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The Emergence of Two Distinct Fertility Regimes in Economically Advanced Countries

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Abstract

Beginning in 2000, in economically advanced countries, a remarkable bifurcation in fertility levels has emerged, with one group in the moderate range of period total fertility rates (TFR), about 1.9, and the other at 1.3. The upper branch consists of countries in Northern and Western Europe, Oceania and the United States; the lower branch includes Central, Southern and Eastern Europe, and East and Southeast Asia. A review of the major theories for low fertility countries reveals that none of them would have predicted this specific bifurcation. We argue that those countries with fertility levels close to replacement level have institutional arrangements, and related policies, that make it easier, not easy, for women to combine the worker and mother roles. The institutional details are quite different across countries, suggesting that multiple combinations of institutional arrangements and policies can lead to the same country-level fertility outcome. Canada, the only exception to this bifurcation, illustrates the importance of the different institutional structures in Québec compared to the rest of Canada.

Circa 1960–1990, the preeminent global demographic concern was high fertility in developing countries. As fertility has fallen in most countries, concern with the “population bomb” has waned. Instead, a distinctly different concern has 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. And 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.

Broadly speaking, dramatic changes in educational systems, the labor market, consumerism, and gender relations have put downward pressure on childbearing. These changes began as early as the 1960s 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 with their large share of traditional “female” jobs 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 have children. But the incompatibility between the worker and mother roles makes this combination problematic to varying degrees in different countries. Men have responded to the new reality by increasing their share of household tasks, but the response has been quite slow – even glacial in some countries. Additionally, the high and increasing expectations regarding parenting, costs of childrearing, and consumption in general have further affected the economics of parenthood (DiPrete et al., 2003; Lareau 2003).

The initial micro response to this confluence of antinatalist factors was the postponement of childbearing, beginning as early as the 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). 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; Goldstein, Sobotka and Jasilioniene 2009). This means that the current low TFRs are increasingly less likely due to postponement and more likely to reflect lowered lifetime childbearing.

A much discussed macro response to the dramatic changes in educational systems, the labor market, and gender relations was the reversal in the direction of the relationship between a country’s total fertility rate (TFR) and its female labor force participation rate (FLFP), from negative to positive (Ahn and Mira 2002; Brewster and Rindfuss 2000; Del Boca 2002; Hilgeman and Butts 2009; Kögel 2004; Matysiak and Vignoli 2008; Rindfuss et al. 2003). The positive TFR-FLFP relationship emerged well after increases in female educational attainment and service sector jobs occurred, and after discrimination against women in the labor market declined. The lag is to be expected given the time it takes for women and couples to adjust to a new institutional regime.

In this paper 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. To put this in demographic 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 emergent fertility fork

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 Oceania. 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.[1] TFRs for 27 of the 28 countries are from The World Bank (World Bank 2015) and data for Taiwan are from the National Statistics Republic of China (2015). Trends, 1981–2012, 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.

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 from 1981 to 1999 Australia hovered between 1.8 and 1.9 and the United States between 1.8 and 2.0. Much of the sorting of countries in the 1980s and 1990s is the result of countries, more precisely, women and their partners, adjusting to new opportunities and constraints that emerged with changes in educational opportunities, transformed labor markets, and changed gender relations.

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 (we return to the Canadian case below). The upper branch, with near replacement-level fertility, contains countries from Northern and Western Europe, North America, and Oceania (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 Republic, Germany, Greece, Hungary, Italy, Japan, Poland, Portugal, Romania, Singapore, Slovenia, South Korea, Spain, Switzerland, and Taiwan). This branching pattern is distinct by 2002, dramatic, and continues to the most recent year. Before discussing the possible reasons for the emergence of the fork, we briefly discuss the evidence for the fork in tempo adjusted TFRs and cohort measures.

