The Emergence of Two Sharply Distinct Fertility Regimes in Economically Advanced Countries

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Circa 1960-1990, the preeminent global demographic concern was high fertility in developing countries. As fertility has fallen in most of those countries, concern with the "population bomb" has waned. Instead, a distinctly different concern emerged: below replacement level fertility, with its attendant issues of aging populations and a shrinking labor force undermining various pay-as-you-go welfare schemes. As positive population momentum (growth created from previous levels of higher fertility) ceases, below replacement fertility leads to a decline in the overall size of the population. While perhaps cheered by environmentalists, declining populations are seen as daunting by economists and policy makers. We show that since the turn of the century, the world's most economically advanced countries have converged to two quite different total fertility levels (TFR): a mean of 1.9 and 1.3, with only one country between 1.50 and 1.75. For perspective, in a stable population with a mean length of generation of 30 years, a TFR of 1.9 implies a 50% population reduction in 230 years but the halving takes only 44 years with a 1.3 TFR (Toulemon 2011).

The bifurcation of fertility levels occurred after dramatic changes in educational systems, the labor market, consumerism, and gender relations put downward pressure on childbearing. These changes began as early as the 1970s in some countries and later in others. Employers demanded better educated workers and educational systems expanded resulting in substantial educational attainment increases, with greater gains for women than for men. Service sectors of economies have expanded rapidly and globalization restructured other sectors of labor markets. In many countries the women's movement led to a decrease in female discrimination, opening more career paths for women. The result of these changes is an increasing desire by women to be in the labor force pursuing careers combined with a continuing desire to become mothers. But

the incompatibility between the worker and mother roles makes this combination problematic to varying degrees in different countries. Men have responded by increasing their share of household tasks, but the response has been quite slow – even glacial in some countries. The emergence of new consumer "necessities," such as cell phones and internet connections, combined with the costs of childrearing has affected the economics of parenthood.

The initial micro response to this confluence of antinatilist factors was the postponement of childbearing, beginning as early as the late-1970s in some countries. Postponing fertility depresses the period TFR even when there is no decrease in the total number of births women have (i.e. in the cohort TFR) (Bongaarts and Feeney 1998). But today, with median ages at first birth near or above 30 for at least the past 10 years in most of these countries, postponement has essentially run its course, resulting in the easing of negative timing pressure on period fertility rates (Bongaarts and Sobotka 2012). Further postponement would bump against the biological clock leading to greater declines in the number of children women have. Together this means that the current low TFRs are increasingly less likely due to postponement and more likely to reflect lowered lifetime childbearing.

We examine fertility trends in 28 economically advanced (GDP per capita >$7,000 in 1995), low fertility (TFR<2.0 in 1995) countries with populations greater than 2 million. They are in East and Southeast Asia, Europe, North America, and Oceana. Because it appears to take about a generation or more for women and policy makers to adjust to new structural regimes, we exclude countries that were formed as the result of the breakup of the Soviet Union and Yugoslavia. TFRs for 27 of the 28 countries are from The World Bank (World Bank 2013) and data for Taiwan are from the National Statistics Republic of China (2014). Trends, 1981-2011, are shown in Figure 1. The colors in the graph are shaded red for the Anglo countries, purple for

Northern Europe, blue for Western Europe, orange for Eastern Europe, dark blue for German-speaking Europe, light green for Southern Europe and bright green for Asia.

(Figure 1 about here)

Early in the time series there is considerable diversity across these 28 countries. Ireland, South Korea, and Taiwan were still in the midst of transitioning from high to low fertility levels. In contrast in 1981, Denmark, Germany, the Netherlands, and Switzerland had TFRs hovering around 1.5. From the mid-1980s until 2000 there is extensive change in the TFRs of some countries and notably less in others resulting in a rearranging of country rankings. For example, South Korea declined from 2.7 in 1981 to 1.4 in 1999, Romania from 2.4 to 1.3, Spain from 2.0 to 1.2, Czech Republic from 2.0 to 1.1, while between 1981 and 1999 Australia hovered between 1.8 and 1.9 and the United States between 1.8 and 2.0.

