

Fertility Change in Canada, 1971-2007: Persistence of a Countercyclical Pattern¹

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Poster presentation at the annual meetings of the Population Association of America, San Francisco, CA, May 3-5, 2012

Extended Abstract

This study evaluates whether fertility in Canada between 1971 and 2007 has been procyclical or countercyclical. The Procyclical thesis predicts birth rates increase in good economic times and fall when the economy is in decline. Underlying this perspective is the proposition that fertility increases in times when couples feel more economically secure and postpone childbearing when economic conditions are less secure. Countercyclical theory posits that aggregate fertility is strongly affected by change in the extent of economic opportunities available to women. Under periods of economic growth the female wage rate is expected to rise and employment rates to increase. This situation is predicted to result in reduced fertility rates because in this type of economic context women incur significant opportunity costs for childbearing. Fertility rates are expected to increase when the economy is a slump when employment opportunities are diminished and the opportunity costs of childbearing are reduced. These competing explanations are evaluated in the context of Canada over the period of 1970 to 2007. The results are consistent with the countercyclical thesis. While male income is found to have a positive effect on birth probabilities, change in female wages exert a strong negative effect on fertility. It is also found that the economic context, whether growth or recession, conditions these effects.

¹ This research is funded by a Grant from the Social Sciences and Humanities Research Council (SSHRC Grant # 410-2009-0160) and additional support from the Society of Edmonton Demographers (SED) and Killam Research Fund at the University of Alberta.

Introduction and Study Objectives

In *Social Aspects of the Business Cycle* (1927), Dorothy Thomas advanced a procyclical interpretation of the relationship between the state of the economy and aggregate fertility rates. She noted that in the United States birth rates rise in good economic times and fall in periods of economic recession. In their study of post-War fertility trends in the United States, Butz and Ward (1979a, 1979b) observed that fertility rates fluctuate countercyclically rather than procyclically: Fertility rates rise when the economy is in a slump and decline during periods of economic growth. Implicit in the procyclical and countercyclical explanations is a behavioural adjustment by couples in response to shifts in the economy, to either advance or delay childbearing. The Procyclical thesis assumes an advancement response to economic upturns and a postponement response to economic downturns. Countercyclical theory advises that couples advance their fertility during economic downturns and delay childbearing during periods of growth. In a recent review of the literature, Sobotka, Skirbekk and Philipov (2011) conclude that since the early 1980s the relationship between economic fluctuations and fertility in highly developed countries has been predominantly procyclical, even though the effects are typically small and generally of little or no consequence for cohort completed fertility. With regard to Canada, the early study of Hyatt and Milne (1991) covering the period from 1947 to 1984 supports a countercyclical explanation of fertility change. To the knowledge of this writer no other such study has been conducted in the context of Canada that looks specifically at this question. The goal of the present investigation is to extend the earlier study of Hyatt and Milne over the 37-year period from 1970 to 2007.

Theoretical Framework

I apply a modified model first proposed by Butz and Ward (1979a) to test the two competing explanations²:

$$\ln B_{a,t} = B_0 + B_1 \ln Y + B_2 K' \ln Y + B_3 K' \ln W_f \quad (1)$$

Where,

$\ln B_{a,t}$ = log (ln) age-specific fertility rates (a = age, t = year);

$\ln Y$ = log male age-specific average income (Y);

$\ln W_f$ = log female age-specific hourly wage rate (Wf);

K = age-specific female employment ratio (females employed/female population).

This equation was modified to incorporate one-year lagged effects (t-1) of the independent variables:

$$\ln B_{a,t} = B_0 + B_1 \ln Y(t-1) + B_2 K(t-1)' \ln Y(t-1) + B_3 K(t-1)' \ln W_f(t-1) \quad (2)$$

Countercyclical Thesis

Consistent with the postulates of the New Household Economics perspective (Becker 1965, 1960; Becker and Lewis 1973; Becker and Barro 1988; Mincer 1962, 1963; Willis 1973), the countercyclical thesis of Butz and Ward (1979a, 1979b) posits a strong negative interaction effect of female employment with female wages on fertility, and that this term in the equation should dominate the anticipated positive effect of male income. For females, the opportunity costs of childbearing are assumed to be of central importance in couples' fertility decisions.

² This is one of two models proposed by Butz and Ward (1979a), and Ward and Butz (1980).

Therefore a rise in female wages should be associated with a rise in female labour force participation; and this in turn, would be responsible for low aggregate fertility rates. However, when the economy is in a slump, such as during recessions, there are fewer work opportunities for women. In such a context aggregate fertility would be expected to rise as the opportunity costs to women for childbearing would be lower. Thus, to the extent that annual movements in period fertility rates are dominated by timing considerations in response to economic conditions fertility rates will fluctuate countercyclically. Concerning male income, its net effect on fertility should remain positive, though relatively weak in relation to the effect of female wages (Butz and Ward 1979a). With respect to model (2), the countercyclical thesis predicts that: $B_1 > 0$, $B_2 > 0$, $B_3 < 0$; and $B_3 + (B_1 + B_2) < 0$.

Procyclical Thesis

Implicit in the procyclical explanation is the proposition that household economic security is a key determinant of couples' fertility decisions (Easterlin 1967, 1987). In good economic times parents are more able to absorb the financial costs of having children, all the while holding a more positive socioeconomic outlook for the future. Under conditions of economic decline however, rising levels of economic insecurity induce couples to delay childbearing in anticipation of better economic prospects in the future. The expectation of the procyclical theory is therefore that fertility should remain low or possibly decline when the economy is in recession and to rise during times of economic growth. As with the countercyclical explanation, the procyclical thesis expects male (husband's) income to be positively related to fertility. However, since male (husband) income generally accounts for a greater share of overall household income (Grindstaff and Trovato, 1990), its effect on fertility should be relatively strong and would be expected to play a dominant role in couples' fertility decisions. Thus, in relation to model (2), the two terms involving male income ($B_1 + B_2$) should override the negative interaction effect of female wages with female employment (B_3). Thus the anticipation is that $B_1 > 0$, $B_2 > 0$, $B_3 < 0$; and $(B_1 + B_2) + B_3 > 0$.

Table 1 summarizes the hypothesized relationships between predictor variables and fertility under the procyclical and countercyclical theses. It may be that the economic context, whether growth or recession, conditions these hypothesized relationships. Therefore model (2) is estimated separately for periods of economic growth and recession, respectively. The indicator for these two economic contexts is the unemployment rate. Periods of low unemployment are considered "growth," and periods of high unemployment "recession."

Table 1: Expected net effects of predictor variables on fertility under procyclical and countercyclical expectations, and anticipated net effects of variables on aggregate fertility rates

Variable	Procyclical	Countercyclical
Female wages (B_3)	$B_3 + (B_1 + B_2) < 0$	$B_3 + (B_1 + B_2) < 0$
Male income (B_1+B_2)	$(B_1 + B_2) + B_3 > 0$	$(B_1 + B_2) + B_3 > 0$