

# What We Know and What We Need to Know About the Baby Boom

Jan Van Bavel\* & David S Reher\*\*

\* Katholieke Universiteit Leuven (Belgium)

\*\*Universidad Complutense de Madrid and Grupo de Estudios Población y Sociedad – GEPS  
(Spain)

Paper prepared for the European Population Conference, Stockholm (Sweden), 13-16 June 2012)

\*\*\* FIRST DRAFT \*\*\*

## **Abstract**

This study of the baby boom is based on a sample of 18 different European and non-European countries classified according to the timing and intensity of their baby boom and to the role played by nuptiality, fertility and age structure in the increasing birth rate. The baby boom is found to be especially strong in non-European countries, fairly strong in some countries and quite weak in others. In many countries the boom started well before the aftermath of World War II, in others it did not start before the 1950s and there were often short-lived post war booms in many. Everywhere it posed significant challenges to political and social systems. Standard explanations for the baby boom are examined and many are found to be wanting. The authors argue that it is useful to understand the boom in terms of the relatively low levels of interwar fertility reached in most countries.

## Introduction

The baby boom is generally thought of as a period of demographic effervescence that affected the developed nations of the world, especially for most of those participating in World War II, and took place between the mid- to late-1940s and the late-1960s or early-1970s. During this period the dynamics of reproduction changed with marriage rates accelerating, total fertility rising and the number of births increasing substantially. The baby boom interrupted the decades-long decline of the birth rates dating back to the nineteenth century. From the 1960s onwards, the decline resumed with the baby bust (see Figures 1A to 1E).

Macunovich described the baby boom as a “birth quake” with many aftershocks; “a totally unexpected, earth shattering, and ground breaking event experienced not just in the United States, but in virtually the entire Western industrialized world during the 1950s and 1960s, as birth rates erupted and the number of babies born annually in many countries nearly doubled within just a few years” (Macunovich 2002: 1). Indeed, like seismologists remaining unable to predict earth quakes, demographers nor other social scientists were able to foresee the baby boom. The recovery of fertility came completely unexpected. For example, even in 1944, in population projections for Europe carried out by Frank Notestein, I.B. Taeuber, Ansley J. Coale, Dudley Kirk, and L.K. Kiser (1944), it was argued that the life style aspirations of the urban and richer parts of the populations of Europe were spreading to the rural and poorer parts of the population, that this would imply a downward adjustment of fertility, thereby increasing the homogeneity within countries between different social classes and that this would prolong the fall of fertility to unprecedentedly low levels (see also Sauvy 1948; Notestein 1950; Keyfitz 1981).

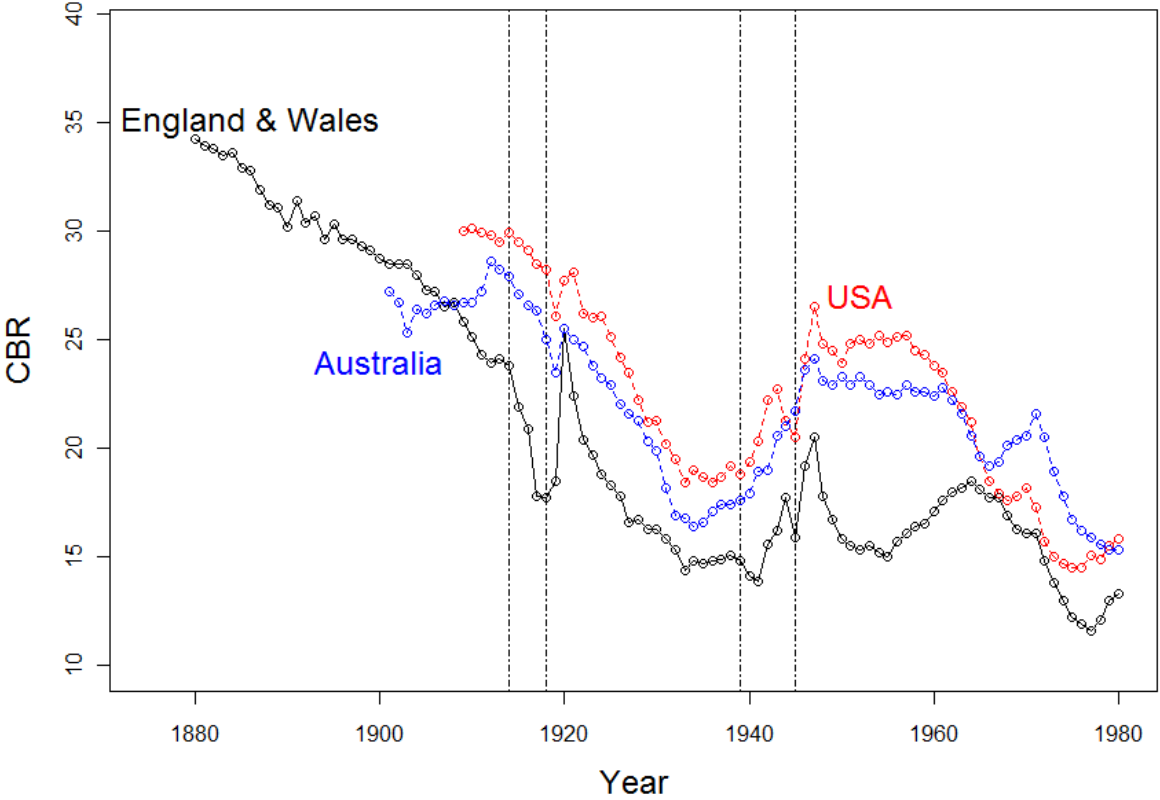
Social scientists did not anticipate the baby boom, nor did they foresee the return to lower level of fertility in the early 1970s (Giddens 1993: 601). The end of the baby boom was just as unexpected as its start. Indeed, by the 1960s, “procyclical fertility” had been called “one of the most firmly based empirical findings in any of the social sciences” (Dorothy Tomas cited in Butz & Ward 1979: 318). Around 1960, mainstream demography and social science was predicting continued fertility increases due to continuing economic growth (Butz & Ward 1979). Ironically, the explanations given *post hoc* for subsequent fertility decline were very similar to the ones given for low and declining fertility before the Second World War (Van Bavel 2010).

Even if the baby boom turned out to be only temporary and did not imply a return to the high fertility levels typical before the demographic transition, it has had very important and long-lasting consequences that are still salient today. For example, the rapidly growing number of retired people today is one of the “aftershocks” of the baby boom, with people born after 1945 reaching age 65 from 2010 onwards. The baby boom generations reaching

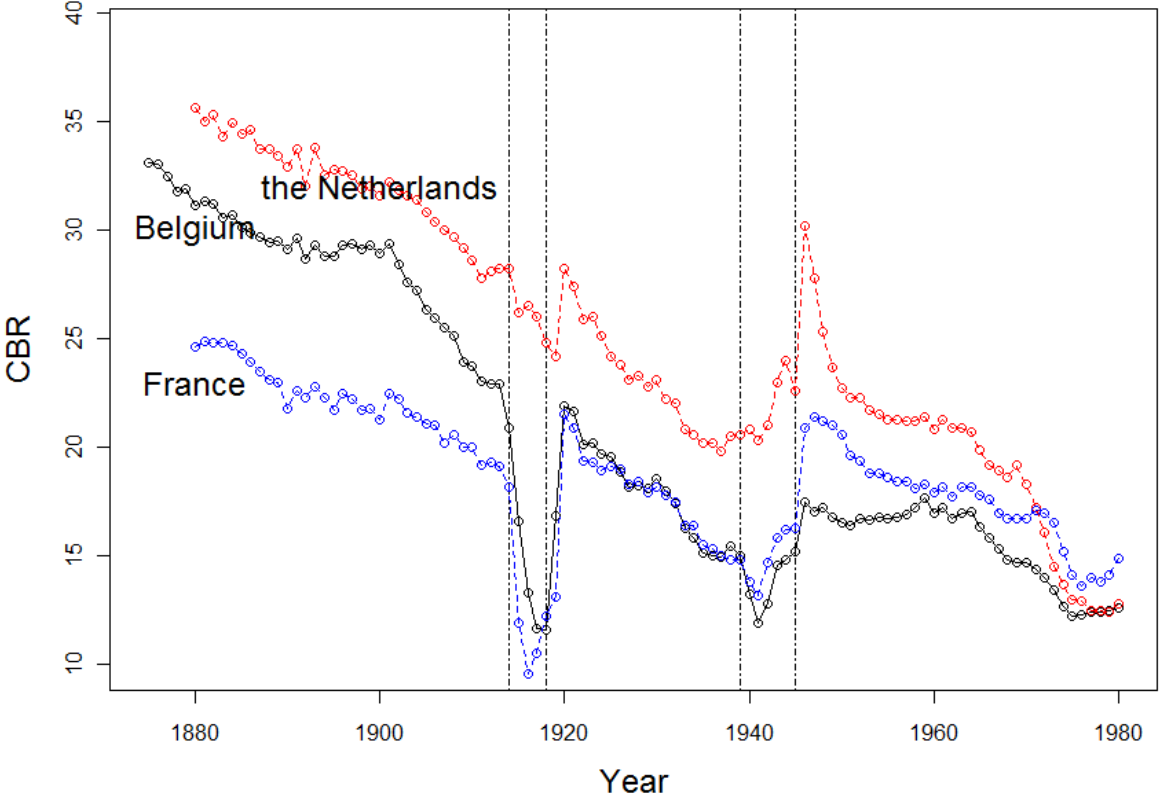
retirement age clearly entail challenges for health care and existing pension schemes (Philipov & Schuster 2010).

Clearly, understanding the causes of the baby boom is therefore a key challenge for demographic economics (Doepke, Hazan & Maoz 2007) and for social science and demography more generally. Yet, the scholarly literature about the exact dimensions and the root causes of the baby boom in an international perspective is not as big as one might expect, given the importance of the subject. There are no widely accepted or even researched theories about the causes of the baby boom. Apart from the fact that we know that the baby boom clearly involved a marriage boom (Glass 1968; Festy 1979), the underlying reasons remain completely unclear (Calot & Sardon 1998: 44).

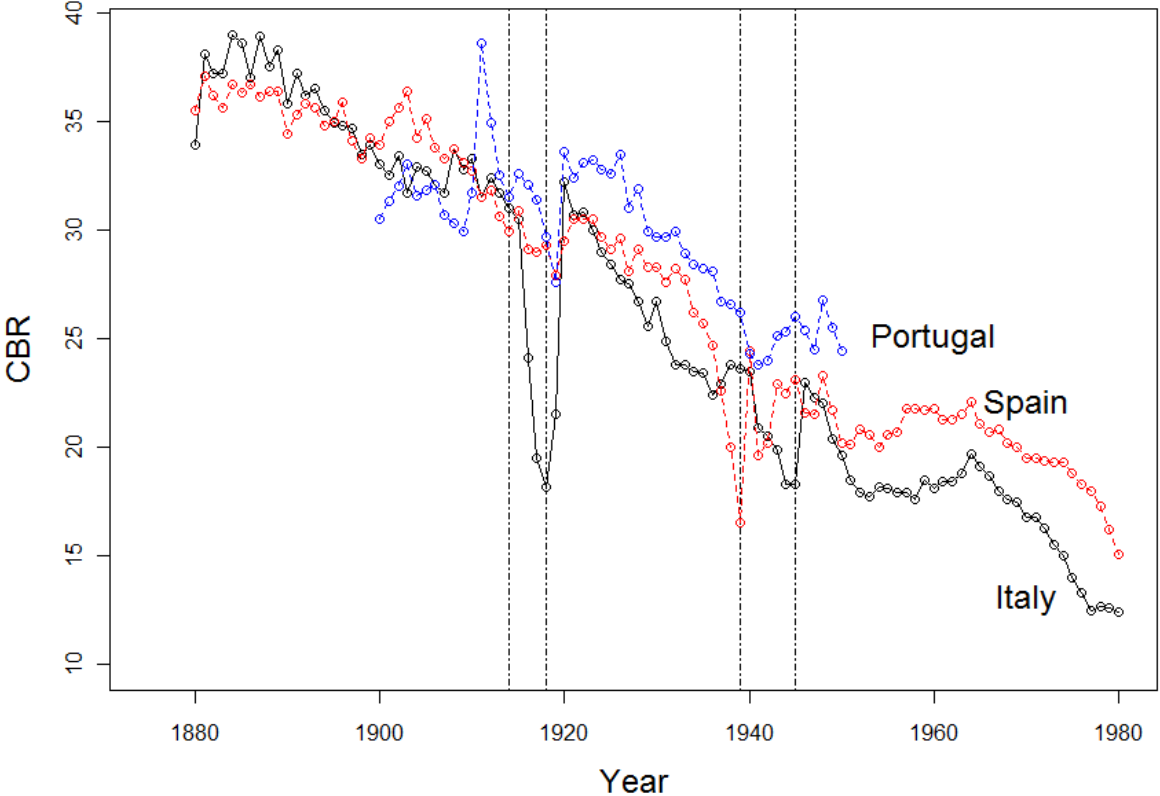
**Figure 1A: Crude birth rate (births per 1000 population) 1880-1980 in England & Wales, Australia, and the USA**