After the turn of the century, a remarkable pattern emerged with some countries close to replacement-level fertility and others clustered at or below 1.5. Only one country, Canada, is between these two groupings. In Figure 1b, Canada has been removed to make the forking pattern more evident. The upper branch, near replacement-level fertility, contains countries from Northern and Western Europe, North America, and Oceana (Australia, Belgium, Denmark, France, Finland, Ireland, the Netherlands, New Zealand, Norway, Sweden, United Kingdom, and the United States). The lower branch is composed of countries from Central, Southern, and Eastern Europe, and East and Southeast Asia (Austria, Czech Replubic, Germany, Greece, Hungary, Italy, Japan, Poland, Portugal, Romania, Singapore, Slovenia, South Korea, Spain, Switzerland, and Taiwan). This branching pattern is distinct by 2002 and continues to the most recent year.

What accounts for the remarkable emergence of two distinct branches? The institutional settings in these two groups of countries differ such that institutions and policies, formal and informal, in the top branch make it easier, but not *easy*, to combine mother and worker roles (Prince-Cooke and Baxtoer 2010; Rindfuss and Brauner-Otto 2008). Klüsener and colleagues (2013), using a natural experiment in the German-speaking region, Eupen-Malmedy, of Belgium (where German is the official language, German mass media predominate, commuting to Germany is frequent, but the more childrearing-friendly institutions of Belgium prevail) find that fertility levels in Eupen-Malmedy resemble those of Belgium rather than Germany. This natural experiment illustrates the importance of institutions. For most countries the relevant institutions and related policies are set at the country level rather than the state/provincial level. The Canadian exception, discussed below, serves to illustrate the importance of institutions and policies.

The general proposition regarding institutions and fertility levels is that any institutional arrangement, and related policies, that allow young adults to more easily combine parental and worker roles will lead to earlier ages at first birth and more births (Rindfuss and Brauner-Otto 2008). Relevant institutions include educational systems, labor markets, housing and related sectors, family, and institutionalized aspects of gender arrangements. The policies involved may have been instituted to deliberately facilitate combining parental and worker roles, or they may be policies that quite inadvertently affect the combination of these two roles. Parental leave policies would be an example of the former; hours elementary schools are open are an example of the latter.

Clearly there is considerable institutional and policy heterogeneity within both the higher and lower fertility country groupings, consistent with the expectation that multiple, and largely

different, combinations of institutional arrangements and policies can lead to the same country-level fertility outcome. A few examples will suffice. Consider first the contrast between Norway and the United States, both having fertility levels near replacement. Norway has high-quality central-government-subsidized child care for all children aged 1-5, with paid parental leave during a child's first year. The United States does not have a national family policy, federally-mandated paid parental leave, or widely available federally-supported child care. Yet, some U. S. employers provide paid parental leave, large employers (more than 50 employees) are required to offer 12 weeks of unpaid leave, and child care options are widely available at various price levels. Some states provide child care for the poor; and various non-profit organizations provide rent-free space for child care centers, essentially subsidizing them. Full-time work hours are relatively short in Norway; they are longer in the United States but the availability of numerous part-time positions provides alternatives. Norway provides rent subsidies for young adults; the United States, with the exception of a few markets like San Francisco and San Diego, has moderately-priced, entry-level renting and/or buying possibilities. A norm of gender equality has emerged in both countries.

Now consider two countries that have had very low fertility for a generation: Italy and Japan. Italy has an insider-outsider labor market that protects the jobs of current workers, mostly older males (Rovny 2011). In contrast, Japan has a labor recruitment system that uses both high schools and universities in the recruitment process (Brinton 2011). While different, both systems make it difficult for women to return to the labor force after they have been staying at home full-time, caring for children. Italy has an extensive pre-school program with approximately 95% of children aged 3-5 enrolled; Japan has a long waitlist for its child care programs (Choe et al. 2014). Italy's housing market has relatively few rental units; because bankers do not have access

to credit reports and face laws that make foreclosure very difficult they require a 40-50% down payment before granting a mortgage (Chiuri and Del Boca 2010). This, in turn, leads young adults to postpone marriage, opting instead to live with their parents until they can afford housing sometime in their mid-30s. Japan has high housing prices, an increase in precarious jobs available to young adults and a marriage system that requires significant sacrifice on the part of women but not (or less so) for men (Brinton 2011; Rindfuss 2004; Tsuya et al. 2012). But note that it is common for young married couples to reside with parents, mitigating the high cost of housing.