Postponement and recuperation

It is well-known that all the countries in Figure 1 have experienced increases in childbearing ages (Billari and Kohler 2004), that fertility postponement depresses period TFRs relative to cohort fertility patterns (Bongaarts and Feeney 1998; Ryder 1980), and that the pace of postponement has slowed in a number of countries (Frejka and Sobotka 2008; Goldstein,

[1]The following countries had a TFR<2.0 in 1995 but did not meet the GDP or population requirements (their TFR in 2012 is noted in parentheses): Bulgaria (1.5), Iceland (2.0), Latvia (1.4) Liechtenstein (1.5), Luxembourg (1.6), Thailand (1.5), and small island nations such as Malta (1.4), Cuba (1.6), and Barbados (1.8). The countries resulting from the break-up of Yugoslavia are almost all in (or near) the lower branch of the fork by 2005 (only Montenegro remains higher, but it is trending down and its TFR is lower than what is seen in the upper branch). Countries resulting from the break-up of the Soviet Union are more varied with several countries falling in between the fork and trending up (Estonia, Belarus, Lithuania, Russian Federation, Ukraine) and Georgia appearing in the upper branch around 2008).

Sobotka and Jasilioniene 2009). So a natural question is whether the forking pattern in Figure 1 is evident in tempo-adjusted period fertility rates. But before addressing that question, it is worth noting that the TFR forking pattern has persisted for more than a decade. Since it is unadjusted period TFRs that determine the size of birth cohorts, the divergence that manifested itself around the turn of the century already has had important implications[2] for those countries in the top and bottom branches. Adjusting for population size and age structure, the countries with TFRs equal to or below 1.5 already have had more than a decade's worth of smaller birth cohorts than those with TFRs above 1.75. Even if all the countries in Figure 1 were to suddenly converge to a 2.0 TFR, the countries on the lower tine of the fork would have a notch in their age structure that would progress temporally through all age-graded organizations from preschools to nursing home facilities.

The Bongaarts and Feeney (1998) adjusted TFR, TFR*, requires data on the TFR and the annual rate of change in the period mean age of childbearing by birth order, *r*. These data were available from the Human Fertility Database (http://www.humanfertility.org/cgi-bin/zipfiles.php) for 14 of our 28 countries. In general, after 2004, the beginnings of the fork in the graph can be seen as countries that were in the upper or lower branch of Figure 1 remain in their respective branch when looking at the tempo adjusted TFR (see Appendix Figure A1a and A1b). Two exceptions are the Netherlands and Canada, both of which are nearer to the low fertility group than was the case in Figure 1. But note that both are trending up, and that for the most recent year available for the Netherlands the TFR* is close to that in Finland.

When using the tempo adjusted TFRs the fork is not as visually pronounced, it starts later, and it reflects more annual fluctuations than with the period TFRs. This is to be expected. For reasons discussed in the introduction, fertility postponement has been experienced in all these countries; TFR* removes the effect of this postponement and hence removes part of the reason for the forking pattern, especially for the early part of the new century. There is evidence that this postponement is slowing down and perhaps stopping (e.g., Frejka and Sobotka 2008; Goldstein, Sobotka and Jasilioniene 2009). As postponement slows, the question of recuperation of fertility at older ages becomes more important (Lesthaeghe and Willems 2009; Goldstein, Sobotka and Jasilioniene 2009; te Velde et al. 2012). The higher fertility countries have had more recuperation likely, as we discuss below, because they have institutions and policies that facilitate women combining the mother and worker roles rather than having to choose one or the other.

Cohort fertility trends

A related question is whether the fertility branching pattern seen in Figure 1 is also seen in the cohort fertility patterns in these countries. Myrskyla and colleagues (2013) have generated cohort estimates that include forecasts for the more recent cohorts[3] (http://www.demogr.mpg.de/go/cohort_fertility/). These data are available for 25 of our 28

[2]Perhaps the implication of tempo changes is best illustrated by the exceptionally large baby boom that occurred in the United States, affecting everything from pop culture to the solvency of the Social Security pension system. Ryder (1980) estimates that 58 percent of the 1936–1957 increase in fertility was due to women having their children at younger ages and that 55 percent of the 1957–1972 decrease was due to women having their children at older ages.