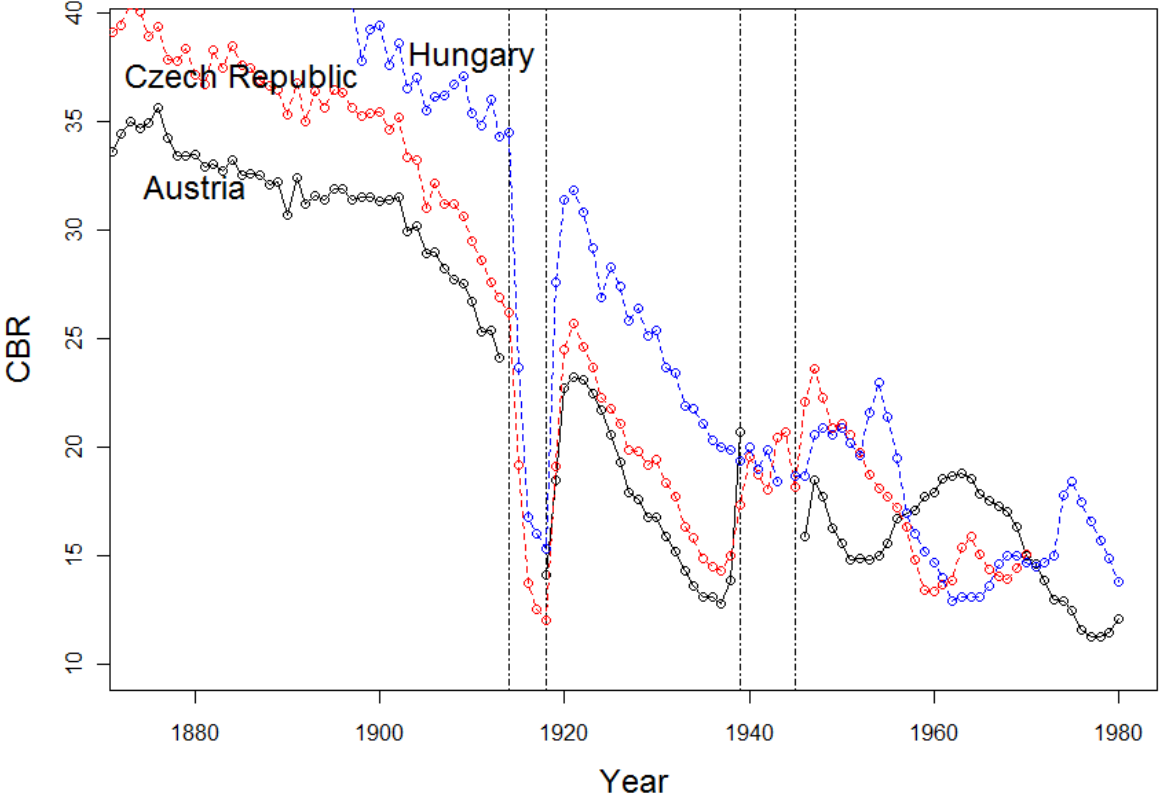
**Figure 1B: Crude birth rate (births per 1000 population) 1880-1980 in Belgium, the Netherlands, and France**



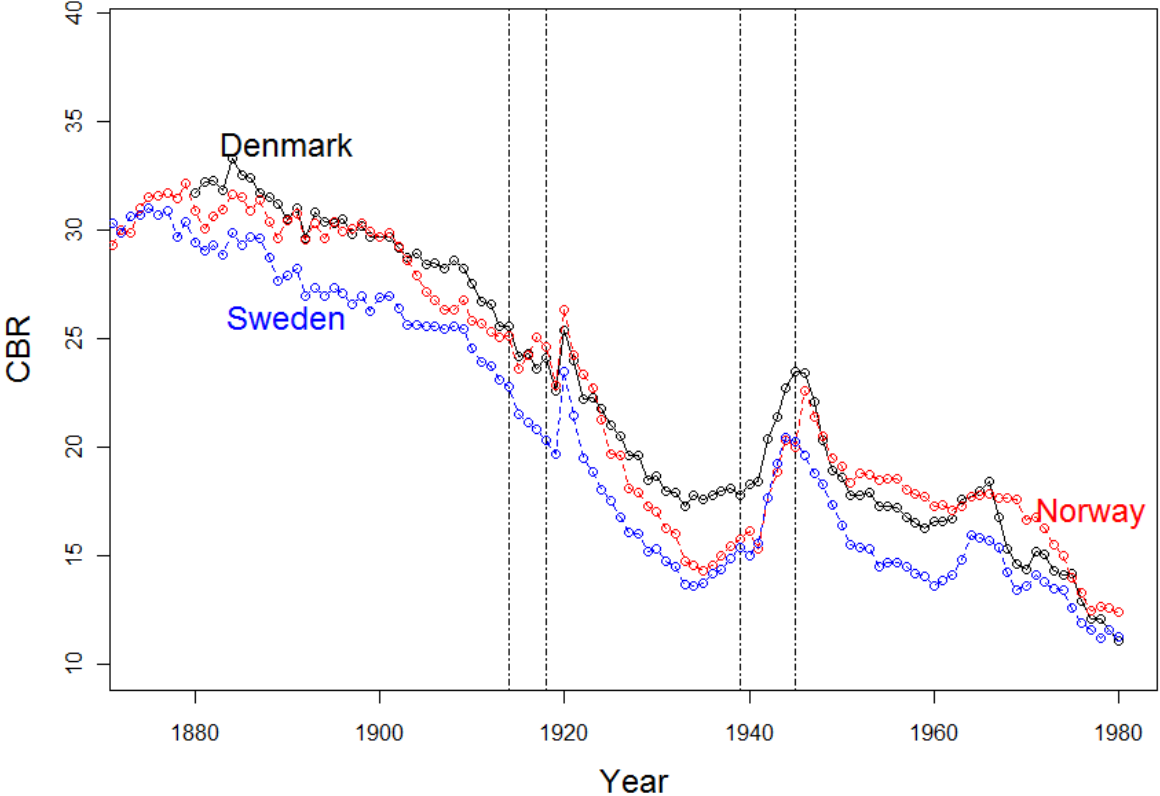
**Figure 1C: Crude birth rate (births per 1000 population) 1880-1980 in Portugal, Spain, and Italy**



**Figure 1D: Crude birth rate (births per 1000 population) 1880-1980 in Austria, Czech Republic, and Hungary**



**Figure 1E: Crude birth rate (births per 1000 population) 1880-1980 in Denmark, Norway, and Sweden**



## Earlier research

The existing literature predominantly deals with the USA (Byerly 1985 provides a literature review; see also Macunovich 2002; Russell 2006; Emeka 2006). The number of studies explicitly addressing the causes of the baby boom is very limited. Most explanations emphasize the importance of the return home of soldiers participating WWII, a period of economic growth that affected many countries in the aftermath of the war, a period in which relatively small cohorts had ample economic and social expectations before them, and a period of general optimism reinforced by cultural contexts in which large families were held up as a socially desirable goal for all. Unquestionably the work of Richard Easterlin, centering for the most part on the experience of North America, is a key point of reference for these ideas. Easterlin (1961) emphasizes the importance of relative cohort size for fertility outcomes. Other explanations have emphasized the role of female labor, especially during the war (Doepke et al, 2007; or, more generally, Macunovich, 1996), the links between fertility, income and subjective well-being (Thornton, 1978), the role of parents, especially fathers (Rutherford, 1999); or technological progress in the household sector (Greenwood et al, 2005). Most attention has gone to economic factors, much less to the importance of ideational and cultural change (with a notable exception being Lesthaeghe and Surkyn 1988).

It is not clear whether or not all social groups participated equally in the trend towards higher fertility. An understanding of the social heterogeneity of reproductive change during the period is nearly absent in the existing literature. There are some indications that social differences became smaller during the baby boom era (Glass 1968: 118-120; Festy 1979: 167-168). Also, it became evident that married women's gainful employment played an important role in explaining the social gradient in fertility, at least in a number of countries, with working wives having lower fertility (Glass 1968: 120). But social differences in the shifting demographic patterns during this period are not thoroughly investigated at all. While this is a cornerstone of much of the literature corresponding to the subsequent period covered by the WFS and the DHS surveys, it is largely uncharted territory for the earlier period of change. Identifying precisely which groups participate in the baby boom and which ones do not will enable us to understand better the contexts of increasing fertility in a way that may have implications for our understanding of the potential pathways of future fertility trends in the world. It is also important to ascertain whether or not the social groups that spearheaded fertility decline in the post baby boom era (educated, urban, etc) were or were not the same ones that lead the trend towards increasing fertility in the earlier period. The timing of these responses is another important but as yet largely uncharted part of the picture.

The extent to which social ‘trendsetters’ can be identified in periods of reproductive change is an important research issue that may have many implications for contemporary society.

By far the largest part of scholarly work addresses the consequences rather than the causes of the baby boom. In many ways, much of what has been written about the demography of contemporary developed societies is linked, in one way or another, to the baby boom. Much of this literature is dedicated to analyzing the implications of the bulge in babies for society as it ripples through the population age structure. This literature is abundant for subjects such as the implications of the boom for education (see, for example, Villa, 1997; and Jacobs and Stoner-Eby 1998); housing (see, for example, Painter and Lee, 2009; Levin et al, 2009; Lindh and Malmberg, 2008; Ermisch, 1996; Mankiw and Weil, 1989); employment and the labor market (see, for example, Slack and Jensen, 2008; Biagi and Lucifora, 2008; Vere, 2007; Manton et al, 2007), asset returns, interest rates, the stock market and economic growth (see, for example, Boersch-Supan and Ludwig, 2009; Della Vigna and Pollet, 2007; Lim and Weil, 2003; Abel, 2001; Lenehan, 1996; Bakshi and Chen, 1994; Blomquist and Wijkander, 1994; Wallace, 1999; Greller and Nee, 1989); the family, its ability to fulfill its role as a primary caregiver and the changes ensuing after the baby boom (see, for example, Sobotka and Toulemon, 2008; Sweeney, 2002; Weiss, 2000; Caputo, 1999; Wolf, 1999; Sell and Kunitz, 1997; Macunovich et al, 1995); aging in its different dimensions (including health, retirement, care, and pensions) (see, for example, Goldsmith, 2008; Clark and Knox-Hayes, 2007; Winston and Barnes, 2007; Wolff, 2007; Floden, 2003; Knickman and Snell, 2002; Haas and Serow, 2002; Baker, 2001; Calot and Sardon, 1999; Denton et al, 1998; Denton and Spencer, 1997; Lee and Mason, 2009; Lee et al, 2008); or other health-related issues (Strunk et al, 2006).

There is some indication that the dynamics of the baby boom may have affected some developing nations who were only then just entering their own demographic transitions. It is worth considering the fact that the timing of both fertility increase and fertility decline in many developing countries is quite close to that of developed countries experiencing the baby boom (on this, see, for example, Dyson and Murphy, 1985; also Dyson and Murphy, 1986). Should this be the case, the apparent non-response of fertility to rapid improvements in mortality in the developing world would have to be attributed, at least in part, to the effects of the baby boom in these nations rather than to some sort of malfunction of their existing demographic systems (Reher, 2004). Many of the existing interpretations of this non-response tend to concentrate on the mechanisms (contraceptive use, for example) rather than on the more general reasons for maintaining fertility high which may have been linked to similar reasons ensuring higher fertility in developed nations.

So, in our view, the literature has paid too little attention to the following important aspects of the baby boom: (1) the underlying causes of the baby boom, especially those linked

to the economic/cultural debates surrounding the Demographic Transition (Dyson, 2001; Reher, 2004; 2007; 2010; Lee, 2003), (2) the disparities in reproductive change in different countries (ranging from nearly stable to sharply rising fertility); (3) the social heterogeneity of reproductive change within each country, i.e. the issue of which social groups were the trendsetters and who were not; insight into the social heterogeneity of the baby boom within countries will also foster a better understanding of its causes; (4) the degree to which the baby boom also affected parts of the developing world (Dyson and Murphy, 1985; 1986). We leave the two latter issues, i.e. the social heterogeneity of the baby boom within developed countries and the baby boom in the developing world, to future work.

This paper will start by looking at the timing, length and intensity of the baby boom in different countries in Europe and North America (sometimes also adding Australia to the picture). It is essential to first get the timing and dimensions right before the causes can properly be tackled. While the start of the fertility transition in nineteenth century Europe has been investigated at length, motivated by the idea that the correlates of the kick-off will give a clue about possible causes (see e.g. Lesthaeghe 1977; Coale & Watkins 1986), the same due attention has not been paid to the starting phase of the baby boom.

## **The timing of the recovery of period fertility**

Virtually all well-known theories and empirical studies about the baby boom address only the trends observed after World War II (Wright 1989, for example, uses time series starting only in 1950). It seems to be forgotten or neglected that the recovery of the birth rate, and certainly the recovery of fertility as the behavioral component underlying the birth rate, started already before or during the War in many countries. By ignoring the fact that the recovery of fertility got started already before the end of the Second World War, some major baby booms (like the ones experienced by Sweden, Finland, and Denmark) are left out of the picture (as in Wright 1989), since the biggest part of their booms were already played out by then. In most European countries as well as in the USA, total fertility reached its lowest level in the mid to late 1930s and then started to recover (Glass 1968; Festy 1979; Calot & Sardon 1998). The recovery of the birth rate tended to follow with very little delay (Sauvy 1948).

