity benefits, which increase with women's income. This is likely a consequence of the fact that the additional annual financial assistance amounts to a significant proportion of family income only for low-income couples and may be significant only for not too low-income couples whose income does not preclude any reasonable intention of having a child. Maternity benefits, on the contrary, increase as a proportion of a woman's wages up to roughly 40,000 CAD.

The effect of housing tenure may seem intriguing at first sight, but makes sense in the Canadian context. For all Canadian married couples and a substantial fraction of Canadian cohabiting couples, half of the value of the family's home belongs to each partner whoever is the owner of the home and whatever the stipulations of the deed. This provision has been enacted by the provincial legislatures in order to compensate upon divorce the partner who is more likely to have accumulated less wealth through labour market participation during the marriage because she was more likely to work less in order to care for the children. As far as we know, this provision had not yet been related to the decision

of having children. According to our results, it could be ranked among family policies that have an effect on fertility.

The hazard of the second birth is related to what is primarily a labour market related variable—the partners' after tax income—and to one state intervention related variable—the amount of expected additional annual financial assistance that would follow the birth.

We expected income to have an effect on each birth. It seemed reasonable to expect this effect to reach a maximum at some point: people who have little income may postpone or give up having a child because of the cost of a child, but people who have 'enough' income are believed to be able to base their decision on some other criterion. What we find is quite different. By itself, income does not seem to have any effect on the birth of the first child, although women's income determines the value of the expected maternity benefits whereas the amount of expected additional annual financial assistance is related to the family's after tax adjusted income. The partners' after tax income does have an effect, but only on the second birth, and this effect is increasing exponentially with income. It is quite low for annual income less than 50,000 CAD, it increases between 50,000 and 100,000 CAD, and faster over 100,000 CAD. Contrary to what we had expected, the effect of income does not level out. The effect of the amount of expected additional annual financial assistance is stronger for the second birth than for the first one: its maximum is 4 rather than 2. Furthermore, it does not seem to level out, as the effect for the first birth seems to do. The data we use provide no information about the motivation or attitudes of the respondents, but the shape of the effects of the partner's income and of the expected amount of financial assistance suggest that once you have a child, the decision to have the second is to a large extent sensitive to financial considerations, even for the relatively wealthy, as if it were an obvious step hindered by real or perceived lack of affluence.

Partners' roles

Most of the factors affecting the decision to have the first child are related with the women's economic condition: having a permanent job—which safeguards the job during the maternity leave—, the amount of maternity benefits—which reduces the loss of the couple's income, but also maintains the earner status of the woman during the maternity leave—, and owning the family home—which, in the Canadian context, acts, in most cases, as a form of wealth equalization between partners. Somehow, in the couple's view of its own situation, insuring the economic condition of the woman before the first birth seems adamant. However, none of the factors affecting the decision to have the second child are related with women' characteristics, whereas the partner's income plays a key role. Apparently, couples make their decision about having the second child assuming that with two children, the affluence of the family will depend mainly on the father's income. Our data did not allow estimating how the partners would share their time between paid employment and domestic work after the birth. This said, this result suggests that even among dual earners, the couple makes its decision assuming that with two children, the mother's income will not be as important a factor as the father's in determining the family's affluence. This amounts to say that contemporary fertility decisions are taken by couples living by 'modern times' gendered roles in which the working mother is more likely to devote less time to paid work or less energy to career building than the father, and more likely to spend more time and more energy in family related work. With such gendered roles, insuring the economic condition of the prospective mother before the birth of the first child makes a lot of sense.

Income level and policy

Financial assistance is designed to reduce child poverty and thus aimed at low income families. Thus it is not surprising that among low income people, having the first and second child is related to the value of such assistance, nor is it surprising that having the first child is related to the amount of expected maternity benefits. More surprising is that the hazard of having the second child is related to partner's

income, not only because it is the partner's income rather than the family income, but because, as we point out above, wealthy couples would be expected to decide whether or not to have a second child on some criteria other than their income. Again, the data we use provide no information about the motivation or attitudes of the respondents, but the effect of the partner's income suggests that even relatively wealthy couples are sensitive to the cost of having a second child. This is not a new idea: Becker and Lewis's (1973) analysis of the couple's fertility decisions is based on the idea that the child of the wealthy cost more than the child of the poor, whereas, maybe more to the point, the Myrdals' (1940, 1941) analysis of low fertility in industrialized Sweden already acknowledged that middle-class people would have the children they intended to have only if their cost were offset by universalistic social programs. What is interesting is finding a trace of the cost sensitivity of the relatively wealthy fertility decisions in a context where policy is driven by ideas than run against universalistic social programs.

Our results show that indeed, the State does mould the childbearing decisions couples make through family related policies as well as through labour market related policies. However, some of our results show that this may happen in unexpected ways. The provisions that impose the sharing of family property among married couples have been implemented as a gender equity measure, not a pronatalist measure. This is true also of maternity benefits, which have been implemented as a gender equity measure, not a pronatalist measure. The complex set of refundable tax credits and transfers developed by the federal and provincial governments that make the annual financial assistance low-income families are entitled to, have not been designed as a pronatalist measure, but as way to reduce child poverty. In Canada, family-related *but not pronatalist* policies mould the childbearing decisions of couples in their childbearing years.

Canada, like other similar countries, has no pronatalist policy. In Canada, as in other countries having a liberal welfare state regime, the tax system and other institutions, such as full-day school, do not deter women from being employed and the country has a very high women labour force participation. The tax system seems effective at reducing the income gap due to family structure, and thus the cost of children, for low-income families; it is not effective at reducing it for middle-income families. This is consistent with the intention of reducing child-poverty. Given that Canadian couples clearly take policies into account when making their childbearing decisions, implementing additional policies aimed at reducing the cost of children—e.g. reducing the income gap, especially for the middle-income families—could help couples having more children if they wish so.