countries for the 1950–1979 cohorts. Again, the fork is apparent as those countries in the upper branch in Figure 1 have higher cohort TFRs and those in the lower branch have lower cohort TFRs (see Appendix Figures 2Aa and 2Ab). The one exception is the Czech Republic which has seen relatively higher cohort TFRs for recent cohorts. However, these cohort rates have been monotonically declining since the 1964 cohort, from 2.00 for cohort 1964 to 1.75 for cohort 1979 and there is no sign that they have completed their decline. The branching pattern is again not as visually pronounced as in Figure 1, and that is to be expected with cohort rates.[4] A cohort's fertility occurs over an approximately 30 year time period, and the period TFR branching evident in Figure 1 is only evident in the past 11-12 years. If the branching pattern in the period TFR so evident in Figure 1 continues, it will also become more evident and distinct in the cohort rates.

Existing theories and the fertility fork

The existence of the two branches is foreshadowed in a number of articles, often as an aside (e.g., Frejka and Sobotka 2008; Lesthaeghe 2010; McDonald 2000, 2008). We argue that documenting and theorizing about its origins as we do here is important for at least two reasons: first, because the branching since the new century is so evident, jumping out in Figure 1, and second, because the theories most commonly used to examine various aspects of fertility in economically developed countries would not predict this dramatic divergence of country-level fertility. We now briefly review the more commonly used theories from the vantage point of the branching pattern in Figure 1.[5]

New home economics

Becker's arguments (Becker 1960, 1981; Willis 1973) initially revolved around the advantages of specialization within a marriage, with women specializing on the domestic front and men in market activities. Higher incomes did not just affect how many children couples might decide to have, with the accompanying "babies as consumer durables" critique (Blake 1968), but also affected the "quality" of children desired as income increased. This quantity-quality trade-off made prediction of future trends difficult. The increase in female education and greater availability of opportunities for women in the labor market (and the assumption that women would drop out of the labor force when their children were very young) raised the issue of "opportunity costs," both lost wages and lost career advancement opportunities. These arguments led to expectations of lower fertility levels as the cost of children and opportunity costs increased. In addition, increased education should lead to increased time investing in the early stages of a career thus postponing childbearing (Happel, Hill and Low 1984). We note that the countries in the top branch in Figure 1 have tended to have robust economies with the exception of the Great Recession. But some of the countries in the bottom branch, such as Germany, have also had

[3]The cohort estimates for the most recent cohorts obviously include a fair amount of forecasting for the childbearing years that have not yet occurred. Myrskyla and colleagues (2013) conducted numerous sensitivity tests, and their estimates are quite robust to a variety of alternative assumptions.

[4]Some caution needs to be exercised in interpreting the branching because these are the cohorts for whom the most projection was required.

[5]Of course, other theoretical perspectives have been applied to understanding fertility trends and individual decision making. We review a selection here.

robust economies. Further, Singapore has a variety of programs subsidizing the cost of children. Jones and Hamid (2015) estimate that the various governmental programs subsidize up to one-third the cost of raising children to age 18, and yet Singapore's TFR in the 2000s is among the lowest in Figure 1. While the economic arguments certainly allow for countries to have different fertility levels (Pritchett and Viarengo 2012), they do not anticipate the branching pattern in Figure 1.

Second demographic transition

Lesthaeghe and van de Kaa in a series of publications (e.g., Lesthaeghe 1995, 2010; Lesthaeghe and Neidert 2006; Surkyn and Lesthaeghe 2004; van de Kaa 1987, 2001) lay out arguments that a second demographic transition has been occurring in marriage and fertility behavior, that it is distinct from the first demographic transition, and that it is expected to spread to all economically developed countries. The second demographic transition was fueled by a change in values and motivations, with increased attention to self-fulfillment, individuation and consumerism, and away from external authority derived from religious institutions. Although the exact formulation of the second demographic transition theory varies from publication to publication, at its heart it is a convergence theory, with the fertility expectation being that countries will move to levels well below replacement. Exactly where countries are in the sequence towards the second demographic transition is a common theme in the second demographic literature (e.g. Lesthaeghe 2010; van de Kaa 1987).

