

# Speeding up for a son? Fertility transitions among first and second generation migrants to Canada

**Alicia Adsera**

Woodrow Wilson School and Office of Population Research,  
Princeton University and IZA (Bonn)

[adsera@princeton.edu](mailto:adsera@princeton.edu)

**Ana Ferrer**

Department of Economics,  
University of Calgary

[aferrer@ucalgary.ca](mailto:aferrer@ucalgary.ca)

## Abstract

A large literature has focused in exploring the phenomenon of “missing women” in some countries, particularly in Asia and the Middle East. Both unequal treatment of children across gender-lines and selective abortion have been found to explain the noticeable higher shares of boys in societies where families express a strong preference for having a son. We expect that in more developed societies where children are not as essential for old-age insurance and where intermarriage and cultural assimilation may dilute ancestral traditions, fertility behavior of migrants arriving from areas with strong son-preference should slowly resemble that of natives. To understand the speed of those changes we explore the fertility transitions of both first and second generation Canadian immigrants using the 20% sample of the Canadian Census of Population for the years 1991, 1996, 2001 and 2006. Using women 16 to 45 years of age, we study the relevance of ethnic and religious background in explaining the differential speed of transitioning to either a second or a third birth conditional on the gender composition of the previous births. We find that on average first generation migrants space children more separately than native-Canadian if the first born is a son. Interestingly, in the transition to the third child, transitions among native-Canadian are the fastest if the first two children are boys but among first generation migrants a third birth occurs sooner if the first two born are girls. Across religious groups, Hindus and Sikhs differentially speed up the second birth after a first-born girl. This gap increases even more in the transition to third birth.. Both first generation migrants from Asia and those of Asian descent have substantially faster transitions after the birth of a girl than any other group. Nonetheless the younger migrants are when arriving into Canada, the most their fertility behavior resembles those of natives.

# Speeding up for a son? Fertility transitions among first and second generation migrants to Canada

## Introduction

A large literature has focused in exploring the phenomenon of “missing women” in some countries, particularly in South Asia and the Middle East (Sen 2003; Klasen and Wink 2003). Both unequal treatment of children across gender-lines and selective abortion have been found to explain the noticeable higher shares of boys in societies where families express a strong preference for having a son. We expect that in more developed societies where children are not as essential for old-age insurance and where intermarriage and cultural assimilation may dilute ancestral traditions, fertility behavior of migrants arriving from areas with strong son-preference should slowly resemble that of natives. Different models of fertility adjustment try to explain the fertility experiences of immigrants. The *assimilation model* of fertility adjustment, suggests that couples migrating from a country with higher fertility rates or with differential gender-preferences will initially follow their own country’s fertility patterns and will only gradually adjust to the fertility rates of the host country. This assimilation process may take more than one generation to accomplish. Adaptation takes place as immigrants’ expectations and cultural values change or as they gain knowledge of opportunity costs in the host country (Fernandez and Fogli 2009). The observed fertility behaviour of a woman is the result of choices made under a set of constraints (e.g. economic, educational and/or institutional) and with a collection of social attitudes towards fertility, contraceptive measures, gender preferences, and out of wedlock childbearing, among many others. Those attitudes constitute an important component of the cultural background of individuals. Since many of those attitudes are linked to common norms and expectations of different societies, we try to partly account for them by looking at the woman’s country of origin. Place of origin has already been shown to be relevant to explain variation of fertility outcomes in different context. Andersson (2004), for example, finds important differences in levels of childbearing propensities between women from different countries of origin among migrant to Sweden from the 1960s to the 1990s. More recently, Georgiadis and Manning (2009) analyze whether Muslims (Pakistanis and Bangladeshis) are not successfully assimilating to British society as compared to other migrant groups in different dimensions that include fertility. Similar research for the US has been undertaken by Kahn (1994) and Parrado and Morgan (2008)

among others. The bottom line of these studies is that even if fertility differentials between the second generation immigrants and the native-born still look large the trend is toward convergence.

### **Data and Empirical Approach**

To understand the speed of those changes in relation to “son-preference” we explore the fertility transitions of both first and second Canadian immigrants using the 20% sample of the Canadian Census of Population for the years 1991, 1996, 2001 and 2006. Using women 16 to 45 years of age, we study the relevance of ethnic and religious background in explaining the differential speed of transitioning to either a second or a third birth conditional on the gender composition of the previous births. Canada has received continuous flows of immigrants throughout its history, although the intensity of migration and the source countries have fluctuated over time. The immigrant population, as a percentage of total Canadian population, has almost doubled between 1980 and 2006. Estimates from the 2006 Canadian census indicate that 20% of the population is foreign born and that yet another 13% are the children of foreign born parents or second generation Canadians. The 2001 and 2006 census provides information on parental place of birth which allows distinguishing immigrants by first, second, and second and a half generation. We use this information to study differences in fertility between the Canadian born children of immigrants and their immigrant parents. As a result, the Canadian census provides large samples and diversity countries of origin among migrants and facilitates the analysis of these questions.