In the 1920s and 1930s, national population growth rates were still positive but this was due only to declining mortality and population momentum. Since fertility had fallen below the replacement level in a many Western countries, it had become a negative rather than a positive factor in population growth. Most demographers saw no reason to expect that the decline of fertility would stop, or even turn around and go up again (Festy 1979: 115; Van Bavel 2010). So it came as a surprise when fertility started to recover from the mid 1930s onwards (Sauvy 1948; Calot & Sardon 1998; Festy 1979). The simultaneity of the recovery of

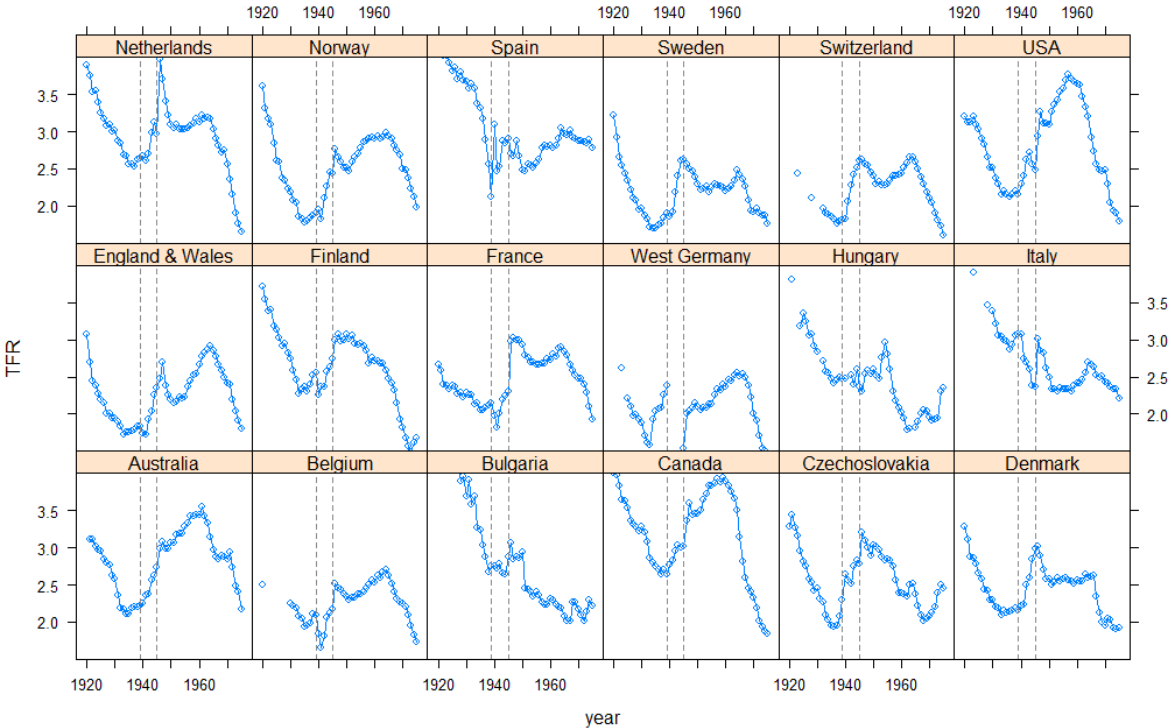


fertility from the late 1930s onwards (see Figure 2) is even more striking than the parallelism observed in the late nineteenth century start of the fertility decline (Festy 1979: 163).

While World War II brought huge mortality and was followed by a major reshuffling of populations within Central and Eastern Europe, Glass (1968: 103) observed that "the trend of fertility as such showed less discontinuity than might have been expected. What became fully visible in the fifties and sixties was often already implicit in the trends of the later thirties and continued during World War II in several Western European countries. These trends might have been detected before World War II if better demographic data had been available and if marriage cohort or birth generation techniques of analysis had been applied".

Calot and Sardon (1998) calculated monthly total fertility rates for a number of countries to trace back the exact timing of the recovery. It turns out that the turnaround started the earliest in the Nordic countries, i.e. mid 1933 in Denmark and Finland, mid 1934 in Sweden and by the end of 1935 in Norway. The decline of fertility stopped in the last trimester of 1935 in France as well as in Belgium and England & Wales. In some cases, the subsequent recovery of fertility was interrupted when the war broke out. This was the case in Belgium and France in May-June 1940, after the declaration of war on September 1, 1939. Then, fertility again recovered a bit before breaking down again in January 1941, after the German offensive in May 1940. After that, fertility basically continued to go up both in France and Belgium. In other countries, the starting phase followed not exactly the same but a similar course. After 1942, fertility was augmenting rapidly in many countries. Just before the end of the war in 1945, the recovery of fertility halted a bit in a number of countries (including the Netherlands, for example). Around 1946, very often a catch-up upward peak was observed (Calot & Sardon 1998) (see Figure 2).

**Figure 2. Period total fertility rates in 18 Western countries, 1920-1975**



The recovery of fertility was not limited to countries that participated in the Second World War. In countries that were most hardly hit, the war seems to have slowed down the recovery a bit but not as much as is often thought (Glass 1968: 103). Probably, people in affected countries often tried to postpone births. Even if total period fertility was on the rise even during the war, the highest levels were typically reached in these countries in the years after the war. In contrast, in countries that did not participate in the hostilities, period fertility often reached the highest baby boom levels already during or only shortly after the war (Calot & Sardon 1998). Switzerland and Sweden remained neutral during the war but still experienced an important recovery of fertility. In both cases, the major part of the recovery took place between 1935 and 1945 rather than after the war. Sweden reached its lowest period total fertility level in 1934 with just 1.7 children per woman. It surpassed 2.1 children per woman already in 1942, reaching a maximum level of 2.6 in 1945. In Switzerland, minimum total fertility before the war was 1.8 in 1937, reaching 2.1 again in 1941 and climbing to a nearly maximum level of 2.6 in 1946, then going down towards 2.3 in the early 1950s before reaching the maximum of 2.7 in 1964 (Chesnais 1992). So, the recovery of fertility (a) started before the Second World War and (b) was also observed in nations that were not involved in that war. These findings indicate that the war did not play a fundamental role in the recovery of fertility underlying the baby boom. The war may have

slowed down that recovery in a number of countries, resulting in catch-up peaks just after the war (when postponed births were caught up), but it did not provoke it (Calot & Sardon 1998).

Chesnais (2006) insists that the "real" recovery started only after the Second World War. Talking about the case of France, he writes: "The real recovery in fertility did not begin (as is frequently written) in 1942 - it was then only the matter of a minor change (+10%), linked partly to the movement of returning prisoners - but rather took place at the end of the conflict (+30%), after the return of the soldiers and the sudden increase in the rate of family benefits" (Chesnais 2006: 443). Yet, "the movement of returning prisoners" related to the Second World War obviously cannot explain why fertility started to recover in many countries already well before the War. In the view of Chesnais, the start of the "real" baby boom should be dated in the aftermath of the war: "Many analysts, among them Gérard Calot [...] date the recovery to 1942, but with 2.1 children per woman, fertility was then appreciably lower than what it had been in the previous period (on average 2.18 for 1927-1939). In 1946, on the other hand, there was a phenomenon without precedent since 1890-1893, when fertility reached 3 children per woman and maintained this for the following four years (1947-1950) and subsequently remained above 2.5 until 1969" (Chesnais 2006: 443, note 3).

There are several problems with this argument. First, the recovery of fertility before and during the war may not immediately have resulted in fertility rates that were as high as in earlier times, yet the recovery was remarkable, important, and predicted by none of the demographers or social scientist of the interwar period (Van Bavel 2010). In demography, rates usually really don't jump up and down indeed; trends often evolve rather slowly, but this doesn't make the reversal less important or significant. If one were to follow the logic of the argument of Chesnais, one could argue just as well that, reversely, the decline of fertility around 1870 in many countries did not mark the start of the "real" fertility transition because fertility was still quite high at that point. Second, if one were to follow the logic of the argument of Chesnais, one could just as well conclude that the baby boom was not important altogether since it did not result in fertility levels as high as before the start of the fertility transition; not even by the 1960s. Where should one, from Chesnais' point of view, draw the line between a "real" and "only a minor" recovery? Third, in France, fertility was already very low in 1890-93, so from an international perspective, even the French recovery after 1946 towards the 1890-93 level would not be very significant, following Chesnais' logic, when compared to countries with higher fertility (like the Netherlands).

It is true that fertility often peaked extremely around 1945-46 and that in many countries (like France) the birth rate reached higher levels afterwards than before or during the war. But that is just not the point. The important point about the timing is that the recovery of fertility was (a) very general internationally (b) already before and during the war while (c) this was unpredicted and unforeseen and that (d) we still do not understand at all

why this was the case while at the same time (e) such an understanding should be very important for social science and demography. Unforeseen twists and turning points often happen in real life but much less in our theories about it. Studying the baby boom might help us devise theories that can make sense of them.

**Table 1: Indicators of timing, intensity and length of the recovery of period fertility**

Country	Period TFR		Change in TFR		Year TFR was...		Length of boom	
	Lowest <sup>1</sup>	Highest <sup>2</sup>	(2) / (1)	(2) - (1)	Lowest	Highest	(6) - (5)	Years of growth
	(1)	(2)	(3)	(4)	(5)	(6)		(*)
Western Germany	1.6	2.6	1.61	1.0	1933	1964	31	NA
Sweden	1.7	2.6	1.55	0.9	1934	1945	11	18
England & Wales	1.7	2.9	1.70	1.2	1933	1964	31	22
Switzerland	1.8	2.7	1.51	0.9	1937	1964	27	NA
Norway	1.8	3.0	1.67	1.2	1935	1964	29	20
Czechoslovakia	1.9	3.2	1.66	1.3	1936	1946	10	17
Belgium	1.9	2.7	1.40	0.8	1935	1964	29	18
France	2.1	3.0	1.47	1.0	1935	1947	12	18
Denmark	2.1	3.0	1.44	0.9	1933	1946	13	20
Australia	2.1	3.6	1.68	1.4	1934	1961	27	23
USA	2.1	3.8	1.78	1.7	1936	1957	21	17
Finland	2.3	3.1	1.36	0.8	1933	1947	14	18
Hungary	2.4	3.0	1.23	0.6	1936	1954	18	NA
Netherlands	2.5	4.0	1.57	1.4	1937	1946	9	15
Spain	2.6	3.1	1.21	0.5	1938	1940	2	18
Canada	2.7	3.9	1.49	1.3	1937	1959	22	16
Bulgaria	2.7	3.1	1.14	0.4	1938	1946	8	13
Iceland	2.7	3.9	1.42	1.1	1938	1950	12	NA
Italy	2.9	3.1	1.07	0.2	1936	1939	3	12

<sup>1</sup> Lowest level of period TFR reached between 1920 and 1938 (both years included)

<sup>2</sup> Highest level of period TFR reached between 1939 and 1975 (both years included)

(\*) Number of years between 1931 and 1974 that period total fertility was higher than in the previous year

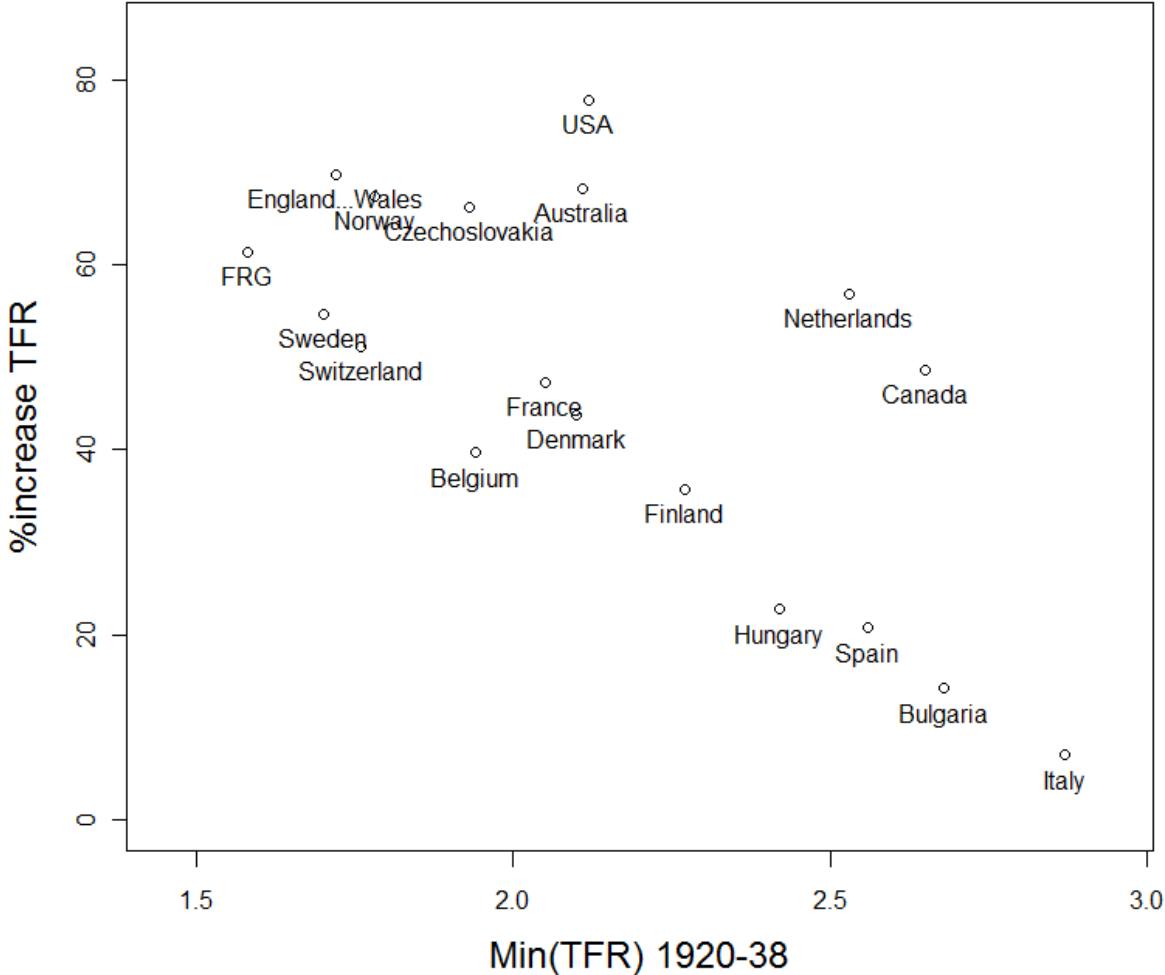
## The strength and length of the recovery

In Northern, Western and Central Europe, period fertility rates were generally higher in the 1960's than in 1935-39 (see Figure 2). In Eastern and Southern Europe, the converse is generally the case (see Bulgaria and Hungary as well as Spain and Italy; however, also see Czechoslovakia).