It is recognized that factors in addition to value change are likely important: "…family allowances, work arrangements, housing situation, or day care provisions." (Lesthaeghe 1995: 56). And more recently the possible continued existence of two different fertility regimes is noted: "To conclude, the original formulation of the SDT theory predicted – apparently correctly – a long period of below-replacement fertility, but it did not predict the current discrepancy between levels close to replacement and levels far below." (Lesthaeghe 2010) He then suggests the importance of country-specific factors.

Preference theory

Arguing that the contraceptive revolution of the 1960s fundamentality altered opportunities for women, Hakim (2003a, 2003b, 2004) proposes that there are three distinct types of women: 1) home-centered, those for whom children and family life are the main priority; 2) work-centered, those for whom employment and career are the main priority; and 3) adaptive, those who want to combine work and family. Each of these groups is argued to have a different value, or preference, system which, in turn, affects their childbearing choices. Hakim expects the home-centered and work-centered groups to each contain about 20 percent of the women in a country, and the adaptive to contain the remaining 60 percent – recognizing that the exact distribution can vary from country to country.

Arguably the major contribution of preference theory is calling our attention to the range and interplay of work and family preferences. Although not a central component, the theory does also point to institutional factors, specifically public policy, as influencing both the relative size of each group of women[6] and the behavior of women in each group. Hence, preference theory is compatible with the patterns seen in Figure 1. However, it is not specific enough to

predict what leads to the proportions in each of the three groups in a given country, nor the number of children women in the large adaptive group will have. Furthermore, the theory does not articulate whether these policies influence the formation of the preferences (as recent theoretical work on intention formation has described (Bachrach and Morgan 2014; Johnson-Hanks et al. 2011)) or whether they simply help women achieve their preferences, and therefore cannot be used to predict specific country outcomes. So while compatible with Figure 1, preference theory would never have predicted the distinct branching.

Institutional factors

Numerous recent publications have noted the likely importance of institutional factors in understanding country-level fertility differences (Balbo et al. 2013; Björklund 2006; Buchman and Kriesi 2011; Esping-Anderson 1999; Hoem 2008; Letablier et al. 2009; McDonald 2000, 2006; Mills et al. 2011; Neyer and Andersson 2008; Prince-Cooke and Baxtoer 2010; Rindfuss and Brauner-Otto 2008; Ziefle and Gangl 2014). And to fix terms, we consider institutions to be the norms, formal and informal, that guide relationships in social interactions, with policies being the formal rules set by legislation or administrative decree. We use “institutional factors” to encompass formal policies and informal norms. 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. For most countries the relevant institutions and related policies are set at the country level rather than the state/provincial level, although policies may be implemented at the state/provincial level as was the case with child care expansion in Norway (Rindfuss et al. 2010).

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, and to more easily enter the life course roles of adults, will lead to higher fertility (McDonald 2000; Rindfuss and Brauner-Otto 2008). And conversely, if it is difficult to be in the labor force and be a mother, more women will remain childless (or stop at 1 once they realize how difficult it is to combine both roles), and hence the forking pattern found. These institutional factors are likely particularly salient when examining period fertility rates. A woman’s, or couple’s, fertility is a result of multiple period fertility decisions and those period decisions that individuals or couples make are constrained by institutions. Of course, some institutions can and do change quickly while others are more stable.

The Canadian exception illustrates the importance of institutions and policies. 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

[6]Specifically: “The size of the three groups varies in rich modern societies because public policies usually favor one or another group (Hakim 2003, pg. 356).”

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 there started rising, reaching a high of 1.74 in 2008 and 2009.