References

Aassve, Arnstein and Trude Lappegård. 2009. Childcare cash benefits and fertility timing in Norway, *European Journal of Population* 25(1): 67-88.

Adserà, Alícia. 2004. Changing fertility rates in developed countries: The impact of labor market institutions, *Journal of Population Economics* 17: 17–43.

Adserà, Alícia. 2005. Vanishing children: From high unemployment to low fertility in developed countries, *American Economic Review* 95(2): 189–193.

Adserà, Alícia. 2011. The interplay of employment uncertainty and education in explaining second births in Europe, *Demographic Research* 25: 513-544

Ahn, Namkee and Pedro Mira. 2002. A note on the changing relationship between fertility and female employment rates in developed countries, *Journal of Population Economics* 15(4): 667.

Beaupré, Pascale and Pierre Turcotte. 2005. Women's labour force participation and family formation: The case of Canadian women, *International Population Conference, Tours 2005*.

Becker, Gary and H. Gregg Lewis. 1973. On the interaction between the quantity and quality of children, *The Journal of Political Economy* 81(2.2): S279-S288.

Binder, David A. and Georgia R. Roberts. 2003. Design-based and model-based methods for estimating model parameters, in R. L. Chambers and C. J. Skinner (eds.), *Analysis of Survey Data*. Chichester: Wiley, pp. 29-57.

Blossfeld, Hans-Peter and Sonja Drobninullc. 2001. *Careers of Couples in Contemporary Society: From Male Breadwinner to Dual-Earner Families*. Oxford: Oxford University Press.

Brewster, K. L. and R. R. Rindfuss. 2000. Fertility and women's employment in industralised nations, *Annual Review of Sociology* 26: 271–296.

D'Addio, Anna C. and Marco M. d'Ercole. 2005. *Trends and Determinants of Fertility Rates: The Role of Policies*. Paris, OECD Publishing. (OECD Social, Employment and Migration Working Papers, No. 27)

Esping-Andersen, Gøsta. 1990. *The Three Worlds of Welfare Capitalism*. Princeton: Princeton University Press.

Esping-Andersen, Gøsta. 1999. *Social Foundations of Postindustrial Economies*. Oxford: Oxford University Press.

Ferrera, Maurizio. 1996 The 'southern model' of welfare in social Europe, *Journal of European Social Policy* 6(1): 17-37.

Feyrer, James, Bruce Sacerdote, and Ariel Dora Stern. 2008. Will the stork return to Europe and Japan? Understanding fertility within developed nations, *Journal of Economic Perspectives* 22(3): 3-22.

Frejka, Tomas , Tomáš Sobotka, Jan M. Hoem, and Laurent Toulemon (eds.). 2008. *Childbearing Trends and Policies in Europe* (*Demographic Research* Special Collection 7).

Frenette, Marc. 2011. How does the stork delegate work? Childbearing and the gender division of paid and unpaid labour, *Journal of Population Economics* 24(3): 895-910.

Gauthier, Anne-Hélène. 1996. *The State and the Family*. Oxford: Clarendon Press.

Gauthier, Anne-Hélène. 2007 The impact of family policies on fertility in industrialized countries: A review of the literature, *Population Research and Policy Review* 26(3): 323–346.

Grambsch, Patricia M. and Terry M. Therneau. 1994. Proportional hazards tests and diagnostics based on weighted residuals, *Biometrika* 81(3): 515–526.

Haan, Peter and Katharina Wrohlich. 2011. Can child care policy encourage employment and fertility? Evidence from a structural model, *Labour Economics*, 18(4): 498-512.

Hoem, Jan M. 2008. The impact of public policies on European fertility, in Tomas Frejka, Tomáš Sobotka, Jan M. Hoem, and Laurent Toulemon (eds.), *Childbearing Trends and Policies in Europe*. *Demographic Research* 19(10): 249–260.

Korn, Edward L. and Barry I. Graubard. 1999. *Analysis of Health Surveys.* New York: Wiley.

Kamerman, Sheila. B. and Alfred J. Kahn (eds.). 1997. *Family Change and Family Policies in Great Britain, Canada, New Zealand, and the United States*. Oxford: Oxford University Press.

Laplante, Benoît, María Marta Santillán, and María Constanza Street. 2009. Household surveys as a source of data for event history analysis. The study of family related life events in Argentina using the Encuesta Permanente de Hogares, *International Sociology* 24(3): 430-456.

Laroche, Sylvie. 2007. *Longitudinal and Cross-Sectional Weighting of the Survey of Labour and Income Dynamics*. Ottawa: Statistics Canada.

Lefebvre, Pierre, Liliane Brouillette, and Claude Felteau. 1994. Les effets des impôts et des allocations familiales sur les comportements de fécondité et de travail des Canadiennes : résultats d'un modèle de choix discrets, *Population* 49(2): 415-456.

Matysiak, Anna and Daniele Vignoli. 2008. Fertility and women's employment: A meta-analysis, *European Journal of Population* 24(4): 363-384.

McNown, Robert and Cristóbal Ridao-Cano. 2004. The effect of child benefit policies on fertility and female labor force participation in Canada, *Review of Economics of the Household* 2(3): 237-254.

Milligan, Kevin. 2005. Subsidizing the stork: New evidence on tax incentives and fertility, *Review of Economics and Statistics* 87(3): 539-555.