For each census, we linked all individuals belonging to the same household and selected all women between 16 and 45 years of age. We excluded aboriginal individuals. For each of these women we have information about their age, education, marital status, number of children (in the 1991 Census), number of children living in the household, province of residence, immigrant status and parental immigrant status (in the 2001 and 2006 Censuses). In addition, for immigrant women, we have information about year of immigration, age at immigration, country of birth and parental country of birth (in the 2001 and 2006 Censuses). To reduce computing time to reasonable length, from each Census, we select all immigrant observations plus a 20% random sample of native-born individuals. We weight observations accordingly. The four censuses are then pooled together resulting in approximately 1,800,000 observations.

The timing of the first three births is estimated separately using Cox proportional hazard models. The dependent variable in all estimates is duration (measured in years) to a birth from either the previous birth or from age 15 in the case of the first birth. For each woman  $i$ , and census year  $y$  who enters a state (e.g. first birth) at time  $t=0$ , the (instantaneous) hazard ratio function at  $t>0$  is assumed to take the proportional hazards form:

$$\lambda_{iyt} = \lambda_0(t) \exp(x'_{it} \beta + P + T) \quad (1)$$

where  $\lambda_0(t)$  is the baseline hazard function;  $\exp(\cdot)$  is the exponential function;  $x_{it}$  is a vector of covariates summarizing observed differences between individuals including presence of additional members in the household, socio-economic status of the household, cultural/religious background, and past demographic behavior (gender of previous children, age at first birth, time between births). We include province fixed effects to analyze within-province changes in the timing of fertility as a response to changing economic or social conditions. We also include a vector of census year dummies,  $T$ . We use a grouped robust variance as estimated by Lin and Wei (1989) and cluster the errors within provinces. Results are robust to clustering the errors by exposure alternatively. As a robustness check and to avoid missing some children who have left the household already, we re-estimate the models, first, only for younger women as well for the 1991 Census that includes total number of children born. Results do not change.

## **Main findings**

We find that on average first generation migrants space children more separately than native-Canadian if the first born is a son. Interestingly, in the transition to the third child, transitions among native-Canadian are the fastest if the first two children are of similar gender and among first generation migrants a third birth occurs sooner only if the first two born are girls. Across religious groups, Hindis and Sikhs differentially speed up the second birth after a first-born girl. This gap increases even more in the transition to third birth. Table 1 includes a couple examples of models to third birth. On average and in comparison to the “other religion group”, Muslims transit the fastest to third birth followed by Sikhs, while those with no religion and Hindis are the slowest. While Hindis favor gender variety with a significant bias toward sons, Sikhs differentially slow down after the birth of two sons. In additional estimates both first generation migrants from Asia and those of Asian descent have substantially faster transitions after the birth of a girl than any other group. Nonetheless the younger migrants are when arriving into Canada, the most their fertility behavior resembles that of natives.

**Table 1. Transition to Third Birth**

	<i>Hazard R</i>	<i>t-st</i>	<i>Hazard R</i>	<i>t-st</i>
Age 1st birth	0.99	-65.19	0.99	-65.11
Months 1 to 2	1.01	54.23	1.01	54.25
<b>Mixed omitted</b>				
Two Girls	1.26	21.5	1.31	4.94
Two Boys	1.24	20.3	1.20	3.27
Immigrant	1.10	8.93	1.12	7.61
Immigrant*2Girls			1.03	1.24
Immigrant*2Boys			0.90	-4.5
<b>Education: Less high school omitted</b>				
High School	0.90	-8.84	0.88	-6.81
Community	0.91	-7.99	0.90	-5.64
BA	1.01	0.43	1.01	0.67
Graduate	0.97	-1.14	1.00	-0.08
High School*2Girls			1.03	0.85
Community*2Girls			0.99	-0.21
BA*2Girls			1.00	0.03
Graduate*2Girls			0.88	-1.97
High School*2Boys			1.04	1.43
Community*2Boys			1.03	1.02
BA*2Boys			0.97	-0.82
Graduate*2Boys			1.02	0.29
<b>Religion (Other omitted)</b>				
Christian	0.93	-3.32	0.93	-2.18
Muslim	1.45	15.19	1.53	11.7
Hindi	0.80	-6.7	0.68	-7.38
Sikh	1.09	2.77	1.10	2.04
No Religion	0.75	-11.84	0.69	-9.79
Christian*2Girls			0.89	-2.2
Muslim*2Girls			0.87	-2.32
Hindi*2Girls			1.38	4.12
Sikh*2Girls			1.54	6.33
No Religion*2Girls			1.09	1.47
Christian*2Boys			1.11	2.05
Muslim*2Boys			0.94	-1.05
Hindi*2Boys			1.26	2.86
Sikh*2Boys			0.54	-7.22
No Religion*2Boys			1.20	3.01
<b>N. Subjects</b>	156155		156155	
<b>N. Failures</b>	50912		50912	