

The changing effect of paid work on Canadian women's childbearing, 1946-2001

CONTEXT

The transformation of the norms and organization of reproductive life, often referred to as the second demographic transition, occurred at the same time as gender roles within the home and society were changing profoundly. The most striking aspect of these changes is doubtlessly the increase in the labor force participation of women that has been almost continuous over the last century. From a cohort analysis of census data, Laplante and Godin (2003) showed that, in Canada, the pattern of women's labor force participation changed twice from the beginning to the end of the 20th century. The first phase involved a transition from few women working outside the home to a pattern of discontinuous trajectories where women would stop working when getting married and having children, and then return to work after their children were raised (Kempeneers, 1992). The second phase involved the transition from these discontinuous trajectories to more continuous ones, in which female labor force participation rate increases linearly with age. Among younger cohorts, whose lifetime is not yet completely observed, the rate of activity by age is very close to that observed for men, and there is no trace left of a retreat from the labor force by women during their childbearing years. This process of change had long been seen as an anomaly rather than a transformation, and as a cause of low fertility. Currently, it probably makes more sense to think of labor force participation of both women and men as one of the basic elements of the work and family equation (Le Bourdais et al., 2000).

In this paper, we examine the variation in the effect of work on women's hazard of having a child, according to their social condition, matrimonial state and birth history, and the evolution over time of each of these conditional effects from 1946 to 2001. In our view, the understanding of how this effect has changed over time should shed light on the relation that currently exists between work and family, as well as enabling us to better situate this relationship in an ongoing process.

HYPOTHESIS

In less than a century, the reproductive system, which was based on a strong gendered role structure, has been replaced by a system in which the gendered specialization of reproduction is, at least in principle, limited to its biological aspects. This replacement process occurred while the level of education of women rose to exceed that of men; at the same time, in the labor market, the importance of intellectual skills grew dramatically, eliminating the former inherent advantage of men in the workforce.

If reproduction is viewed as a process, the role of paid work as part of women's activities is an ambiguous element; on the one hand, it may be in competition with reproduction for the use of time, but on the other hand, it may also foster reproduction as it provides part of the resources needed to raise and care for children. Of course, the effect of women's paid work on childbearing that can be measured using statistical techniques is the net result of these two opposite effects.

The problem of identifying the impact of paid work on fertility is further complicated by the combined effect of several other factors. First, it is likely that whatever the role of paid work in the reproduction process, the magnitude and direction of its effect might vary according to women's matrimonial status. It is difficult to conceive how the effect of paid work could be the same for one woman living by herself and another living with a partner, and it makes sense to

think that this effect may also differ between married women and cohabiting women. Earnings are usually related to education. Thus, the opportunity cost of a child should be higher for a more educated woman than for a less educated one; consequently, highly educated women should have a smaller number of children than less educated women. However, for less educated women who have lower earnings, working full time may be the only way to afford a child, while reducing their number of hours might constitute an affordable and optimal solution for more educated women. These relations are likely to be reinforced when taking into account the spouse's levels of education and income, especially in the case of homogamous unions. The family income of a well educated couple may turn to be quite sufficient even after experiencing a significant reduction of the woman's income. By contrast, the income of the low educated spouse of a low educated woman might not be sufficient to forego even part of her income, especially if it has to support a child. The effect of paid work is likely to vary according to the birth history of women, i.e. for those who never had a child and among those who already had one, two, or three children. Finally, with all other things being equal, the effect of paid work should also change through time, as norms and public opinion evolved, as economic conditions changed, and as the importance of women's earnings in family income rose considerably over the last fifty years.

An interesting topic would be to relate the evolution, over historical time, of the effect of paid work on childbearing to the changes observed in norms, public opinion, economic conditions, and women's role, using some appropriate theoretical framework. The main problem of such an endeavor is that we still cannot measure how this effect truly evolved over time. The main hindrance in answering this question probably rests upon the fact that most studies on such topics (for instance, see Oppenheimer, 1994, 1997) rely upon the stationarity postulate typical of the economic approach to human behavior (Becker, 1976, 1993). Our aim in this paper is more modest: to identify the shape of the evolution, over time, of the effect of paid work on the hazard of women to have a child, depending upon their social condition, their matrimonial status, and their birth history.

DATA AND METHOD

Our data come from the *2001 General Social Survey* (GSS15), the most recent Canadian retrospective survey on family history, which provides respondents' detailed family (conjugal and reproductive) biography and summarized work biography (Statistics Canada, 2003). The sample of the GSS15 contains 13,646 women aged 15 years and over in 2001.