Chesnais (2006: 443) notes that, during this period, France lost its position as the country with the lowest low fertility level and that the postwar recovery was more sudden

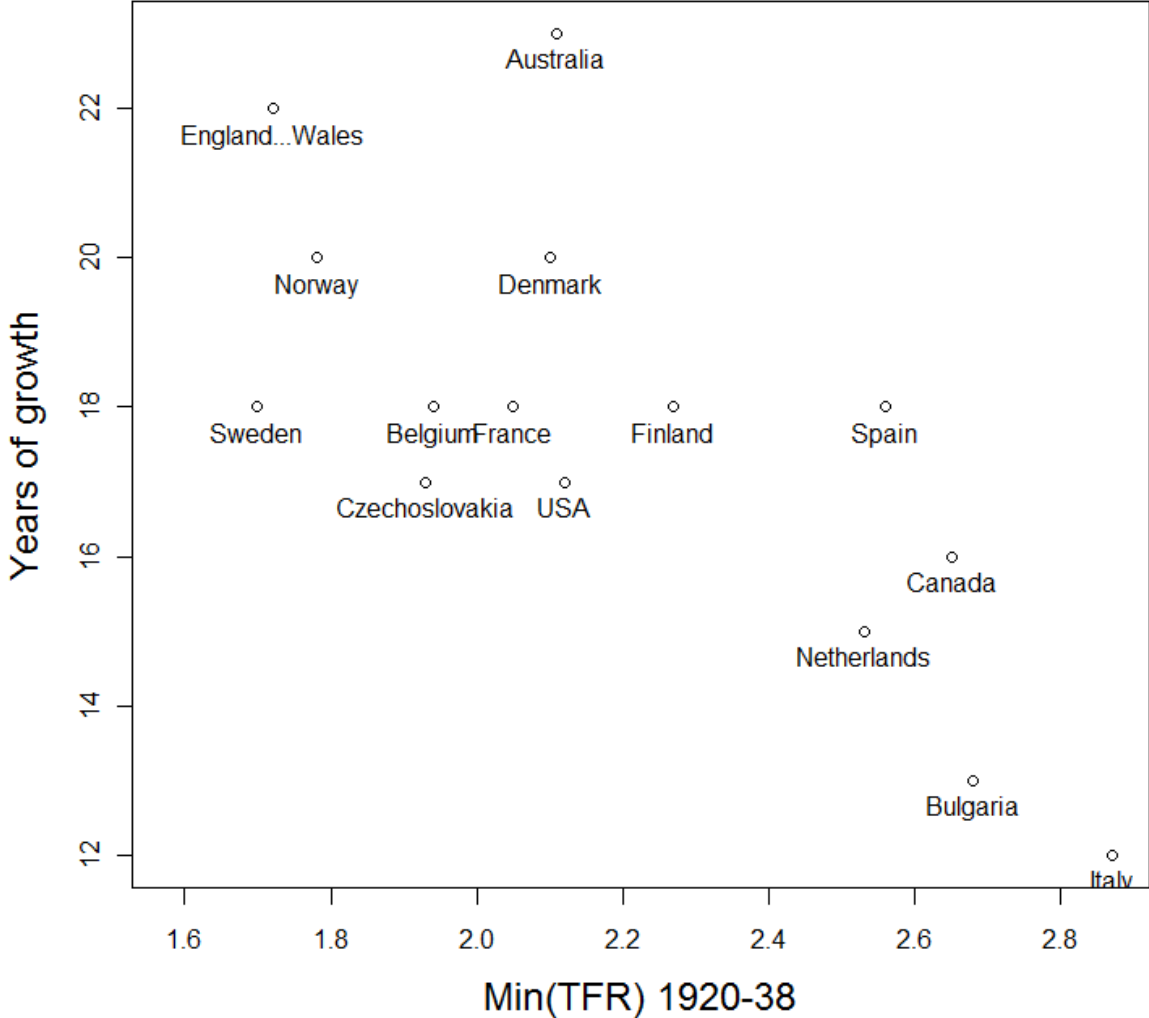
and powerful in his country than in neighboring countries like Belgium, England, or Germany. More generally, Sauvy noted already in 1948 that the recovery of the birth rate seemed to be the strongest in countries with the lowest level of fertility before the war (Sauvy 1948). Figure 3 was constructed in order to check whether that statement turned out to be true for the subsequent after-war period. The horizontal axis of that figure gives the minimum level of total fertility reached during the interwar period (more precisely, the years 1920-1938). The vertical axis gives the percentage increase of total fertility between that minimum level and the maximum level of total fertility observed since the breaking out of World War II in 1939. The scatter plot suggests that, indeed, the recovery of fertility was more intense in countries that exhibited the lowest fertility in the interwar period, including Germany, Czechoslovakia, England & Wales, Norway, Sweden, and Belgium. In these countries, period total fertility dropped below 2 during the interwar period and subsequently grew with at least 40%. Countries that still exhibited relatively high fertility during the interwar period included Hungary, Spain, Bulgaria, Italy, and the Netherlands. In the former 4 of these, the recovery of total fertility amounted to 23% at most. The unexpectedly high recovery for the Netherlands is a result of the remarkable spike immediately after the War (see Figure 2). If we ignore that post-war spike and look at maximum Dutch period fertility after 1950, the recovery still amounts to an increase of 27%, as compared to the interwar minimum. Overall, Figure 3 would suggest some connection between the stage of the fertility transition reached before World War II and the strength of the recovery after that War: countries that were more advanced in limiting fertility experienced a stronger recovery. (In fact, a simple bivariate OLS regression shows that the minimum level of pre-war fertility can predict about half of the variance of the log of the subsequent percentage growth).

**Figure 3. Minimal level of period TFR in the 1920-1938 period (horizontal axis) and the percentage growth of period TFR from that minimal pre-war level to the maximum TFR after the year 1938 (vertical axis)**



There is also a correlation between the stage of the fertility transition a country had reached during the interwar period on the one hand and the duration of the subsequent recovery. Figure 4 displays the minimum level of total fertility reached during the interwar period on the horizontal axis and, on the vertical axis, the number of years that fertility was higher than in the previous year during the 1931-1974 period. In low fertility countries like England & Wales, Norway, Sweden, or Belgium fertility was on the rise for 18 years and more. In contrast, in countries that exhibited relatively high fertility before the War, like, Canda, the Netherlands, Bulgaria, or Italy, fertility was typically recovering only for less than 16 years.

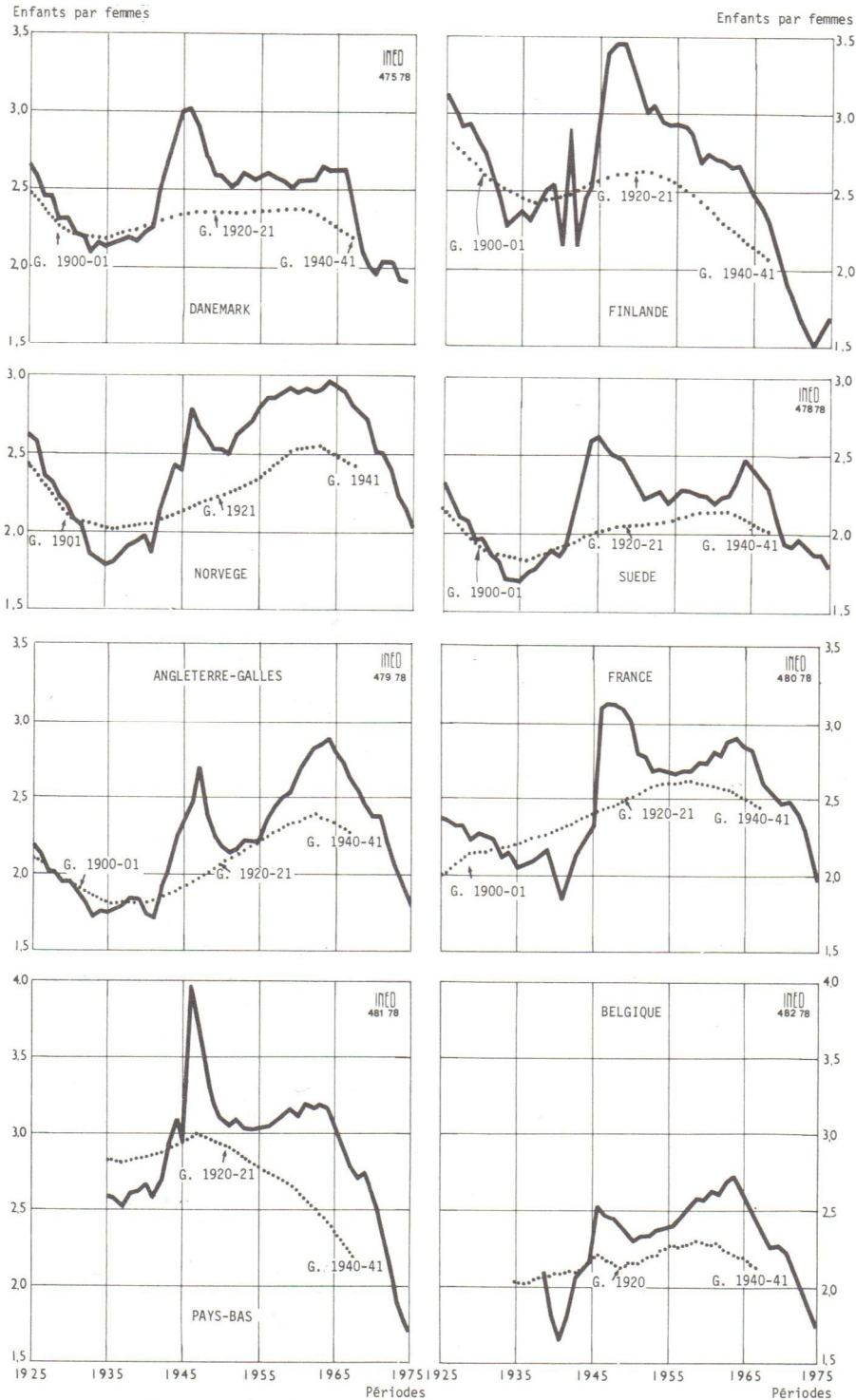
**Figure 4. Minimal level of period TFR in the 1920-1938 period (horizontal axis) and the number of years that fertility was higher than during the previous year in the 1931-1974 period (vertical axis)**



**Cohort fertility**

After World War II, demographers became very sharply aware of the limitations of conventional period measures of fertility and (net or gross) reproduction, most notably their strong sensitivity to tempo shifts. As a result, many called for putting more emphasis on the analysis of cohort measures (see e.g. Hajnal 1947; Ryder 1964; 1965; Glass 1968).

**Figure 5. Juxtaposition of period total fertility (solid lines) and cohort total fertility (dotted lines); cohort figures are lagged by the number of years corresponding to the average age at childbearing (copied from Festy 1979)**



**Figure 21. Somme des naissances réduites et descendance des générations(\*).**  
 (\*) Décalée d'un nombre d'années égal à l'âge moyen à la maternité.



**(Figure 5. continued)**

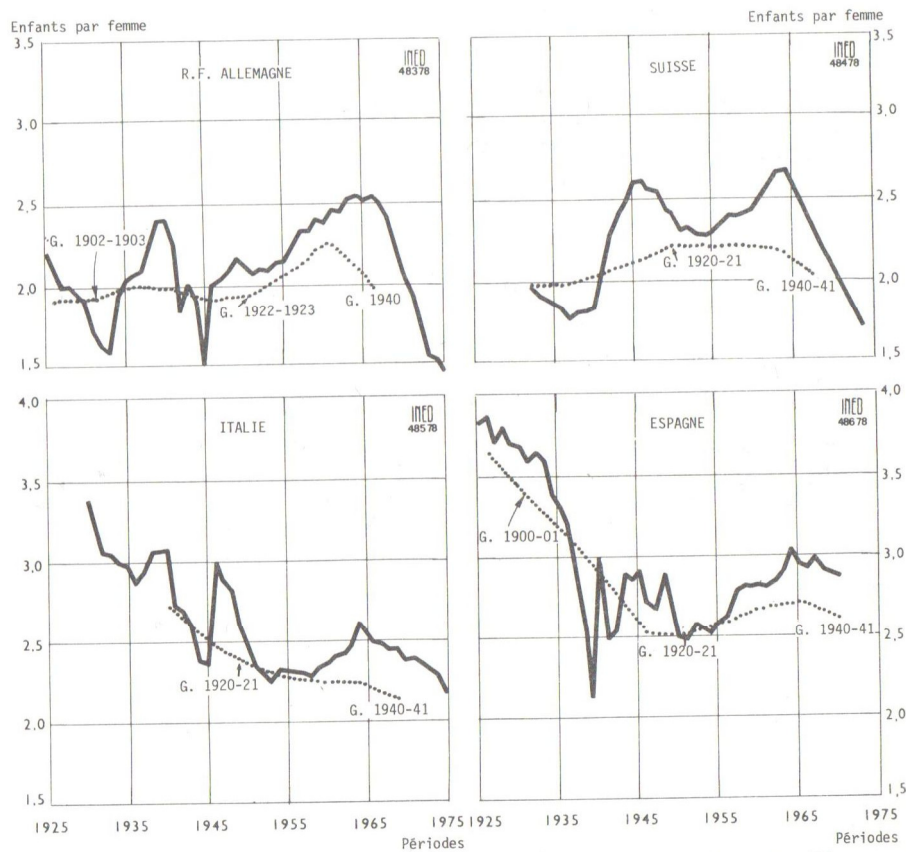


Figure 21 (suite). Somme des naissances réduites et descendance des générations(\*).