Why is Canada an exception to the emergent two-tiered fertility pattern? The explanation lies at the junction of institutions and provincial variability. Figure 2 shows the TFRs for the 4 largest Canadian provinces (containing 86% of Canada's population). Fertility in Alberta has been consistently near replacement similar to the upper branch in Figure 1, whereas Ontario and British Colombia have had very low fertility similar to the lower branch in Figure 1. Québec initially fell into the latter group but around 2005 fertility in Québec started rising, reaching a high of 1.74 in 2008 and 2009.

(Figure 2 about here)

For the overwhelming majority of countries in Figure 1 institutional structure is determined at the national or federal level; however, in Canada there is considerable variation at the provincial level, particularly comparing Québec to the rest of Canada. Québec has had more generous family policies stemming from concern over extremely low fertility and a shrinking Francophone population in the 1980s. From 1988 to 1997 Québec offered "Baby Bonuses" as part of a universal family allowance which paid up to $8000 for a third child ($500 for 1st child, $1000 for 2nd). In the rest of Canada in 1988 an income-based tax deduction was enacted but

slowly eroded until 1993 when it ended and an income-based benefit was put in its place. Since 2006 the federal family benefit has had two parts: a universal child care benefit of $100/month for each child under age 6 and a child tax benefit available to low- and middle- income families. Québec residents have been eligible for the Child Assistance Payment, which varies between roughly $650 and $2300 per year per child depending on income.

Additionally, and likely much more important, Québec has invested substantially in affordable childcare. Starting in 1997 Québec replaced the "Baby Bonus" with an income-tested child allowance and there was a major overhaul of the child care system. In the first year of the program subsidized daycare spaces for four year olds were priced at $5/day/child. Kindergarten for five year olds was also expanded to full-day. By 2000, eligibility was expanded to all children under five. The number of available reduced-fee spots expanded from 74,058 in 1997 to over 200,000 spots in 2010, now serving half of the eligible children (Lefebvre, Merrigan, and Roy-Desrosiers 2011). In 2004 the price of day care increased to its current rate of $7/day/child, and to put this in perspective the minimum wage in Québec is $10.15/hour. An indication of the success of the availability of low-cost day care is that not only did fertility increase, but also the labor force participation rates of mothers with children aged 1-5 increased by 8% and are now markedly higher in Québec than the rest of Canada (for details see: Beaujot, Du, and Ravanera 2013; Lefebvre and Merrigan 2008; Stalker and Ornstein 2013).

Family leave also varies between Québec and the rest of Canada, with who is covered and the level of payment being the largest differences. Since 2000 the federal policy has provided a year of leave paid at 55% of insurable earnings, up to $45,900 per year. Because this plan is funded through Unemployment Insurance (UI) it has a 2 week waiting period during which no benefits are paid and is not available to the self-employed or anyone not contributing to

UI. Since 2006 Québec has offered an alternative plan that pays at 70% of earnings up to $66,000 per year, has no waiting period, and is available to the self-employed.

Alberta's higher fertility is linked to economic and demographic considerations, rather than institutional differences (Trovato 2010). The province contains a third of Canada's agricultural land and farm families tend to have higher fertility. Additionally, Alberta has an oil-based economy with no provincial sales tax, low provincial income taxes, higher wages, and lower unemployment rates than the other provinces. Further, compared with other provinces, a larger proportion of Alberta's population are members of high fertility religious groups such as Mormons, Hutterites, and Mennonites, as well as a considerable presence of higher fertility Aboriginal/First Nations groups.