The hazard of having a child is an intensity that may be estimated, in its simplest form, using the number of births by units of time at risk. The effects that one or several variables exert on this intensity are commonly estimated using a class of linear models, known as hazard models (Cox and Oakes, 1984; Kalbfleish and Prentice, 2002; Lawless, 2003).

The age of women is the unit of time in our analysis. All episodes during which a woman was at risk of having a child are included in the analysis. Thus, each woman is considered at risk of having a child from the age at which giving birth is no longer considered exceptional (i.e., age 15) until the end of her reproductive life (age 45). In the 2001 GSS, only 0.27% of the female respondents' children were born from mothers aged less than 15 years old, and 99.60% were born before their mother reached the age of 45. Women are removed from the risk group during the period that immediately follows a birth. Women born outside of Canada are included in the risk group only from the age at which they immigrated in Canada. Using the retrospective data on all women interviewed in the 2001 GSS, from the time they were 15 years old, allows us to study the

evolution of the effect of paid work on the hazard of having a child from 1946 to 2001. The original sample of 13,646 women gave birth to 23,819 children. The age of the mother at each birth is given in years with one decimal in the microdata file, thus providing a number of points (309) on the time axis that is ten times greater the number of years comprised between the 15th and the 45th birthday. On average, 77 births occurred at each time point, which violates a condition for using continuous time models; we thus use discrete time models. Furthermore, the fact of using all episodes (rather than only one episode) during which a woman is at risk of giving birth compels us to use random effects models.

Identifying the shape of the evolution, over historical time, of the effect of paid work on the hazard of giving birth, according to social condition, matrimonial status, and birth history, means that we wish to model the effect of paid work as a function of time and of each of the three other variables. We thus estimate equations that contain combinations of conditional relations that each may be specified using polynomials or splines. For instance, the rather simple equation in which the effect of paid work, W , is a function of social condition, S , matrimonial status, M , and birth history, B , and the effects of these variables are a function of historical time, H , with a single inflexion point within each category of the variables, would comprise as many terms as those resulting from the expansion of the expression $W+S+M+B+W(1+H+H^2)+ W(1+H+H^2)(S+M+B)$. The coefficients associated with these terms are barely interpretable, but the curves they represent are smooth and easily interpretable.

The 2001 GSS respondents were sampled from a complex survey design. Estimation must be calculated using the weights provided by Statistics Canada. However, the usual estimators of standard error do not provide reliable estimates. Therefore, we use robust estimators of standard error (Binder, 1983; Rao and Wu, 1988).

REFERENCES

- Becker, G. S. (1993). *A Treatise on the family*. Cambridge (MA): Harvard University Press.
- Becker, G. S. (1976). *The economic approach to human behavior*. Chicago: University of Chicago Press.
- Binder, D. A. (1983). "On the variances of asymptotically normal estimators from complex surveys", *International Statistical Review*, 51, 279-292.
- Cox, D. R. and D. Oakes (1984). *Analysis of survival data*. London (UK): Chapman and Hall/CRC Press.
- Kalbfleisch, J. D. and R. L. Prentice (2002). *The statistical analysis of failure time data, second edition*. New York NY: John Wiley and Sons.
- Kempeneers, M. (1992). *Le travail au féminin. Analyse démographique de la discontinuité professionnelle des femmes au Canada*. Montréal : Presses de l'Université de Montréal.
- Laplante, B. and J.-F. Godin, (2003). "La population active au 20^e siècle", in V. Piché and C. Le Bourdais (eds.), *La démographie québécoise, enjeux du XXI^e siècle* (p. 193-224), Montréal: Presses de l'Université de Montréal.
- Lawless, Jerald F. (2003). *Statistical models and methods for lifetime data, second edition*. New York NY: John Wiley and Sons.

Le Bourdais, C., G. Neill and N. Vachon (2000). "Family Disruption in Canada : Impact of the Changing Patterns of Family Formation and of Female Employment", *Canadian Studies in Population*, 27 (1): 85-105.

Oppenheimer, V. K. (1994). "Women's rising employment and the future of the family in industrial societies", *Population and Development Review*, 20 (2): 293-342.

Oppenheimer, V. K. (1997). "Women's employment and the gain to marriage: The specialization and trading model", *Annual Review of Sociology*, 23: 432-453.

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

Statistics Canada (2003). *2001 General Social Survey, Cycle 15: Family History Public Use Microdata file Documentation and User's Guide*, Ottawa: Statistics Canada, Housing, Family and Social Statistics Division (Catalogue no. 12M0015GPE)