(\* ) Décalée d'un nombre d'années égal à l'âge moyen à la maternité.

(Figure 5. continued)

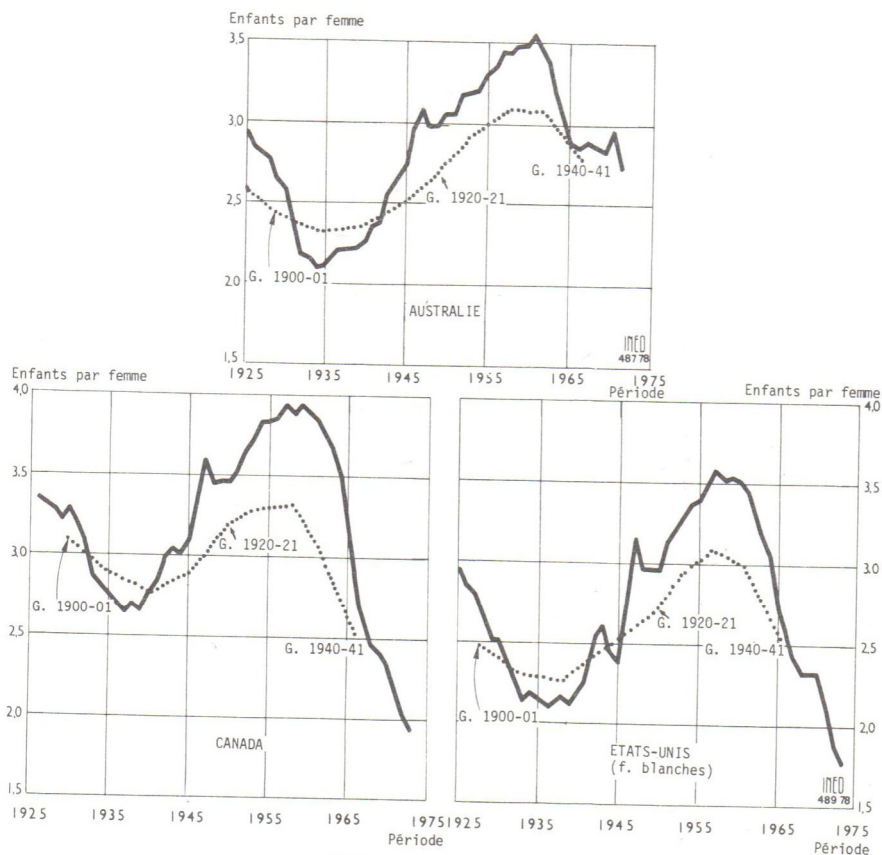


Figure 21 (suite et fin)

Cohort fertility had reached a temporary minimum about everywhere in Europe as well as in the United States and Australia among the first generations born into the twentieth century, i.e. among the generations who were having their first children during the interwar years (Festy 1979: 120-125). Subsequently, there was a remarkable similarity between Western countries in the recovery of cohort fertility until the generations born around the year 1920. So, cohort fertility started to recover in most Western countries among the generations that had their first children just after the Great Depression all the way through the Second World War (see Figure 5).

Yet, after that, the remarkable similarity between countries broke down in the generations born after 1920. Still, a clear pattern can be observed among the cohorts born after 1920. In countries with relatively high cohort fertility, like the Netherlands and Finland, generations born after 1920 strongly limited their family sizes compared to the earlier generations in their country. In countries that had the lowest level of fertility in the earlier cohorts, fertility typically continued to increase during the after-war years, producing the baby boom of the 1950s and '60s. This was the case in France, England & Wales, and Norway.

Sweden and Denmark experienced a more limited increase in these generations, while cohort fertility in Switzerland declined a bit (Festy 1979: 124) (see Figure 6).

**Figure 6. Trends in cohort fertility in a number of European countries, cohorts born 1905-20 (left) and cohorts born 1920-35 (right) (copied from Festy 1979)**

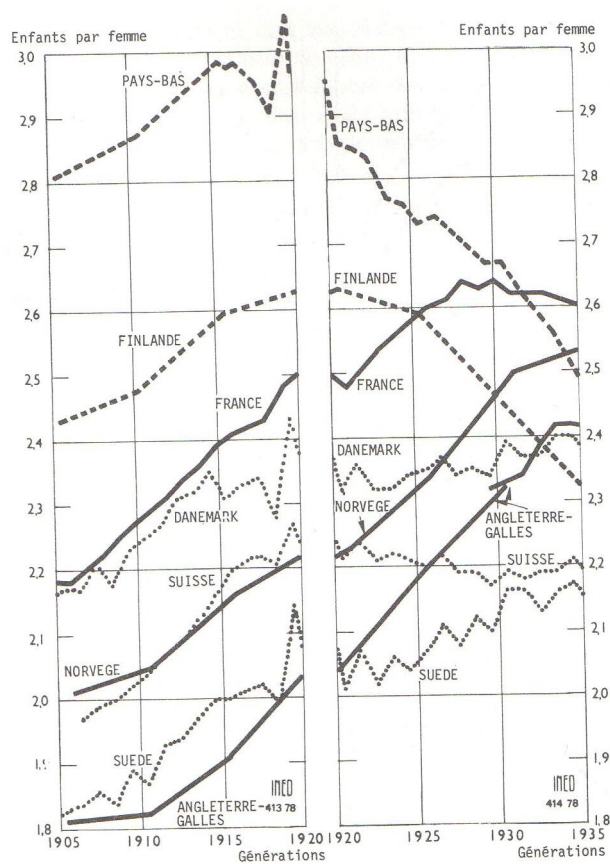


Figure 5. Descendance finale des générations

In terms of the *distribution* of cohort fertility (rather than the *average* completed fertility), the level of childlessness had reached high levels in many Western countries in the cohorts born around 1900 (Rowland 2007; Dykstra 2009), i.e. typically around 15%. Also the number of single-child families had been increasing. Both increasing childlessness and single-child families strongly contributed to the historical fertility transition (Festy 1979: 74-81; Anderson 1998; Van Bavel & Kok 2010). The subsequent recovery of cohort fertility clearly involved a reinforcement of the concentration around 2 or 3 children per woman and per couple. Both extremes of the distribution declined: the number of childless as well as the number of single-child women and couples went down compared to the cohorts born around 1900. The same happened with the number of women and couples with more than three children (Glass 1968; Festy 1979). Again, this concentration of final family size around 2 or 3,

to the expense of 0 and 1 as well as 4+, was remarkably general across countries, with the exception of those countries that experienced the biggest baby booms, including the USA and England. In those countries, the number of big families with 4, 5, 6, and more children increased from the generations born around 1900 up into the generations born around 1930. In terms of cohort parity progression ratios, the similarity between Western countries was even greater: whatever the length and strength of the baby boom, parity progression ratios increased for the low parities (especially 0>1 and 1>2) as compared to the generations born around 1900, while parity progression ratios decreased at higher birth orders (3 and more) (Festy 1979: 131-136).

Also very general across countries was the fact that people were having their (typically 2 or 3) children at younger ages, with 20-24 and 25-29 more outspokenly becoming the modal ages at childbearing. This holds in countries that experienced a prolonged baby boom, i.e. in countries where the post 1920 cohorts were still increasing their fertility, as well as in countries where this was not the case (Festy 1979: 137-142). Also, the number of years needed by married couples to complete their family size was going down. For example, in the Netherlands, the number of years elapsed between marriage and the birth of the last child declined from 6.5 years in marriages contracted around 1935 to below 4.5 years in the 1960 marriage cohort. The number of years elapsed between first marriage and last childbirth declined similarly in all countries with data available, including England, the USA, Sweden, Norway, and Switzerland. In sum, the general pattern emerging was clearly one of concentration of two or three births very early in marriage (Festy 1979: 146-147).

There was also an international concentration going on: over the course of the baby boom period, the differences between European countries in terms of fertility became smaller. Countries with relatively high fertility at the start of the 20th century experienced a limited or no baby boom, while countries with very low fertility around 1930 tended to experience a longer and more intense baby boom. But the process of fertility behavior becoming more homogeneous was not limited to the inter-country differences. There was also a convergence process going on between social groups within the countries of the West. This was not limited to the concentration of final family size at two or three children but extended, for example, to earlier marriage and childbearing. An analysis of data for the USA revealed that differences according to level of education became smaller (Festy 1979: 167-168).

## **Explaining the baby boom**

From the beginning, a number of plausible but speculative sociological and economic explanations were given for the revival of fertility (see the survey by Sauvy 1948). Yet, these speculations have not been investigated extensively. Part of the explanation for this is that, during the early years of the baby boom, demographers argued that one should first

investigate a number of purely demographic explanations, like postponement-related catching up effects. In the words of Hajnal (1947: 155): "When we know precisely what changes have to be explained it will be opportune to discuss what, in sociological terms, were the causes." We feel that this task has still not been fulfilled.

Within demography, the unexpected rise of the birth rate from the late 1930s onwards incited not so much a sociological or economic debate about our understanding of reproductive behavior but rather a technical debate about the appropriateness of the conventional period measures of fertility and reproduction and their interpretation (Hajnal 1947; Stolnitz & Ryder 1949; Ryder 1964; Festy 1979: 115-116). More specifically, as the salience of woman's age for actual fertility had declined with the fertility transition, it was argued that fertility should better be analyzed by duration of marriage and parity. Also, the habit of interpreting period rates as reflecting "synthetic" or "virtual" cohorts was questioned and many scholars advocated the analysis of *real* cohorts (Festy 1979: 115).

The following paragraphs first address demographic explanations that have featured prominent in the discussion, i.e. the proximate causes of the baby boom. Second, we review some theories about more remote, socio-economic causes that may explain the proximate causes of the baby boom.

## ***Demographic explanations***

### **Catch up fertility**

The baby boom is a temporary and relatively minor exception to the broader, bigger, and more fundamental trend of declining birth rates, observed from the nineteenth century until the end of the twentieth century (see Figure 1). The temporary and exceptional character of the "postwar baby boom" has often been related to the temporary and exceptional character of the Second World War. During that war, marriages and births were postponed, so the story goes. After the war, with the liberation of occupied countries and the end of hostilities, came a climate of general optimism related to national reconstruction. People were getting ready for a new era of peace and economic growth. This kind of optimism spurred a wave of recuperation on the front of marriage and fertility; people were quickly catching up marriages and births that had been postponed during wartime.

The idea here is that fertility went up after the war because marriages and pregnancies had been postponed during wartime or during the economic depression (see e.g. Hajnal 1947). This mechanism can probably explain the spike in fertility observed in many countries in the years 1946 and 1947. Yet, it cannot explain the biggest part of the baby boom, i.e. the high fertility observed in the 1950s. The young mothers of the 1950s and '60s were often just too young to be married at all during the war; many of them were not even born during the

Great Depression (Easterlin 1987; Greenwood et al. 2005; Doepke et al. 2007). Secondly, the catch-up mechanism cannot explain the rise of completed *cohort* fertility observed in many countries (Festy 1979; Greenwood et al. 2005; Doepke et al. 2007).

The juxtaposition of period and cohort measures of total fertility suggests that the start of the recovery of period fertility from the middle of the 1930s onwards results from the recovery of cohort fertility; from 1935 onwards, fertility started to rise in one country after the other because the cohorts born in 1910 started to have more babies than the generations just before them. The only exception is France, where cohort fertility was already on the rise from the generations born around 1900 onwards and continuing to rise until the 1930 cohort, while period fertility was (still) declining between 1925 and around 1940. Also the end of the baby boom closely corresponds in most countries with a turn of cohort fertility for generations born after 1935. Again, there are exceptions, including France but most notably the Netherlands, where cohort fertility is already on the decline from the generations born after 1920 onwards, even if period fertility is still stabilizing or slightly rising after 1955 (Festy 1979: 152-154).

During the 1930s, period fertility tends to lie a bit below the corresponding cohort levels, which is indicative of fertility postponement. In contrast, from the early 1940s into the 1960s, period fertility tends to exceed cohort fertility, often strongly, which is indicative of the earlier timing of births. Especially around 1945, period fertility peaked as a result of (a) the catching up of births that were postponed by earlier generations of women and (b) the earlier childbearing calendar followed by the younger generation. So the peak at the end of the Second World War was to a large extent a story of postponement and recuperation. But underneath, the quantum of cohort fertility was rising slowly but systematically and steadily. The catching-up peak was short lived, but in a number of countries period fertility stabilized for a while at higher levels in the 1950s or even underwent a second boom cumulating in the early 1960s as a result of three factors: (a) rising cohort fertility, (b) earlier childbearing, and (c) the shorter spacing of births. The "valley" between the post-1945 peak and the 1965 peak had to do with the fading of the catching-up effect of earlier generations, and maybe in some cases also with a slowdown of the decline of the age at first childbearing (Festy 1979: 151-163). As is often the case, timing and quantum each have a reinforcing effect on period fertility, but in most cases, it's the timing effects that play the larger role in the fluctuations of period fertility, not just the timing of marriage and first childbearing but also the (shorter) spacing of births (Festy 1979: 157-161).