Milligan, Kevin. 2008. *Canadian Tax and Credit Simulator*, Database, software and documentation, Version 2008-1. (http://faculty.arts.ubc.ca/kmilligan/ctacs/)

Myrdal, Alva. 1941. *Nation and Family: The Swedish Experiment in Democratic Family and Population Policy*. New York: Harper and Brothers.

Myrdal, Gunnar. 1940. *Population, a Problem for Democracy*. Cambridge: Harvard University Press.

Neyer, Gerda and Gunnar Andersson. 2008. Consequences of family policies on childbearing behavior: Effects or artifacts?, *Population and Development Review* 34(4): 699–724.

OECD. 2005. *Taxing Working Families: A Distributional Analysis*. Paris: OECD Publishing. (OECD Tax Policy Studies nº 12)

Parent, Daniel and Ling Wang. 2007 Tax incentives and fertility in Canada: Quantum vs tempo effects, *Canadian Journal of Economics* 40(2): 371-400.

Phipps, Shelley A. 2000. Maternity and parental benefits in Canada: Are there behavioural implications?, *Canadian Public Policy* 26(4): 415-436.

Presser, Harriet B. 2003. *Working in a 24/7 Economy: Challenges for American Families*. New York: Russell Sage Foundation.

Rao, J. N. K. and C. F. J. Wu. 1988. Resampling inference with complex survey data, *Journal of the American Statistical Association* 83(401): 231-241.

Rao, J.N.K., C.F.J Wu, and K. Yue. 1992. Some recent work on resampling methods for complex surveys. *Survey Methodology* 18: 209-217.

Royston Patrick and Willi Sauerbrei. 2007. Multivariable modeling with cubic regression splines: A principled approach, *Stata Journal* 7(1): 45-70.

Santarelli, Elisabetta. 2011. Economic resources and the first child in Italy: A focus on income and job stability, *Demographic Research*, 25: 311-336.

Sobotka, Tomáš, Vegard Skirbekk, and Dimiter Philipov. 2011. Economic recession and fertility in the developed world, *Population and Development Review* 37(2): 267–306.

Statistics Canada. N.D. *Survey of Labour and Income Dynamics (SLID) - A Survey Overview*. Ottawa: Statiscs Canada. http://www.statcan.gc.ca/bsolc/olc-cel/olc-cel?catno=75F0011X&lang=eng. (Accessed on September 23rd 2011).

Thévenon, Olivier. 2011. Family policies in OECD countries: A comparative analysis, *Population and Development Review* 37(1): 57-87.

Thévenon, Olivier and Anne-Hélène Gauthier. 2011. Family policies in developed countries: A fertility booster with side-effects, *Community, Work, and Family* 14(2): 197-216.

Zhang, Junsen, Jason Quan, and Peter Van Meerbergen. 1994. The effect of tax-transfer policies on fertility in Canada, 1921–88, *Journal of Human Resources* 29(1):181-201.

Annex 1

Social programs related to the presence of children

The federal programs are 1) the Goods and services tax and the Harmonized sales tax refundable tax credit, 2) the Canada Child Tax Benefit, and 3) the National Child Benefit Supplement.

The provincial programs are 1) the Newfoundland and Labrador Child Benefit, since 1999, 2) the Nova Scotia Child Benefit, since 1998, 3) the New Brunswick Child Tax Benefit, since 1997, 4) the New Brunswick Working Income Supplement, 5) the 'new version' of the Quebec Family Allowance, from 1997 to 2004, 6) the Quebec Refundable Childcare Credit, 7) the Quebec APPORT/Parental Wage Assistance, from 1998 to 2004, 8) the Quebec Child Assistance Measure, since 2005, 9) the Quebec Work Premium, since 2005, 10) the Ontario Child Care Supplement for Working Families, since 1997, 11) the Manitoba Child related Income Support Program, 12) the Saskatchewan Employment Supplement, since 1998, 13) the Alberta Family Employment Tax Credit, since 1997 with changes in 2005 , 14) the British Columbia Family Bonus, since 1996, and 15) the British Columbia Earned Income Benefit.

Annex 2

Cubic spline functions

A cubic spline function combines features of a linear spline function and of a polynomial function. A linear regression spline is a piecewise linear function in which the relation between the dependent and independent variable is broken down into a series of pieces —or segments— in which the effect of the dependent variable is linear, constant within each piece, but varies across pieces. A cubic regression spline is a function in which the relation between the dependent and independent variable is broken down into a series of pieces in which the dependent variable is expressed as a series of piece-specific third degree polynomial functions of the independent variable. In the approach developed by Royston and Sauerbrei (2007), the piece-specific third degree polynomial functions are replaced by 'basis functions' that are algebraically equivalent, but have mean zero, standard deviation 1, and are uncorrelated. Each basis function has a linear relation with the dependent variable. The relation between the independent and dependent variable is specified as the sum of the products of each basis function and its coefficient, as it would be, for example, for a 'conventional' quadratic or cubic relation.

Tests on independent variables whose specification requires more than one term (time-dependent effects and relations specified using cubic spline) are done on all terms simultaneously; in the tables, such tests are marked using daggers ('†') rather than asterisks ('*').

Table 1 Description of risk sets of first, second and third births. Canadian two-earner couples, 1999-2006. Individual characteristics. Weighted proportions of time at risk.