Provincial variability under a federalist governmental system has resulted in dramatic institutional variation across regions (see Brauner-Otto Forthcoming for a more lengthy discussion of the points below). The federal government in Ottawa sets policies, but provincial governments are free to alter those policies. As a result, on the one hand we see Alberta which has an oil- and agriculture- based economy and contains 11% of Canada's population. Higher fertility here has been linked to the lack of provincial sales tax, low provincial income taxes, and higher wages (Trovato 2010).[7]

In recent years the other high fertility Canadian province is Québec, and here the federalist system has meant that Québec has a more generous family leave policy and child allowances than the rest of Canada. Additionally, and likely much more important, Québec has invested substantially in affordable childcare. Starting in 1997 and rolled out over 3 years there was a major overhaul of the Québec child care system such that by 2000 all children under five were eligible for subsidized daycare spaces priced at $5/day/child. The number of available reduced-fee spots has tripled to serve half of the eligible children by 2010 (Lefebvre, Merrigan, and Roy-Desrosiers 2011). In 2014 the price increased to its current rate of $7.30/day/child for families earning less than $50,000 a year, gradually rising to $20/day/child for family incomes of $155,000 or more per year. 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).

The German-speaking region, Eupen-Malmedy, of Belgium provides an illustrative example of the impact of institutions and their policies relative to the impact of culture and attitudes. Klüsener and colleagues (2013) using a natural experiment in Eupen-Malmedy (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. These findings are similar to what is observed in Canada where fertility of Francophones in Québec is distinctly different from that of Anglophones in the rest of Canada (Brauner-Otto Forthcoming).

This may appear to be a notable contrast to the work conducted as part of the European Fertility Project which found similarities in fertility decline among linguistically similar groups (i.e. culturally similar) and less comparable fertility declines among groups defined by their socio-economic situation (Coale and Watkins 1986). However, we believe both sets of results are entirely consistent with each other. First, it is perfectly reasonable that cultural

[7]Also, compared with other provinces, a larger proportion of Alberta's population are farm families, Aboriginal/First Nations groups, and members of religious groups such as Mormons, Hutterites, and Mennonites all of which have high fertility.

factors were more salient to fertility decision making in the past and institutional factors are more salient today. Second, since we define institutions to include informal norms (e.g. gendered expectations of childcare and family life that are related to fertility (McDonald 2000)) we are in fact including what many may consider to be “culture” in our framework.

While the Eupen-Malmedy example (Klüsener et al. 2013) is a clever illustration of the importance of institutional factors, it does not explain which institutional factors are important. Rather it indicates that the bundle of institutional factors present in Belgium lead to higher fertility compared to the bundle in Germany. We expect that the institutional structures in the countries in the upper branch of Figure 1 are quite different from those in the lower branch, but we would not argue that the institutional structures for the countries in the upper branch are all similar to one another nor are they all similar to one another in the lower branch. To further illustrate the importance of institutional bundles consider gender as an institution, in particular McDonald’s work on gender equity within and outside the family (McDonald 2000). The countries in the lower branch of our fork could be characterized as having low levels of gender equity within the family, however, not all countries in the upper branch have high levels. Notably, the Netherlands has been characterized as having a strong breadwinner-homemaker model with women bearing a disproportionate burden of care for children. Because this gender institution exists in combination with a labor market that includes rewarding part-time employment opportunities fertility in the Netherlands is much higher than in countries with similar gender equity within the family (Mills 2015).

That it is methodologically difficult to examine such institutional bundles to determine the ones affecting the level of fertility in a country has been frequently noted (Balbo et al. 2013; Gauthier 1996, 2007; Goldscheider et al. 2010; Hoem 2008; Neyer and Anderson 2008; Rindfuss and Brauner-Otto 2008; Ziefle and Gangl 2014). Perhaps the most central and vexing difficulty is the degrees of freedom problem (DiPrete et al. 2003): the institutional bundles involve numerous variables and there are relatively few economically-developed countries, and even fewer with the necessary data.

The severe methodological problems in determining which institutional factors are the most important will not be solved here, but we will provide one additional example from the upper and one from the lower branch of Figure 1 to illustrate that quite different bundles of institutional factors can lead to the same outcome. From the top branch we will illustrate comparing Australia with Norway, and from the lower branch Italy and Japan. Figure 3 is the same as Figure 1, except that all the countries have been removed except these four.