### **The role of marriage**

During the interwar period, the literature about low fertility hardly paid attention to the role played by nuptiality as an explanatory variable for fertility trends (Glass 1968; Van Bavel

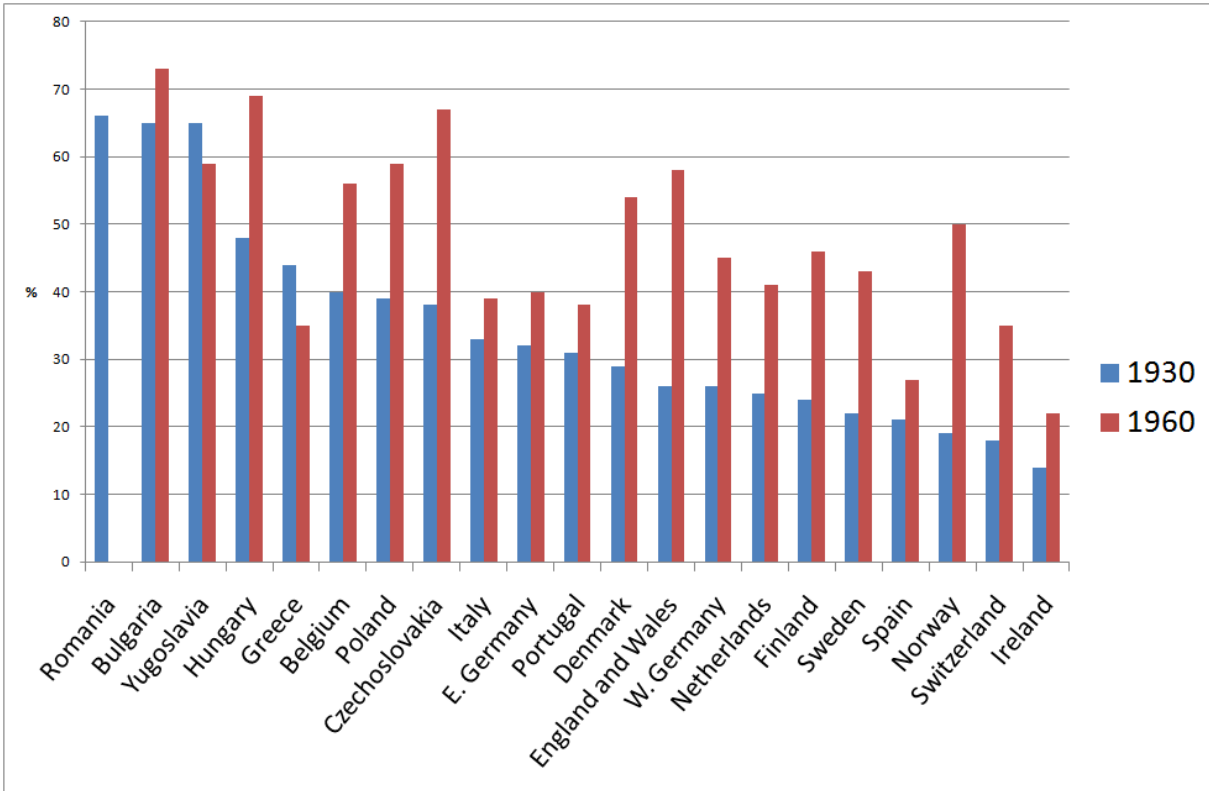
2010). This habit is still visible in the international survey held by Sauvy (1948) just after the war about the reasons for the recovery of the birth rate, where marriage plays at most a marginal role in the discussion (in contrast, see Hajnal 1947). According to Glass, the reason was that "it was generally assumed - at least implicitly - that because the long-period decline in the birth rates was not in any major sense the consequence of changes in marriage habits, marriage as such could be discounted in looking at the present or the near future" (Glass 1968: 105). This changed dramatically during the baby boom era, since it soon became clear that rising nuptiality was a key factor behind the rise of period fertility (Hajnal 1947; Glass 1968).

In all Western countries, the average ages at marriage dropped and the proportions ever marrying increased (Hajnal 1947; Glass 1968; Festy 1979). Between 1930 and 1960, the proportions still single at age 20 to 25 dropped with 10 percentage points and more in many countries (see Figure 7). The proportions ever marrying climbed 4 to 10% over the course of 25 birth cohorts, starting from the ones born around 1910 and reaching unprecedented high levels in the ones born around 1935. See Figure 8 for the percentages ever married women age 45-49 years in 1930 and 1960.

In general terms, marriage rates increased the most in countries in which relatively late marriage was customary before World War II and in which the proportions ever marrying tended to be not much above 85% (Glass 1968). For example, the rise of nuptiality was particularly strong in the Scandinavian countries, in the Netherlands, in England and in Switzerland. It was more limited in France and Southern European countries Spain, Italy, Portugal, and Yugoslavia (Glass 1968; Festy 1979: 125-132). The increase in marriage propensity was greater for women than for men. This was "partly associated with changes in the ratio of women to men in the marriageable ages. In many West European countries, these changes began to show themselves in the 1930s, with the elimination from the marriage market of the age groups affected by World War I, and with the decline in overseas migration during the economic depression" (Glass 1968: 107).

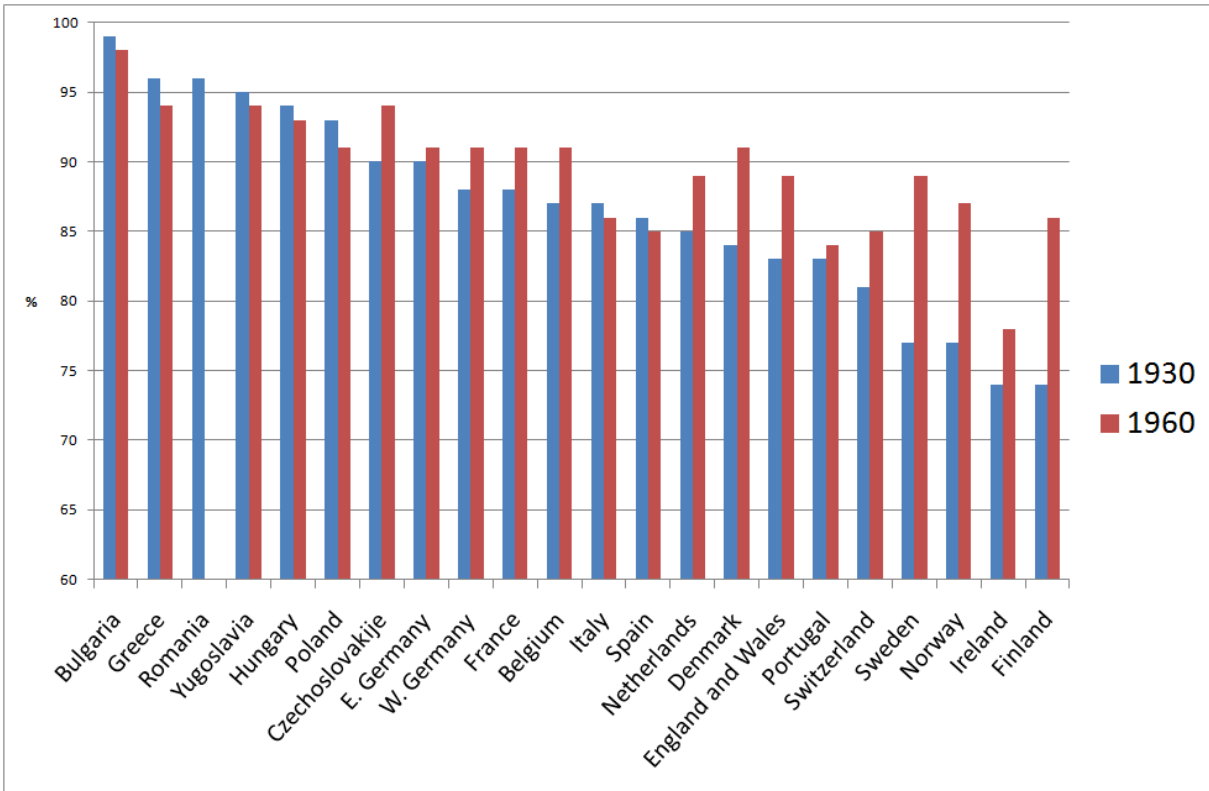
Overall, the similarity of increasing nuptiality across countries was very striking. Also, it continued among the generations born after 1920, even in countries where the recovery of fertility came to an end from then onwards (like in the Netherlands, Finland, and Switzerland (Festy 1979: 125-132)). So, rising nuptiality was a key and very general trend during this period; it was general across time periods, generations, and countries (whereas rising cohort fertility was general across countries only in the 1900-1920 cohorts).

**Figure 7: Percentage ever-married women aged 20-24**



Source: Glass (1968: Table 1)

**Figure 8: Percentage ever-married women aged 45-49**



Source: Glass (1968: Table 1)



The rise of nuptiality was very important for the European demographic landscape. It implied a major weakening of the restrictive, Malthusian marriage pattern as described by Hajnal (1965). Marriage now acted much less than before as a brake on total fertility (Glass 1968). On the contrary, rising nuptiality was important in keeping up total fertility, even in countries with a very limited or no baby boom.

Rising nuptiality may have a positive effect on the birth rate in three ways, where both increasing proportions ever marrying and declining ages at marriage play a role (Hajnal 1947; Glass 1968). First, married people have higher fertility than non-married of the same age. So when more people get married, this higher fertility applies to more people. This implies higher total cohort fertility, even if average marital fertility remains the same. Second, during a period when the average age at marriage declines, additional, younger cohorts of men and women will marry in a given year and the number of recently married people will increase. We know that recently married people have higher fertility than people who married many years ago (even in a natural fertility regime, see Van Bavel 2003), so this will not only push up period total fertility but also period marital fertility, even if average family sizes remain constant. Third, a lower age at marriage increases the length of exposure to the chances of conception, all else equal, which will probably have some effect on total cohort fertility (Glass 1968). Note that the first and third mechanisms imply rising cohort fertility; the second mechanism affects only period measures of fertility. Only the third mechanism affects cohort *marital* fertility.

Rising total fertility usually involved rising marital fertility. Rising total fertility can therefore not only be accounted for by rising proportions married, but also other circumstances such as the rising proportion of marriages of relatively short duration – since these have the highest fertility – and also the age at marriage – since women marrying at younger ages tend to have more children, on average, at the end of the reproductive life span (Hajnal 1947; Glass 1968: 110). Yet, even fertility indices standardized for duration of marriage showed considerable rises in a number of countries (including England & Wales and Sweden) by 1944 (Hajnal 1947), so the decline of average age at marriage cannot explain all of the rise in total cohort fertility.

An earlier age at marriage carries with it a longer period of exposure to conception at younger (and more fecund) ages. This may or may not be counterbalanced by greater and more effective use of family limitation. In addition, it may or it may not be indicative of a greater willingness to have children. British research has indicated that, for the marriage cohorts of the 1930's and later, the link between age at marriage and family size was becoming looser (Glass 1968: 110; see also Hajnal 1947: 143). Indeed, given a target family size of two or three children, that target may be achieved even if marriage and first childbearing would be considerably postponed. On the other hand, early marriage may

possibly indicate that standard of living aspirations are lower than for people who marry at a later age. If that is the case, early marrying people may be “prepared to ‘accept’ more children, even if they do not ‘desire’ to have more than couples marrying at later ages” (Glass 1968: 110).

In countries with a limited and short-lived recovery of total fertility (like the Netherlands), fertility would have even decreased sharply, or much more sharply and earlier than was actually the case, if nuptiality would not have continued to rise, because marital fertility was falling. This was for example clearly the case in the Netherlands and Italy. More generally, marital fertility recovered much less than total fertility. Only in England and even more in Australia and the USA did marital fertility sharply increase (Festy 1979: 126-128).

Changing nuptiality affects fertility, but there may also be effects the other way around. For example, in countries and regions that were, by the 1940’s, only half way along the road to low fertility (like the Netherlands), “the very change in the availability and in the legitimization of birth prevention may partly explain the movements in marriage” (Glass 1968: 110).

What was new in this era was not so much the declining age at marriage and first childbearing, since these were trends that often had already started in the nineteenth century. The surprising thing was rather the (temporary) reversal of the downward cohort fertility trend. Nuptiality had been on the rise in the late nineteenth and early twentieth century. Yet, there was a tendency in a number of western countries for this rise to be halted or even partly reversed for a while, with the proportions ever marrying to go down from the generations born around 1840 to the generations born around 1900. In particular, this was the case in the Nordic countries, among white women in the USA and in Australia (Festy 1979: 67-68). The general trend since the latter part of the nineteenth century had been one of declining age at first marriage. Yet, it looks like this broad trend was slowed down or even halted and temporarily and slightly reversed for a while during the interwar period. From a cohort perspective, age at first marriage was increasing somewhat in the generations born between 1900 and 1910, i.e. the ones typically marrying between 1925 and 1940. This was the case in England, Canada, Norway, the Netherlands, Sweden, and Switzerland - it was more or less stable for these generations in Italy, Australia and the United States. In Denmark, Finland and France, age at first marriage was already declining then (Festy 1979: 144-145). Wattelar and Wunsch (1967) use Belgian census data to show that, even during the interwar era, growing proportions of the population were marrying at a younger age, even if crude nuptiality rates were on the decline. Anyway, in almost all countries, age at first marriage strongly declined from the 1920s cohort onwards (marrying, on average, from 1945 onwards) - one exception in France, where the age at first marriage fluctuated a bit at an already very

low level (between 23 and 24). Ages at first birth typically closely followed the course of the ages at marriage (Festy 1979: 144-145).