	First		Second		Third	
	Woman	**Man**	**Woman**	**Man**	**Woman**	**Man**
LABOUR MARKET						
Job permanency						
Temporary	0.13	0.10	0.10	0.08	0.11	0.05
Permanent	0.87	0.90	0.90	0.92	0.89	0.95
Job sector						
Private	0.72	0.76	0.73	0.80	0.70	0.80
Public	0.28	0.24	0.27	0.20	0.30	0.20
Union protection						
No	0.67	0.66	0.69	0.67	0.63	0.62
Yes	0.33	0.34	0.31	0.33	0.37	0.38
Work schedule						
Part time	0.20	0.07	0.29	0.04	0.62	0.03
Full time	0.80	0.93	0.71	0.96	0.38	0.97
Employer's pension plan						
No	0.45	0.41	0.45	0.41	0.44	0.33
Yes	0.55	0.59	0.55	0.59	0.56	0.67
After tax income (CAD)						
Less than 10,000	0.07	0.02	0.08	0.02	0.09	0.01
10,000 to l.t. 25,000	0.38	0.23	0.41	0.18	0.38	0.10
25,000 to l.t. 40,000	0.38	0.39	0.36	0.38	0.35	0.35
40,000 to l.t. 55,000	0.13	0.23	0.12	0.27	0.13	0.32
55,000 or more	0.04	0.13	0.04	0.16	0.05	0.22
Unemployment rate						
Less than 5%	0.19	0.25	0.18	0.24	0.20	0.25
5% to l.t. 7.5%	0.54	0.37	0.62	0.43	0.64	0.43
7.5% to l.t. 10%	0.13	0.25	0.14	0.27	0.13	0.27
10% or more	0.14	0.12	0.06	0.07	0.03	0.05
STATE INTERVENTION						
Entitled to maternity leave						
No	0.06		0.06		0.04	
Yes	0.94		0.94		0.96	
Entitled to maternity benefits						
No	0.07		0.10		0.10	
Yes	0.93		0.90		0.90	
Amount of expected maternity benefits (CAD per week)						
Less than 200	0.23		0.27		0.31	
200 to l.t. 350	0.37		0.35		0.33	
350 or more	0.40		0.38		0.36	
Entitled to employment insurance						
No	0.09	0.06	0.12	0.05	0.14	0.04
Yes	0.91	0.94	0.88	0.95	0.86	0.96

Table 1 Description of risk sets of first, second and third births. Canadian two-earner couples, 1999-2006. Individual characteristics. Weighted proportions of time at risk. (Continued)

	First		Second		Third	
	Woman	**Man**	**Woman**	**Man**	**Woman**	**Man**
OTHER						
Highest diploma						
High school or less	0.26	0.35	0.29	0.36	0.37	0.38
Postsecondary	0.40	0.38	0.43	0.41	0.38	0.39
University	0.34	0.27	0.28	0.23	0.25	0.23
Age						
20-24	0.16		0.05		0.01	
25-29	0.31		0.22		0.07	
30-34	0.22		0.29		0.22	
35-49	0.31		0.45		0.70	
Time at risk	3,753		2,740		5,574	

Table 2 Description of risk sets of first, second and third births. Canadian two-earner couples, 1999-2006. Family characteristics. Weighted proportions of time at risk (except for panel).

	First	Second	Third
Panel			
Panel 3 (1999-2004)	918	765	1,100
Panel 4 (2002-2006)	756	607	896
LABOUR MARKET			
Adjusted after tax total income (CAD)			
Less than 25,000	0.10	0.15	0.18
25,000 to less than 50,000	0.54	0.65	0.70
50,000 or more	0.29	0.18	0.12
Number of benefits offered by employers			
None	0.08	0.08	0.05
One or two	0.10	0.10	0.10
Three	0.82	0.82	0.85
STATE INTERVENTION			
Amount of expected additional annual financial assistance (CAD)			
Less than 500	0.19	0.22	0.06
500 to less than 1,000	0.28	0.27	0.06
1,000 to less than 1,500	0.29	0.22	0.39
1,500 to less than 2,000	0.12	0.14	0.24
2,000 or more	0.12	0.14	0.25
OTHER			
Type of union			
Marriage	0.60	0.75	0.85
Cohabitation	0.40	0.25	0.15
Education			
Woman has a higher level	0.31	0.27	0.24
Both partners have the same level	0.51	0.53	0.54
Man has a higher level	0.18	0.20	0.22
Housing tenure			
Renting	0.33	0.18	0.08
Ownership	0.67	0.82	0.92
Time at risk in person-months	3,753	2,740	5,574

Table 3 Hazard of first, second and third births. Net effects from 'full' models. Employed Canadian women living with a partner, 1999-2006.

	First	Second	Third
LABOUR MARKET			
Job permanency [Temporary]			
Permanent	2.748**	2.627	1.158
Permanent · *t*		0.842	
Job sector [Private]			
Public	1.004	1.151	3.218
Public · *t*			0.737
Union protection [No]			
Yes	1.153	0.943	1.142
Work schedule [Part time]			
Full time	0.739	0.838	1.610
Employer's pension plan [No]			
Yes	1.120	1.273	0.787
Logarithm of after tax income			
s_1	0.788	0.937	0.881
s_2	1.165	1.332	1.023
Unemployment rate			
s_1	1.129	0.899	0.867
s_2	0.940	0.943	0.966
STATE INTERVENTION			
Amount of expected maternity benefits			
s_1	1.378†	1.210	1.170
s_2	0.974	1.002	1.189
OTHER			
Highest diploma [University]			
High school or less	0.895	0.680	0.750
Postsecondary	0.939	0.663	0.643
Age			
s_1		0.486††	0.375
s_2		1.408	1.354
Time at risk in person-months	3,753	2,740	5,574

Results from Cox model. Coefficients are reported as hazard ratios (a.k.a. relative risks).
s_k are pieces of a cubic spline function. See "Method" for details.
Tests are based on weighted bootstrap replication to account for sample design effect.
Data from panels 3 and 4 of the *Survey of Labour and Income Dynamics* (Statistics Canada).
* p<0.1; ** p<0.05; *** p<0.01. † p<0.1; †† p<0.05; ††† p<0.01 for tests on several variables.