Consider first the contrast between Australia and Norway. As can be seen in Figure 3, they have had identical fertility trends since the late 1980s; yet they have quite diverse histories, cultures and institutional bundles. 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, and a consistent history of introducing policies to promote gender equality. These policies have reduced the incompatibility between the mother and worker roles. In recent years, Australia’s family policies have been repeatedly changed depending on which political party has been in office, including the conservative government of the late 1990s inadvertently reducing the availability of childcare by stopping the grants made to community-based

centers, putting many of them out of business (McDonald 2015). Full-time work hours are relatively short in Norway; they are longer in Australia but the availability of numerous part-time positions provides alternatives.

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 quite 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; Tsuya et al. 2012). But note that it is common for young married couples to reside with parents, mitigating the high cost of housing.

Conclusion

To summarize, with the exception of Canada, in economically advanced countries two distinct fertility regimes have emerged: one with fertility below, but near, replacement levels and the other below 1.5. This pattern is clear and striking using TFR as the fertility measure. It is also evident in a tempo adjusted measure, TFR*, and cohort fertility rates, but as expected the branching shows later in the years covered and not as striking. This branching pattern was not predicted by any of the theories routinely used by those who study fertility in economically advanced countries.

Eschewing the question of how important value change has been in the decline to below replacement fertility levels and the question of the permanency of all women being home-centered, work-centered, or adaptive, we expect that institutional factors, and how they are bundled in a given country, are responsible for countries being in the upper or lower branches. The task ahead is to determine which institutional factors, and in which combination, are the most important in a country being in the upper or lower branch, while recognizing that different bundles can lead to the same outcome.

We end with 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? More recently, countries that fall below a 1.5 TFR tend to stay below 1.5 (McDonald 2008). Canada is an exception, with a TFR of 1.49 in 2000, and its 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, Billari, and Mills 2013; Thevenon 2011).

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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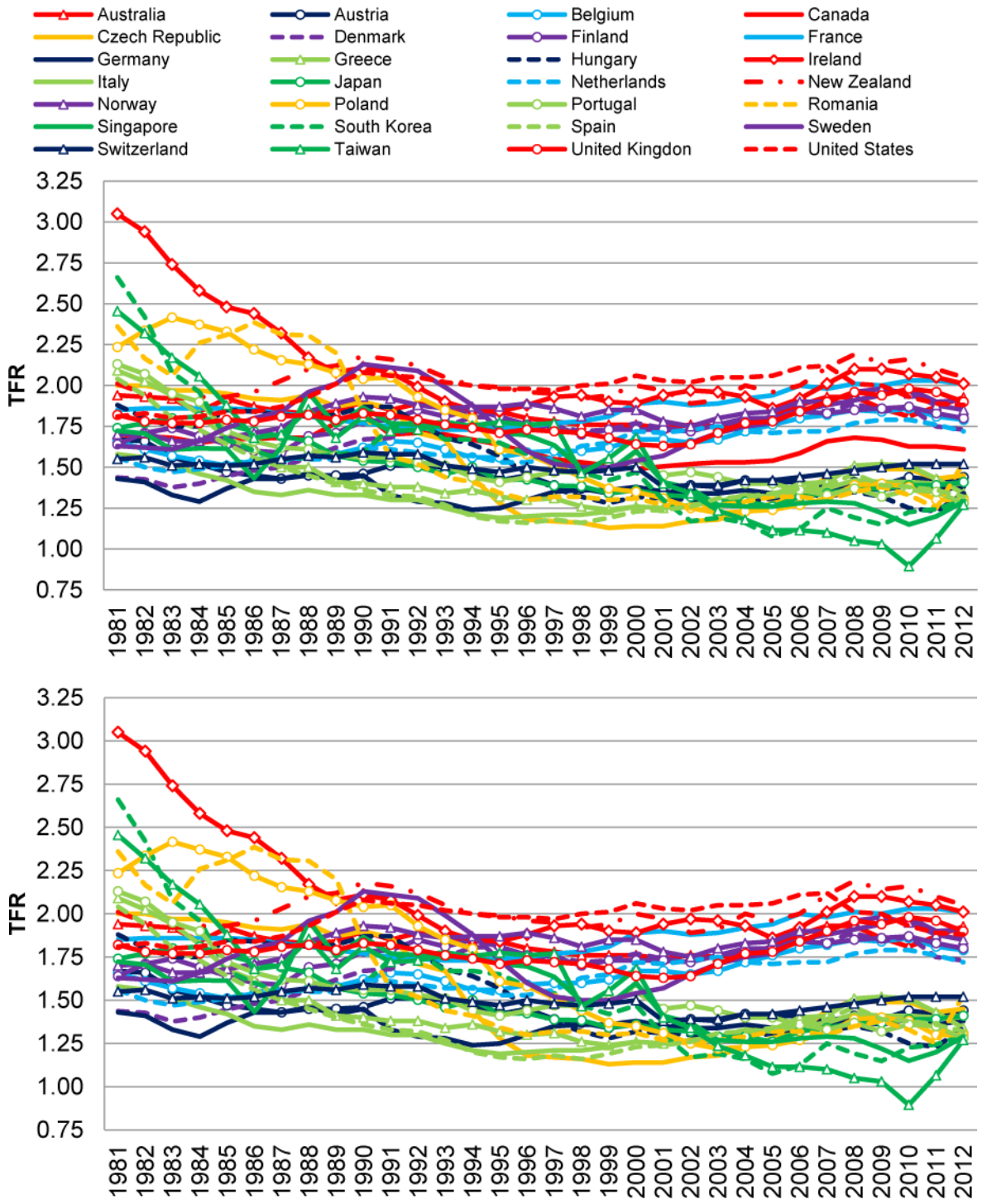