While the average age at childbearing declined during the first stages of the fertility transition as a consequence of foregone higher order births, this average age at childbearing did not rise again during the recovery of the baby boom years. This is because the rise of cohort fertility was largely the result of declining childlessness and single-child families rather than a growing number of large families. The transition to parenthood was made earlier during the baby boom era, and the interbirth intervals became shorter (Festy 1979: 125-165).

As said, rising total fertility after the second world war usually involved rising marital fertility, and this typically happened in low fertility countries (like France, Norway, and England & Wales, for example). Declining fertility usually involved declining marital fertility, and this typically happened in countries that still exhibited relatively high fertility (like Hungary, Czechoslovakia, or Italy, for example) (Glass 1968: 110-114). Although fertility limitation was already widely practiced during the interwar period and beyond, it does not follow that the full potential effects of fertility control were already fully displayed by the post-war period. One of the problems in the 1950's still was the low effectiveness of prevailing contraceptive practices. "The spread of more advanced means of contraception may thus have a substantial effect on the timing of births, even if it has a much smaller effect on ultimate family size. And given the fact that in most European societies the ultimate family size of fairly recent marriage cohorts is relatively modest, changes in timing may give rise to a proportionately large variation in period fertility rates and in short-term population growth" (Glass 1986: 134).

It may be that, in low fertility countries, married couples were already getting the most out of the inefficient contraceptive methods that were available to them. Given the apparent increased "appetite for marriage" (Matthijs 2002), rising family sizes may have been the unintended consequence of the fact that people were exposed to high risks of conception during an increased number of years, i.e. at young ages while being married and thus having access to culturally legitimized sexual intercourse. The young married people had to wait until the spread of highly efficient hormonal contraceptives to be able to marry at a young age while being safe from unwanted conceptions; or (later on) they could have sex outside marriage with only a very low risk of unwanted pregnancy.

So, we now know what needs a sociological and economic explanation in order to understand the baby boom in the West: we need to explain (1) the rise of nuptiality and (2), maybe to a lesser extent, the rise of marital fertility.

## ***Socio-economic explanations***

Theorizing about the socio-economic causes of the marriage and baby boom and baby bust has been dominated by economists. Major contributions have been published in the *American Economic Review*, including Easterlin (1961), Butz and Ward (1979), and Greenwood, Seshadri and Vandenbroucke (2005). Also more recent contributions have been published by economists, like Doepke, Hazan and Maoz (2007) or Bailey and Collins (2009). Culture is out of the picture as a prime mover of socio-economic change in these contributions. This is in sharp contrast with major contributions about the start of the secular fertility decline in the nineteenth century and about the decline of fertility since the mid-1960s. Demographers with a background in sociology had a much stronger voice in the literature about these fertility trends, as strongly evidenced by the highly influential work of Ron Lesthaeghe, both about the nineteenth century decline (Lesthaeghe 1977; Lesthaeghe & Wilson 1986) and about the Second Demographic Transition. This work remains largely silent about the developments of reproductive behavior in the period 1925-1965: it is supposed to be a kind of "interregnum" between two demographic transitions (Lesthaeghe & van de Kaa 1986: 10), or, the baby and marriage boom are considered as the last typical features of the first demographic transition (involving a strengthening of marriage and family as an institution), while rising divorce rates signal the second transition (Lesthaeghe & Surkyn 2007; Lesthaeghe 2010). Although the culture-salient theory of the second demographic transition was to some extent a reaction against purely economic interpretations of fertility trends (Lesthaeghe 2010), the developments during the period 1925-1965 are often easily attributed to economic developments, or are simply seen as the last typical features of the earlier transition, as if no major changes were happening on the cultural level at this time, as related to family formation and fertility.

The following paragraphs comment on a number of major economic theories about the baby boom, without having the ambition to give an exhaustive overview of all theories and to provide an in-depth review of them.

### **Easterlin: the relative income hypothesis**

Easterlin's widely known relative income hypothesis maintains that fertility decisions are driven by the gap between the actually experienced material wellbeing during adulthood on the one hand and people's aspired material wellbeing on the other hand. The ratio of the first divided by the second is called the relative income and is argued to drive (among other things) fertility behavior: if the relative income is low, fertility is low; if the relative income goes up, fertility also increases. Material aspirations are built up during the childhood years, depending on the environment of primary socialization. People who grew up during the Great Depression had low material aspirations, so the argument goes. After the war, these cohort

reached adulthood in times of economic boom, and they responded with raising their demand for children, i.e. there was a positive income effect (Easterlin 1961; 1987).

One of the problems with the Easterlin hypothesis is that many of the parents who made the baby boom did not grow up during the Depression at all but rather during the prosperous post-war period (Doepke et al. 2007). For example, mothers who were 25 years old in 1960 were born in 1935 and spent most of their childhood in prosperous times. Also, little support has been found for the Easterlin hypothesis outside the United States (Wright 1989). Still, Macunovich (1998; 1999) argues that the concept of relative income is often not adequately measured and that the evidence overwhelmingly points to a positive reaction of fertility to male relative income.

### **Butz and Ward 1979: relative wages of women**

Butz and Ward (1979) maintain that fertility reacts to the relative wages of women as compared to wages of men. In particular, they argue that fertility switched from being procyclical during the 1950s to countercyclical from the late 1960s onwards. Procyclical fertility reacts positively to periods of economic growth in the business cycle; countercyclical fertility reacts negatively to such growth. They argue that, during the baby boom period, the relative wages of women were low and that this lowered the opportunity costs of having children. At the same time, the wages of husbands were rising. This generated a positive income effect on fertility. The subsequent baby bust, in contrast, would be primarily due to increases in female wages and income. As more women entered the work force, couples acquired an incentive to plan births during economic slumps, when women's wages are low.

A major problem with this theory, as an explanation of the baby boom, is that it does not explain why there would not have been a positive income effect during the first, nineteenth century to early twentieth century stage of the fertility transition. During that period, couples pioneering family size limitation were typically found in relatively high income circles of bourgeois families. These were typically breadwinner families, with the wife staying at home and the husband working out for pay. According to the Butz and Ward theory, they should have been the couples exhibiting the highest fertility levels.

### **Greenwood et al 2005: household technology lowers the opportunity costs of having children**

Greenwood, Seshadri, and Vandenbroucke (2005) argue that the widespread diffusion of new household technology (such as refrigerators and washers) helped women to run their households in much less time than before. This supposedly lowered the time cost of having children. Yet, it remains to be seen whether the appliance of new household technology actually lead to parents investing less time in childrearing. The indications are rather that the

cultural standards of how a respectable household should be properly run were actually raised; the standards for a child to be clean and dressed with properly ironed clothes might just have been raised in parallel with the spread of the new technology. Parents now spend more time on child rearing than before (Gauthier et al. 2004). Rather than just fulfilling existing needs, new technology often creates new ones.

### **Doepke et al 2007: the crowding out of women out of the labor force**

Recently, Doepke, Hazan and Maoz (2007) came up with a new economic explanation that claims to account for a major part of both the baby boom and the subsequent baby bust. The theory addresses the case of the USA in the first place but is argued to apply to other countries as well. The argument is as follows.

In the United States, as well as in a number of other countries, the Second World War induced a large positive shock on the demand for female labor: women were drawn into the labor market to replace working men, who were mobilized to fight the war in Europe and Asia. The positive effect of the war on female labor participation was not only large but also persistent: a large share of the women who worked for pay during the war continued to do so afterwards. This boost of female employment had opposite consequences for young versus older women. Women who were already old enough to work during the war accumulated valuable labor-market experience and remained in the labor market after the war. In contrast, young women who were still in school during the war and who were too young to go out and work for pay, faced large competition in the post-war labor market: “in addition to the men who returned from the war, a large number of the experienced women of the war generation were still in the labor force” (Doepke, Hazan & Maoz 2007: 2). This led to a lower demand for labor from the younger generations of women and lower wages; the youngest adult women were crowded out from the labor market by older generations and therefore chose to have more children instead. “It is these younger women who account for the bulk of the baby boom” (ibidem).

This explanation is consistent with the labor force participation rates observed in the United States during the first decades after the Second World War: the participation rates of women above age 33 continue to rise all the way through the 1940-1980 period, whereas the labor force participation of younger women declines between 1940 and 1960; after that, participation rates for women below age 33 soar and exceed the ones for older women. In other words: during the baby boom period, the labor supply of older women increased sharply, whereas young women worked less. The boom comes to an end once the war generation of working women starts retiring from the labor market, i.e. from the 1960s onwards. From then, the work force participation rates for younger women start to rise again (Doepke et al 2007).

The model does a particularly good job at reproducing the timing of the baby boom as well as the baby bust in the USA. It explains a limited proportion of the rise of period fertility, but clearly a major proportion of the rise of completed fertility for cohorts born between 1920 and 1935. Doepke and colleagues did not apply the details of their macro-econometric model to countries other than the USA, but from their theory, it follows that countries with a larger wartime increase in female labor force participation should also experience larger baby booms. They give some (limited) evidence that the international data are consistent with their theory. Australia, Canada, and New Zealand experienced strong war mobilization and a related upward shock in female paid labor. These allied countries experienced baby booms that seem to have been quite similar to the one observed in the USA. In contrast, Portugal, Spain, Sweden, and Switzerland remained largely neutral during the Second World War, implying that no large scale mobilization took place and that there was no large demand shock for female labor. These countries also experienced weaker baby booms. Yet, the authors admit that even neutral countries, and countries that did not undergo the wartime boom in female labor, often still experienced at least some baby boom. This implies that the female labor force out-crowding mechanism cannot be the only explanation for the baby boom; "some factor other than the dynamics of the female labor market must also have played a role" (Doepke et al 2007: 6).

In the USA in the middle of the twentieth century, Doepke and his colleagues argue, the typical pattern for a woman was to enter the labor market after finishing school, but redrawing from it upon marriage and childbearing. Therefore, a substantial part of the drop of young female labor supply after the War was due to a compositional shift from single to married women; it was not so much that young single women no longer worked, Doepke et al (2007) argue, but rather that they married earlier, got their first child earlier and, hence, redrew from the labor market at an earlier age.

This theory provides a number of interesting insights but also has some weaknesses.

a) It is assumed that female labor market participation is driving the appetite for marriage and childbearing, as if these would be only important in so far as labor market conditions permit. Yet, the causal arrow might just as well go the other way around. It could be the case that an increasing appetite for family formation was pushing the labor force participation of women down. Or, all these things might have been caused by something else.

b) This theory has got the timing wrong as well; it cannot explain why the recovery of fertility, in the USA and elsewhere, started already before the Second World War. An alternative hypothesis would be that the appetite for marriage and family formation was already increasing for other reasons before and during World War II. An important question, which may give a clue about the latter issue, is: what social status groups contributed to

higher fertility already before and during the war? What age groups were responsible for the first signs of recovery? Was it also the younger generation? What about their education?

c) The Doeke et al (2007) model assumes that, "[s]ince the fecund period is limited, having more children requires leaving the labor market earlier." (p.4) They argue that women would be inclined to do so when wages would be high in the labor market, given the advantage and value of accumulating experience in the labor market. However, during the interwar period, ages at first marriage and first birth had already significantly declined while at the same time people were strongly limiting their fertility by earlier stopping - that was the great novelty of the "first" fertility transition. So, if women would have wanted to have more children, they could also have continued for a longer period of time, until a somewhat higher age, with childbearing; they could theoretically have stopped later. Their own data (on p. 5) indeed show that fertility rates increased somewhat for women aged 30-34 in the United States.

### **Pro-natalist policies**

During the interwar period, pro-natalist were initiated by Nazi Germany and then began to expand to France, Belgium, and Italy. These policies reinforced the sentiment that the Western world was on its way to depopulation and decline (Glass 1968: 103; Van Bavel 2010); "a feeling made more intense by the increasingly frequent use of period net reproduction rates as indicators of national 'vitality' ('true' rates of natural increase were much less frequently cited: they required more elaborate computations and appeared to be less striking). Such rates were regarded as sophisticated and meaningful measures of replacement tendencies and they were given a semi-official status by inclusion in the League of Nations Statistical Yearbooks. The apparent implications of these rates were made even more sharply visible by the publication of population projections constructed on a component basis, and using essentially the same approach as that embodied in net reproduction rates - that is, with fertility measured in terms of age-specific fertility rates, and with no regard paid to nuptiality" (Glass 1968: 103)

According to Calot and Sardon (1998: 44) as well as Chesnais (2006: 443), family policy not only contributed to a "sense of urgency" as described by Glass, but greatly contributed to the actual baby boom, at least in the French case. Yet, their assessment is based on a rather superficial study of what happened. Calot and Sardon (1998: 44) speculate, from a comparison of France after the installment of pro-natalist family policies with the course of fertility in other countries, that policy did play a supportive role in the recovery of fertility. Chesnais (1998: 44) writes rather confidently: "The demographic characteristics of the baby boom corresponded to the raising of the family allowance rate. Actually, it was with the



emphasis on the second child that the expenditure effort was by far the most marked (sixfold). With two dependent children, a family received almost the equivalent of a second wage [...]. This change in the rate created a very strong incentive to abandon the family model so widespread in the pre-war France, that is, that of the single child. It was in agreement, moreover, with the wishes of the legislator. There was thus a concordance between the variations in the legislation scale (differential incitements) and the increase in fertility following the pre- and the post-war birthrates - couples without children or with a single child became rarer, to the advantage of limited or average families (those with two children especially, and a few with three)" (Chesnais 2006: 443). Note that Chesnais does not cite figures, statistical analyses or studies to support these claims; they are just conjectures that would need to be investigated.