Table 4 Hazard of first, second and third births. Net effects from 'full' models. Partners of employed Canadian women, 1999-2006.

	First	Second	Third
LABOUR MARKET			
Job permanency [Temporary]			
Permanent	1.119	0.978	2.221
Permanent · *t*			
Job sector [Private]			
Public	0.687	0.793	1.358
Union protection [No]			
Yes	1.304	1.034	0.669
Work schedule [Part time]			
Full time	1.083	1.135	0.364
Employer's pension plan [No]			
Yes	1.114	1.577	1.119
Yes · *t*		0.882	
Logarithm of after tax income			
s_1	1.238	1.163	1.522
s_2	1.186	0.900	1.878
Unemployment rate			
s_1	1.007	1.030	0.988
s_2	0.992	0.996	0.902
STATE INTERVENTION			
Entitled to unemployment insurance benefits [No]			
Yes	1.444	0.769	0.620
OTHER			
Highest diploma [University]			
High school or less	0.989	0.798	0.832
Postsecondary	0.952	0.988	0.916
Time at risk in person-months	3,753	2,740	5,574

Results from Cox model. Coefficients are reported as hazard ratios (a.k.a. relative risks).
s_k are pieces of a cubic spline function. See "Method" for details.
Tests are based on weighted bootstrap replication to account for sample design effect.
Data from panels 3 and 4 of the *Survey of Labour and Income Dynamics* (Statistics Canada).
* p<0.1; ** p<0.05; *** p<0.01. † p<0.1; †† p<0.05; ††† p<0.01 for tests on several variables.

Table 5 Hazard of first, second and third births. Net effects from 'full' models with each partner's income (left) and family income (right). Canadian two-earner couples, 1999-2006.

	First		Second		Third	
LABOUR MARKET						
Women						
Job permanency [Temporary]						
Permanent	2.439*	2.370*	2.293	2.205	1.121	1.043
Permanent · *t*			0.846	0.841		
Job sector [Private]						
Public	1.059	0.982	1.344	1.372	3.715	3.153
Public · *t*					0.711	0.727
Union protection [No]						
Yes	1.132	1.151	0.918	0.839	1.114	1.148
Work schedule [Part time]						
Full time	0.703	0.657	0.803	0.674	1.576	1.497
Employer's pension plan [No]						
Yes	1.019	0.921	1.237	1.043	0.818	0.747
Logarithm of after tax income						
s_1	0.809		1.097		0.863	
s_2	1.132		1.261		1.101	
Unemployment rate						
s_1	0.918	1.230	0.931	0.905	0.779	0.750
s_2	0.683	1.015	0.993	0.983	1.176	1.213
Men						
Job permanency [Temporary]						
Permanent	0.918	0.967	0.968	1.065	2.189	2.175
Job sector [Private]						
Public	0.684	0.653	0.825	0.770	1.858	1.861
Union protection [No]						
Yes	1.312	1.331	1.014	1.035	0.678	0.677
Work schedule [Part time]						
Full time	1.127	1.172	1.371	1.652	0.284	0.338
Employer's pension plan[No]						
Yes	1.025	1.062	1.273	1.611	1.194	1.324
Yes · *t*			0.930	0.916		
Logarithm of after tax income						
s_1	1.281		2.441†††		2.094	
s_2	0.982		0.662		2.335	
Unemployment rate						
s_1	0.915	0.930	1.195	1.162	2.094	0.986
s_2	0.986	0.997	1.012	1.054	2.335	0.863
Family						
Logarithm of family's adjusted after tax total income						
s_1		1.531		2.370		1.017
s_2		1.056		0.799		0.991
s_3		0.948		1.109		0.973

Table 5 Hazard of first, second and third births. Net effects from 'full' models with each partner's income (left) and family income (right). Canadian two-earner couples, 1999-2006. (Continued)

	First		Second		Third	
Number of benefits offered by employers [One or two]						
None	0.633	0.700	1.099	0.949	1.067	0.948
Three benefits	1.043	1.052	1.026	1.062	0.749	0.741
STATE INTERVENTION						
Women						
Amount of expected maternity benefits						
s_1	1.334	1.067	1.125	0.904	1.221	1.111
s_2	0.958	1.018	0.968	1.099	1.169	1.201
Men						
Entitled to un employment insurance benefits [No]						
Yes	1.248	1.337	0.776	0.901	0.574	0.656
Family						
Amount of expected additional annual financial assistance						
s_1	1.170	1.292†	2.323†††	2.069†††	0.854	0.831
s_2	1.339	1.456	1.378	1.373	0.901	1.037
OTHER						
Women						
Age						
s_1			0.479††	0.466††	0.345	0.329
s_2			1.351	1.397	1.474	1.487
Family						
Education [Both partners have the same level]						
Woman has more	0.903	0.878	0.925	0.830	0.723	0.763
Man has more	0.867	0.868	0.898	0.842	0.814	0.861
Type of union [Cohabiting union]						
Marriage	0.878†	0.891†				
Marriage · t	1.090	1.089				
Housing tenure [Renting]						
Ownership	2.397***	2.436**	1.607	1.674	1.073	1.105
Time at risk	3,753		2,740		5,574	

Results from Cox model. Coefficients are reported as hazard ratios (a.k.a. relative risks).
s_k are pieces of a cubic spline function. See "Method" for details.
Tests are based on weighted bootstrap replication to account for sample design effect.
Data from panels 3 and 4 of the *Survey of Labour and Income Dynamics* (Statistics Canada).
* p<0.1; ** p<0.05; *** p<0.01. † p<0.1; †† p<0.05; ††† p<0.01 for tests on several variables.