Figure 1.

a. TFR for 28 countries, 1981–2011 (GDP/capita > $7000 in 1995, TFR<2.0 in 1995, and population>2 million).

b. TFR for 27 countries, excludes Canada, 1981–2011 (GDP/capita > $7000 in 1995, TFR<2.0 in 1995, and population>2 million).

Source: World Bank 2015, except Taiwan which are from National Statistics Republic of China 2015.

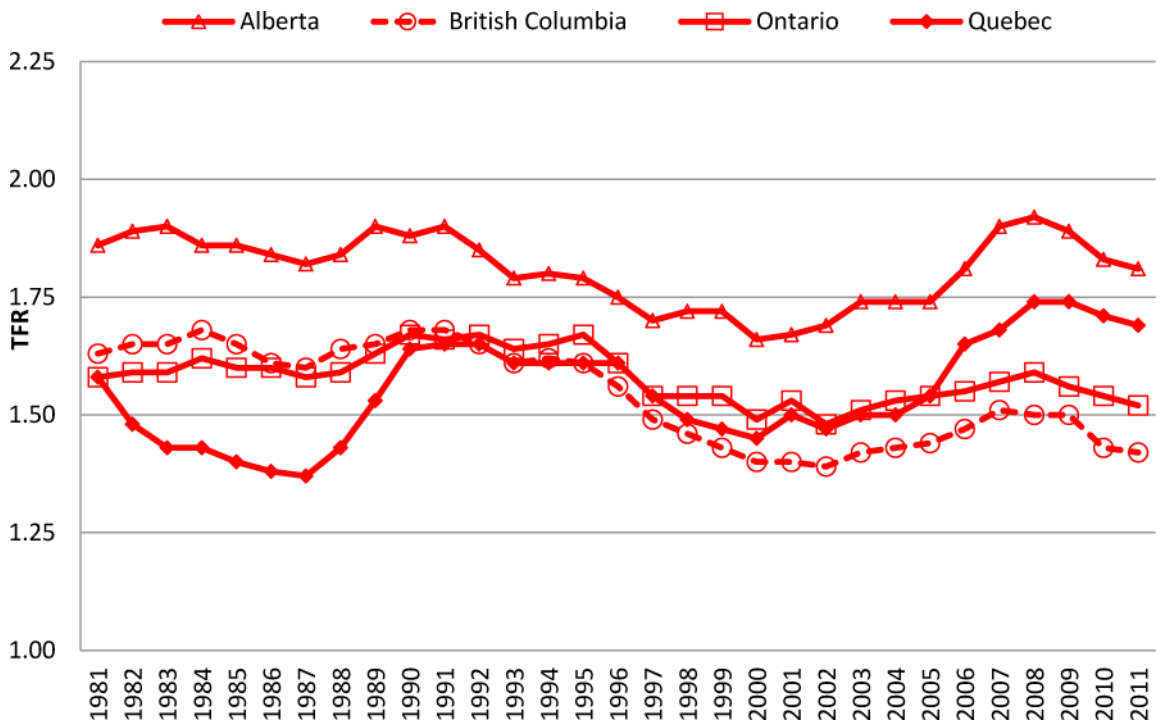

Figure 2. Fertility Trends for Canada's Four Most Populous Provinces: Alberta, British Columbia, Ontario, and Québec, 1981–2011

Sources: Statistics Canada CANSIM and Vital Statistics

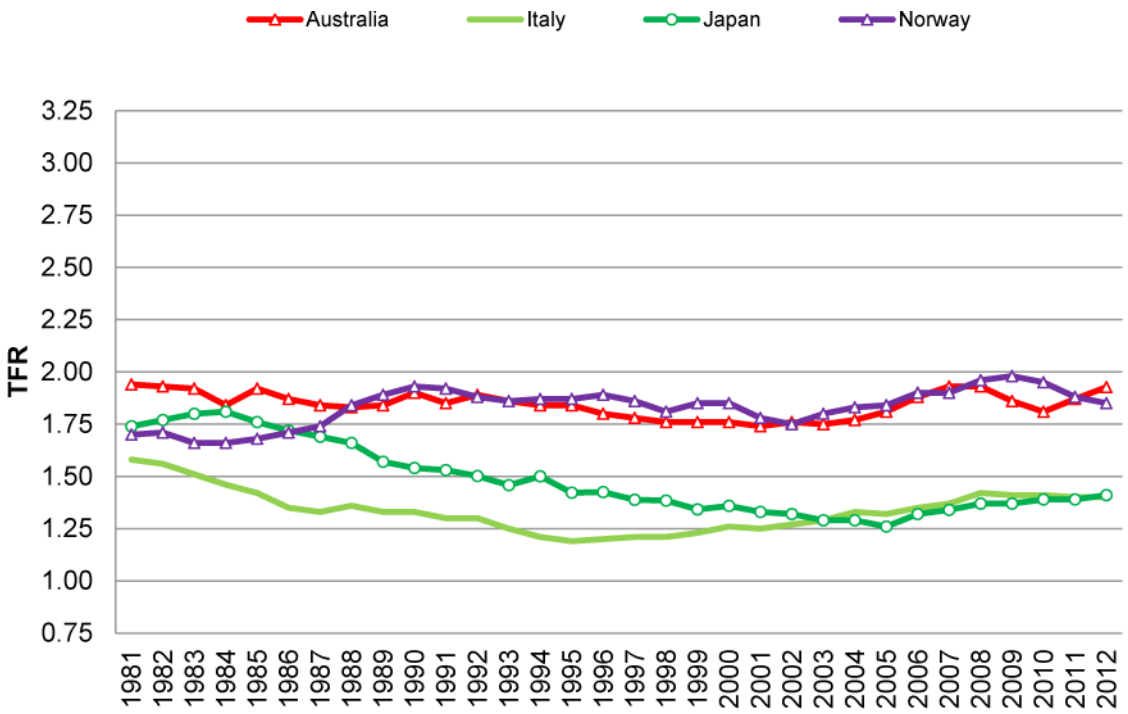

Figure 3. Trends in TFR, Australia, Italy, Japan, and Norway, 1981–2012
Source: World Bank 2015.