To summarize, in economically advanced countries two distinct fertility regimes have emerged. In the upper branch, with near replacement-level fertility, countries have various combinations of child care availability, generous parental leave, and/or flexible education and employment systems that facilitate balancing work and family roles. In the lower branch, with TFRs at or below 1.5, countries have early childhood and education systems that make it difficult for mothers to work, limited help from husbands with household tasks, job discrimination against women, and/or labor markets that make it difficult for young adults and/or returning mothers to find meaningful jobs, coupled with norms regarding women's obligations to stay home and serve as primary care givers. Importantly, there is not one single institutional feature that leads a country to one or the other fertility regime, rather, there are multiple combinations that can yield similar results.

Apart from Canada, countries that fall below a 1.5 TFR tend to stay below 1.5 (McDonald 2008), especially since 2000. This stimulates the question of the likelihood of

countries from one fertility regime moving into the other fertility regime. When countries were adjusting to the educational, labor market, consumerism and gender relations changes, there were examples in both directions. Sweden, Denmark and the Netherlands had TFRs in the 1.5 range sometime during the 1981-1999 period and now are at or above 1.8. The Czech Republic, Greece, Japan, Poland, Portugal, Romania, South Korea and Taiwan had TFRs above 2.0 in 1981 and are at or below 1.5 in 2011. But now that people and institutions have adjusted to the new social order, will we see countries moving from one group to another? The province of Québec provides an intriguing possibility. By making subsidized daycare widely available and providing more generous parental leaves Québec made the mother-worker roles somewhat less incompatible, and fertility rose from the 1.4 to 1.5 range to 1.7 now. Yet the track record of countries trying to move from one regime to the other suggests that doing so is extraordinarily difficult (Balbo, Bilari, and Mills 2013; Thevenon 2011).

NOTE: Additional planned work includes looking at this pattern using tempo-adjusted TFRs and seeing if the pattern has yet emerged in cohort rates. Theoretically, there will be discussion of these results for those theories that imply (or outright state) an expected convergence of fertility rates in low fertility countries.

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Figure 1. Country Fertility Trends, 1981-2011.

Figure 1A

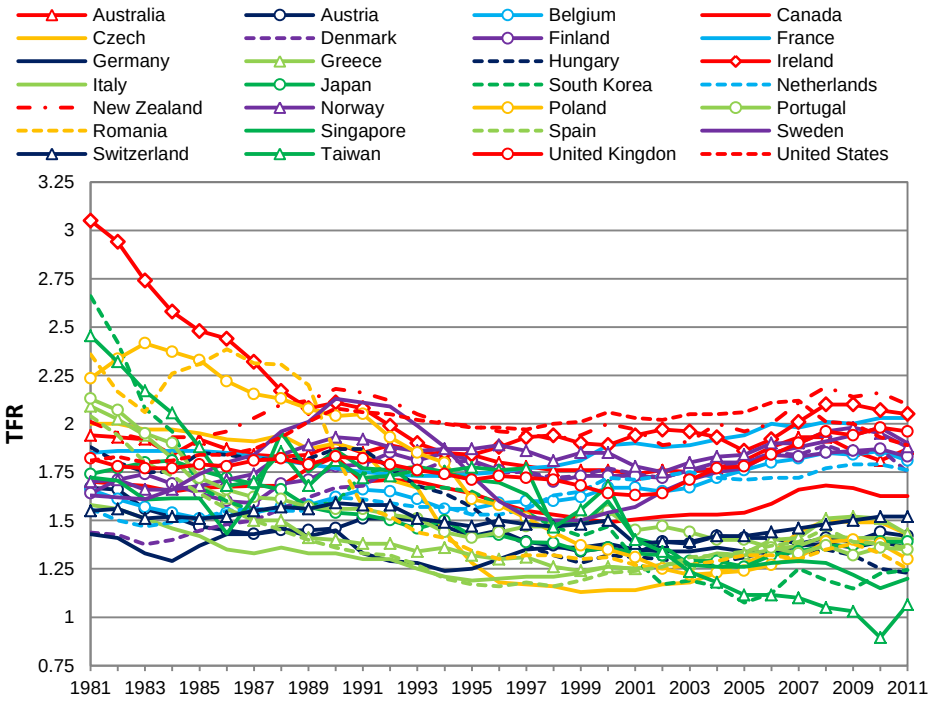
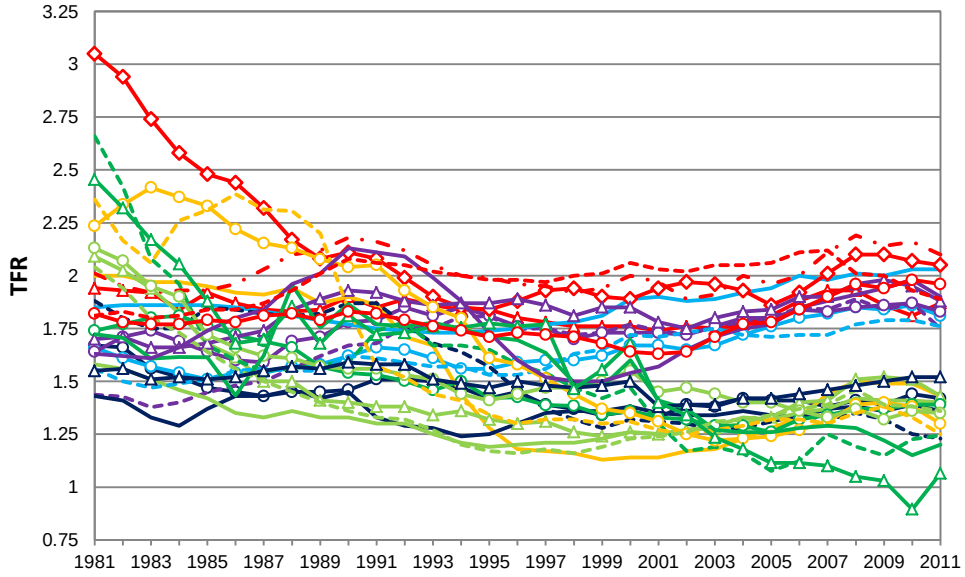