Table 6 Financial assistance as a function of after tax income

After tax income, Man (CAD)	Expected increase in annual financial assistance following the birth of a child (CAD)
Less than 10,000	2,373.96
10,000 to less than 25,000	2,090.24
25,000 to less than 40,000	1,364,77
40,000 to less than 55,000	717.79
55,000 or more	216.38

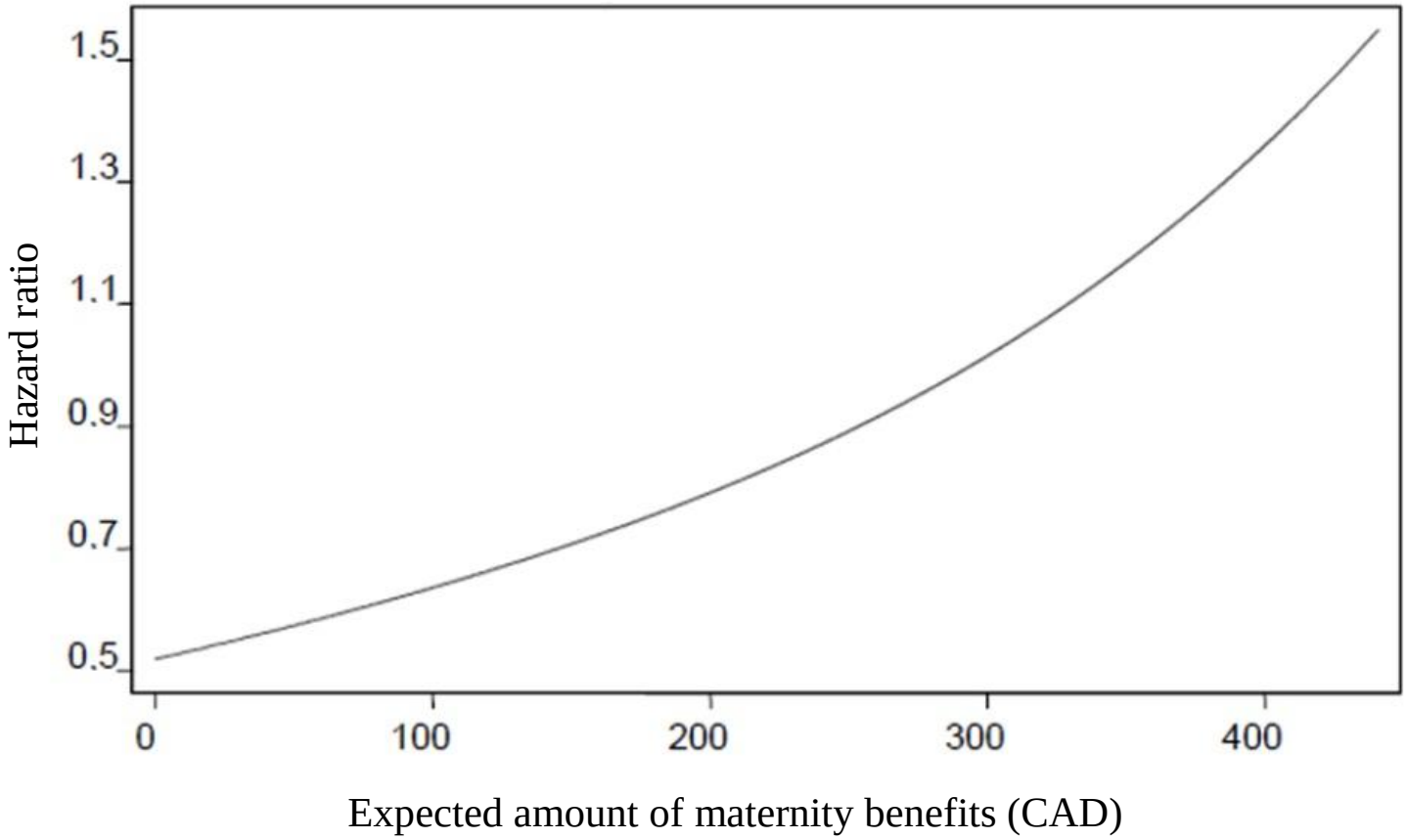

Figure 1 Effect of the expected amount of maternity benefits on the hazard of first birth according to results from Table 3. Employed Canadian women living with a partner, 1999-2006.

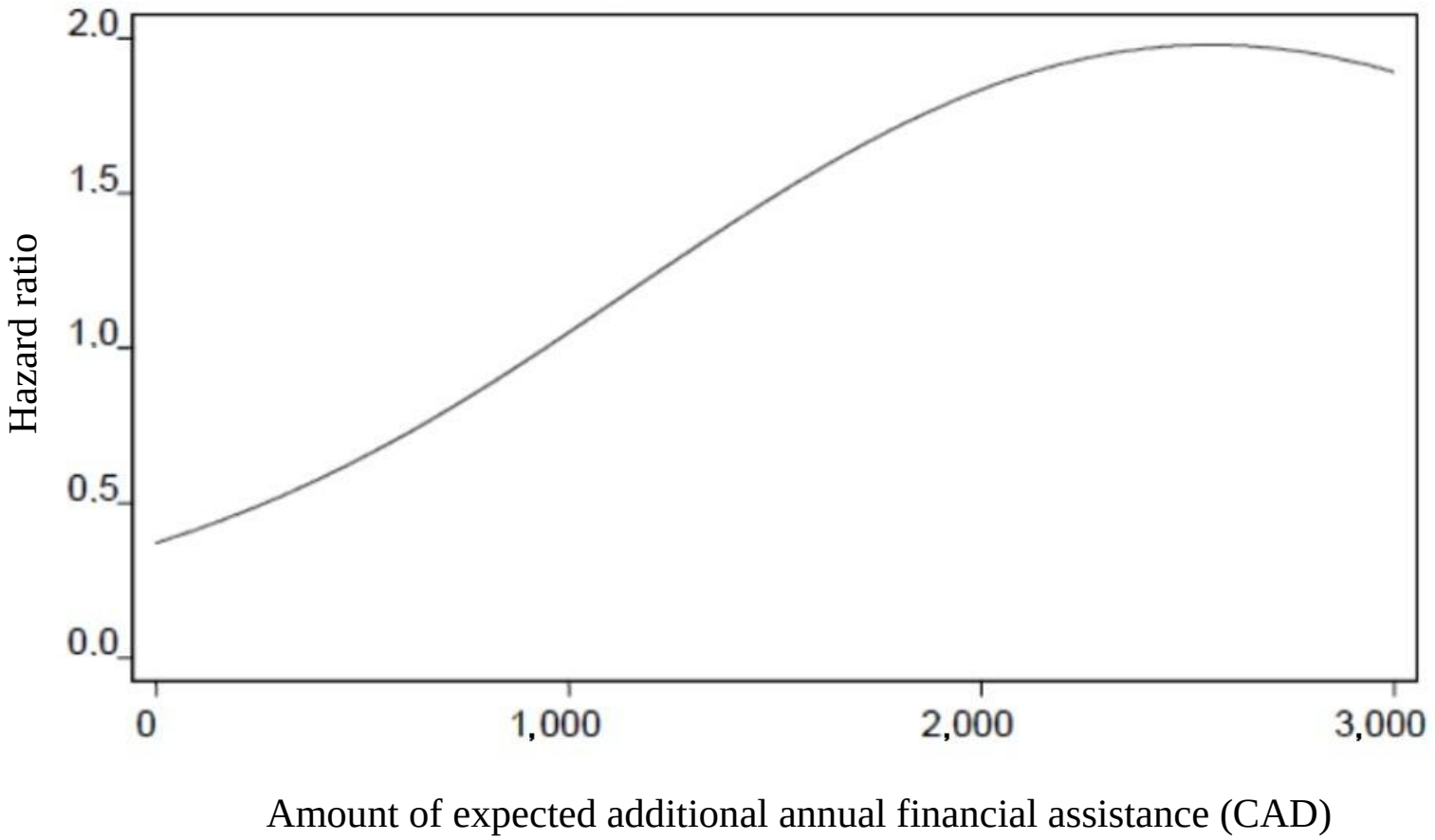

Figure 2 Effect of the amount of expected additional annual financial assistance on the hazard of the first birth according to results using the net effect reported in Table 5. Canadian two-earner couples, 1999-2006.