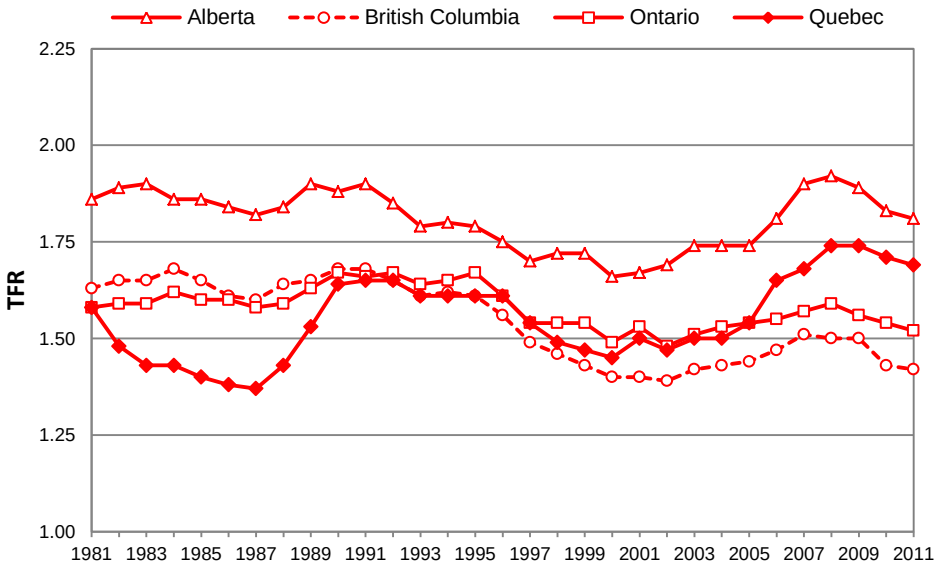
Figure 1B



Source: World Bank 2013, except Taiwan which are from National Statistics Republic of China 2014.

Figure 2: Fertility Trends for Canada's Four Most Populace Provinces: Alberta, British Columbia, Ontario, and Québec, 1981-2011.

Figure 2



Source: Statistics Canada CANSIM and Vital Statistics.