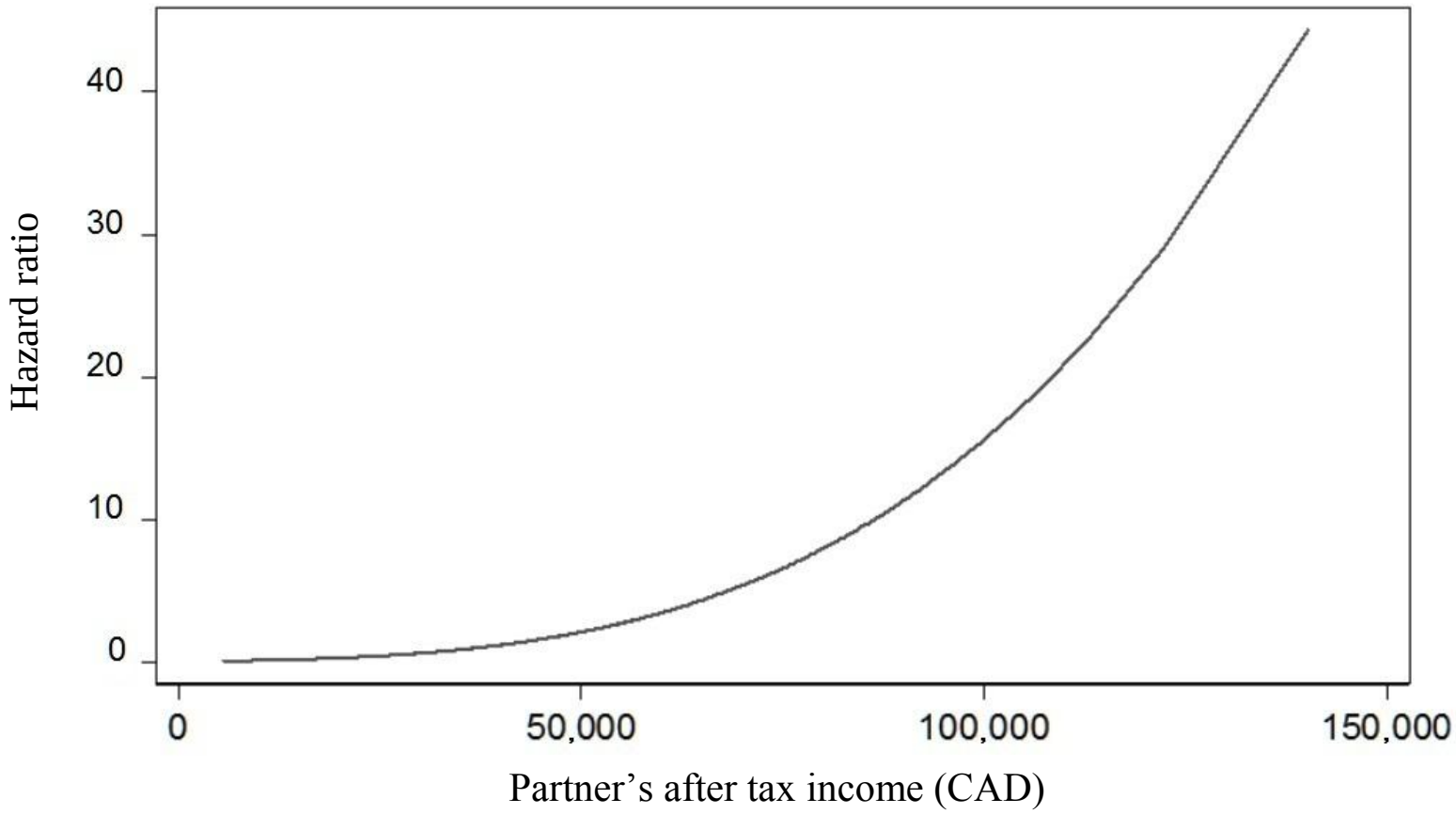

Figure 3 Effect of the partner's after tax income on the hazard of the second birth using the net effect reported in Table 5. Canadian two-earner couples, 1999-2006.

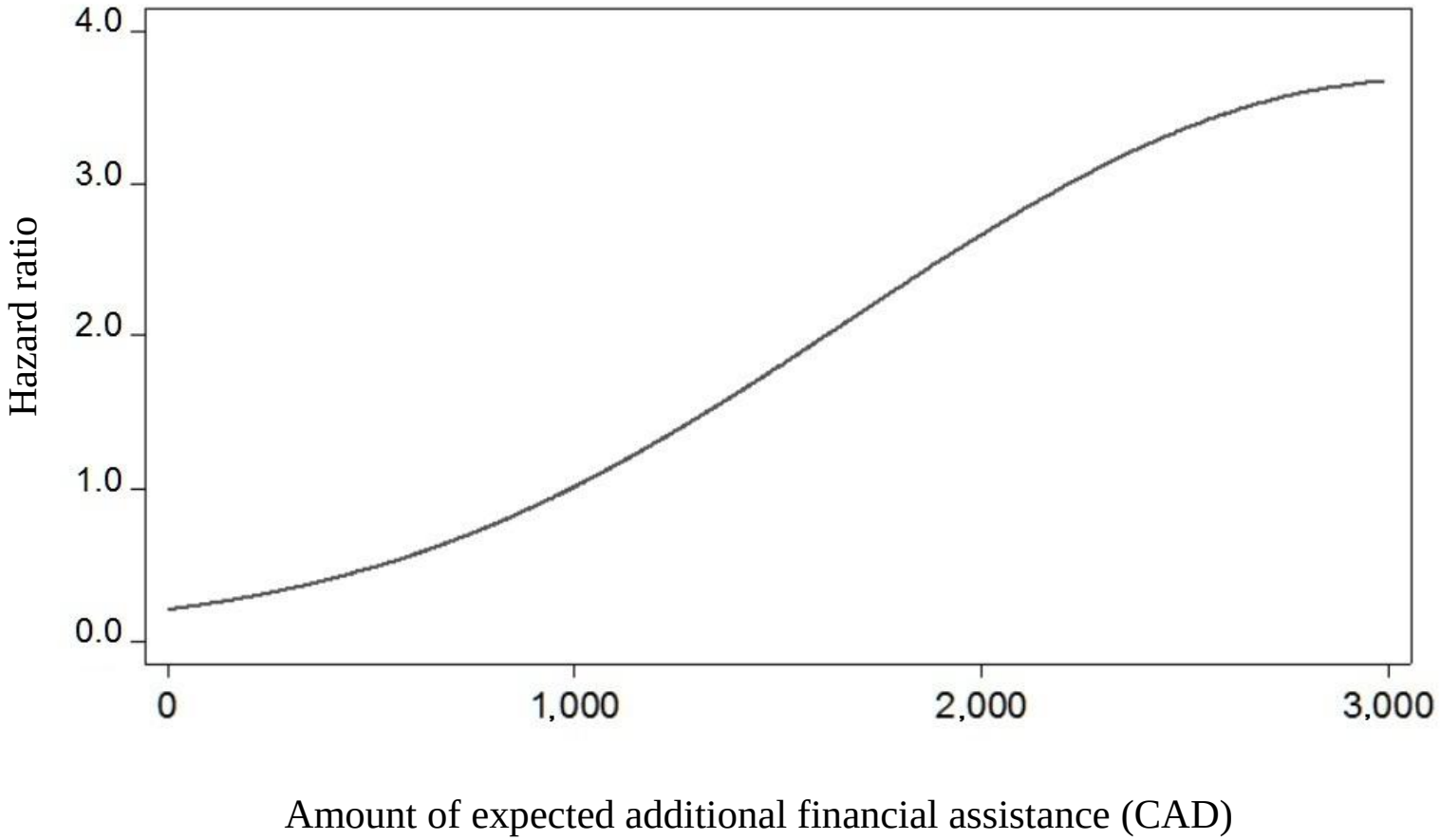

Figure 4 Effect of the amount of expected additional annual financial assistance on the hazard of the second birth using the net effect reported in Table 5. Canadian two-earner couples, 1999-2006.