## **Discussion**

The baby boom cannot be considered as an optimistic response to the end of the Second World War, because the roots of the high birth rates observed in the 1950s and '60s were laid in the second half of the 1930s already, when total period fertility started to recover in many countries of the West. Economic theories about the causes of the baby boom often cannot account for this timing.

Fertility increased the most (both in terms of percentage increase and in terms of the number of years of fertility growth) in countries that had been leading the downward fertility transition before the Second, or even the First World War. A hypothesis to be investigated is that the dimensions of the baby boom in Western countries can to a large extent be predicted by the state of fertility observed at the end of the nineteenth century.

The baby boom involved much more than just a making up of children that would have been postponed during the war. Although such a catching up mechanism may explain the spike in the birth rate in the one or two years after the end of the war, it cannot explain the high fertility observed in later years and caused by the higher average family sizes in cohorts that experienced the war when they were still young kids themselves rather than postponing own children.

Although we still lack sufficient data to draw any firm conclusions about this, the major proximate cause of the baby boom is probably the rise of nuptiality: both the proportions ever marrying and the proportions marrying at a young age (20-25 years) were on the rise. The declining average age at marriage contributed to a rise of total marital fertility. But, again "probably" and at least in some countries, marital fertility rose also for other reasons.

The rise of nuptiality was already going on since the second half of the nineteenth century. To borrow the words of Koen Matthijs, people in Europe and America were

exhibiting an increasing "appetite for marriage" (Matthijs 2002), which was eroding the Malthusian marriage pattern. Increasing nuptiality would normally imply increasing total fertility when marital fertility would have remained constant. Yet, what happened was that marital fertility limitation was more than compensating the increase of the marriage rates (Coale 1986). We need to investigate how the baby boom can be explained by the fact that marriage rates continued to increase while marital fertility stopped going down. Maybe marital fertility stopped going down because married couples had already reached the limits of fertility control with the traditional methods at their disposal. New, highly efficient contraception came only available from the mid 1960s. When couples started to marry earlier, this implied that a larger part of their "legitimate" fecund period was spent during the biologically highly fecund ages (20-25 years). Stopping at a low parity might then become more difficult for couples who marry at a younger age. This may explain the increase of cohort fertility.

An important question, which may give a clue about the latter issue, is: what social status groups contributed to higher fertility already before and during the war? What age groups were responsible for the first signs of recovery? Was it also the younger generation? What about their education? Were the social groups marrying at younger ages during the baby boom period the same as the ones pioneering the decline of fertility during an early stage of demographic changes? Or is the issue maybe that exactly the opposite was the case? Maybe groups of people started to marry earlier who had not mastered the methods to limit marital fertility in earlier generations? As long as we need to rely on aggregate time series data, as has typically been the case in studies about the causes of the baby boom, we cannot answer such questions. To that end, we need individual level data, gathered from surveys or censuses.

## References

- Abel, AB (2001) "Will bequests attenuate the predicted meltdown in stock prices when baby boomers retire?" *Review of Economics and Statistics*, 83 (4): 589-595.
- Anderson, Michael. 1998. "Highly restricted fertility: Very small families in the British fertility decline," *Population Studies* 52(2): 177-199.
- Bailey, Martha J. and William Collins. 2009. Did Improvements in Household Technology Cause the Baby Boom? Evidence From Electrification, Appliance Diffusion, and the Amish. Cambridge, MA: National Bureau of Economic Research. (NBER Working Paper 14641).
- Baker, D (2001) "Defusing the baby boomer time bomb: Projections of after-tax income in the twenty-first century," *International Journal of Health Services*, 31 (2): 239-278.

- Bakshi, GS & ZW Chen (1994) "Baby boom, population aging, and capital markets," *Journal of Business*, 67 (2): 165-202.
- Biagi, Federico, and Claudio Lucifora (2008) "Demographic and education effects on unemployment in Europe," *Labour Economics*, 15(5): 1076-1101.
- Blomquist, NS and H Wijkander (1994) "Fertility waves, aggregate savings and the rate of interest," *Journal of Population Economics*, 7 (1): 27-48.
- Boersch-Supan, Axel & Ludwig, Alexander (2009) "Aging, Asset Markets, and Asset Returns: A View From Europe to Asia," *Asian Economic Policy Review*, 4 (1): 69-92.
- Butz, William P. and Michael P. Ward. 1979. "The emergence of countercyclical U.S. fertility," *The American Economic Review* 69( 3): 318-328.
- Calot, Gérard and Jean-Paul Sardon. 1998. "La vraie histoire du baby-boom," *Sociétal*(16): 41-44.
- Calot, G & Sardon, JP (1999) "The factors of population ageing," *Population*, 54 (3): 509-552.
- Caputo, RK (1999) "Age-condensed and age-gapped families: Coresidency with elderly parents and relatives in a mature women's cohort, 1967-1995," *Marriage and Family Review*, 29 (1): 77-95.
- Chesnais, Jean-Claude. 1992. *The Demographic Transition: Stages, Patterns, and Economic Implications: A Longitudinal Study of Sixty-Seven Countries Covering the Period 1720-1984*. Oxford: Clarendon.
- Clark, Gordon L. & Knox-Hayes, Janelle (2007) "Mapping UK pension benefits and the intended purchase of annuities in the aftermath of the 1990s stock market bubble," *Transactions of the Institute of British Geographers*, 32 (4): 539-555.
- Coale, Ansley J. 1986. "The Decline of Fertility in Europe since the Eighteenth Century As a Chapter in Demographic History," in Ansley J. Coale and Susan C. Watkins (eds.), *The Decline of Fertility in Europe*. Princeton (N.J.): Princeton University Press, pp. 1-30.
- Coale, Ansley J. and Susan C. Watkins, eds. 1986. *The Decline of Fertility in Europe. The Revised Proceedings of a Conference on the Princeton European Fertility Project*. Princeton (N.J.): Princeton University Press.
- DellaVigna, Stefano & Pollet, Joshua A. (2007) "Demographics and industry returns," *American Economic Review*, 97 (5): 1667-1792.
- Denton, FT & Spencer, BG (1997) "Population aging and the maintenance of social support systems," *Canadian Journal on Aging-Revue Canadienne du Vieillissement*, 16 (3): 485-498.
- Denton, FT, Feaver, CH & Spencer, BG (1998) "The future population of Canada, its age distribution and dependency relations," *Canadian Journal on Aging-Revue Canadienne du Vieillissement*, 17 (1): 83-109.

- Doepke, Matthias, Moshe Hazan, and Yishay D. Maoz. 2007. *The Baby Boom and World War II: A Macroeconomic Analysis*. Bonn (Germany): IZA, Institut for the Study of Labor. (IZA Discussion Paper Series No. 3253)
- Dykstra, Pearl. 2009. "Childless old age," in Peter Uhlenberg (ed.), *International Handbook of the Population Aging*. Berlin: Springer, pp. 671-690.
- Dyson, Tim (2001) "A partial theory of world development: The neglected role of the Demographic transition in the shaping of modern society," *International Journal of Population Geography*, 7: 67-90.
- Dyson, Tim and Mike Murphy (1985) "The onset of fertility transition," *Population and Development Review*, 11, 3: 399-440.
- Dyson, Tim and Mike Murphy (1986) "Rising fertility in developing countries," in Woods, Robert and Philip Rees (eds) *Population structures and models: developments in spatial demography*, London: Allen & Unwin, 68-94.
- Easterlin, Richard A. 1961. "The American Baby Boom in Historical Perspective," *American Economic Review* 51(5): 869-911.
- Easterlin, Richard A. 1987. *Birth and Fortune. The Impact of Numbers on Personal Welfare, Second Edition*. Chicago: University of Chicago Press.
- Emeka, Amon. 2006. "Birth, fortune, and discrepant fertility in twentieth-century America," *Social Science History* 30 (3): 327-357.
- Ermisch, J (1996) "The demand for housing in Britain and population ageing: Microeconomic evidence," *Economica*, 63 (251): 384-404.
- Festy, Patrick. 1979. *La fécondité des pays occidentaux de 1870 à 1970*. Paris: INED/Presses Universitaires de France.
- Floden, M (2003) "Public saving and policy coordination in aging economies," *Scandinavian Journal of Economics*, 105 (3) 379-400.
- Giddens, Anthony. 1993. *Sociology*. Cambridge: Polity Press.
- Glass, David V. 1968. "Fertility trends in Europe since the Second World War," *Population Studies* 22(1): 103-146.
- Goldsmith, Jeff Charles (2008) *The long baby boom: an optimistic vision for a graying generation*, Baltimore: Johns Hopkins University Press.
- Greenwood, Jeremy, Ananth Seshadri, and Guillaume Vandenbroucke. 2005. "The baby boom and baby bust," *The American Economic Review* 95(1): 183-207.
- Greller, Martin M. & Nee, David M. (1989), *From baby boom to baby bust : how business can meet the demographic challenge*, Reading, Mass.: Addison-Wesley Pub. Co.
- Haas, WH & Serow, WJ (2002) "The baby boom, amenity retirement migration, and retirement communities: Will the Golden Age of Retirement continue?" *Research on Aging*, 24 (1): 150-164.

- Hajnal, John. 1947. "The analysis of birth statistics in the light of the recent international recovery of the birth rate," *Population Studies* 1(2): 137-164.
- Hajnal, J. 1965. "European Marriage Patterns in Perspective," in D. V. Glass and D. E. C. Eversley (eds.), *Population and History. Essays in Historical Demography*. London: Edward Arnold, pp. 101-143.
- Jacobs, JA & Stoner-Eby, S (1998) "Adult enrollment and educational attainment," *Annals of the American Academy of Political and Social Science*, 559: 91-108.
- Keyfitz, Nathan. 1981. "The limits of population forecasting," *Population and Development Review* 7( 4): 579-593.
- Knickman, JR & Snell, EK (2002) "The 2030 problem: Caring for aging Baby Boomers," *Health Services Research*, 37 (4): 849-884.
- Kornblum, William. 2008. *Sociology in a Changing World*. Belmont, CA: Thomson Higher Education.
- Lee, Ronald D 2003. "The Demographic Transition: three centuries of fundamental change," *Journal of Economic Perspectives*, 17 (4): 167-190.
- Lee, Ronald D and Andrew Mason. 2009. "Fertility, Human Capital, and Economic Growth over the Demographic Transition," *European Journal of Population*, <http://www.springerlink.com/content/974r153l834733g7>
- Lee, Ronald D, Sang-Hyop Lee, and Andrew Mason. 2008. "Charting the Economic Lifecycle," in A. Prskawetz, D. E. Bloom and W. Lutz (eds) *Population Aging, Human Capital Accumulation, and Productivity Growth, a supplement to Population and Development Review* 33.. New York, Population Council, 208-237.
- Lenahan, AJ (1996) "The macroeconomic effects of the postwar baby boom: Evidence from Australia," *Journal of Macroeconomics*, 18 (1): 155-169.
- Lesthaeghe, Ron. 1977. *The Decline of Belgian Fertility, 1800-1970*. Princeton (N.J.): Princeton University Press.
- Lesthaeghe, Ron. 2010. "The unfolding story of the second demographic transition," *Population and Development Review* 36(2): 211-251.
- Lesthaeghe, Ron and Johan Surkyn. 1988. "Cultural dynamics and economic theories of fertility change," *Population and Development Review* 14(1): 1-45.
- Lesthaeghe, Ron and Johan Surkyn. 2007. "When history moves on: the foundations and diffusion of the second demographic transition," in Rukmalie Jayakody, Arland Thornton, and William Axinn (eds.), *International Family Change: Ideational Perspectives*. Mahwah, NJ: :Lawrence Erlbaum, pp. 81-118.
- Lesthaeghe, Ron and Dirk J. van de Kaa. 1986. "Twee demografische transitie?," in R. Lesthaeghe and D. J. van de Kaa (eds.), *Bevolking: groei en krimp [Population: growth*

- and decline*] (Book supplement to *Mens & Maatschappij*, Vol 61). Deventer: Van Loghum Slaterus, pp. 9-24.
- Lesthaeghe, Ron and Chris Wilson. 1986. "Modes of Production, Secularization, and the Pace of the Fertility Decline in Western Europe, 1870-1930," in A. J. Coale and S. C. Watkins (eds.), *The Decline of Fertility in Europe*. Princeton (N.J.): Princeton University Press, pp. 261-292.
- Levin, Eric, Alberto Montagnoli and Robert E. Wright (2009) "Demographic Change and the Housing Market: Evidence from a Comparison of Scotland and England," *Urban Studies*, 46 (1): 27-43.
- Lim, KM & Weil, DN (2003) "The baby boom and the stock market boom," *Scandinavian Journal of Economics*, 105 (3): 359-377.
- Lindh, Thomas and Bo Malmberg (2008) "Demography and housing demand - what can we learn from residential construction," *Journal of Population Economics*, 21 (3): 521-539.
- Macunovich, Diane J. 1996. "Relative income and price of time: exploring their effects on US fertility and female labor force participation," *Population and Development Review* 22 (Supplement): 223-257.
- Macunovich, Diane J. 1998. "Fertility and the Easterlin hypothesis: An assessment of the literature," *Journal of Population Economics* 11(1): 53-111.
- Macunovich, Diane J. 1999. "The role of relative cohort size and relative income in the demographic transition," *Population & Environment* 21(2).
- Macunovich, Diane J. 2002. *Birth Quake: the Baby Boom and Its Aftershocks*. Chicago, IL: The University of Chicago Press.
- Macunovich, Diane J, Richard A Easterlin, CM Schaeffer and Eileen M Crimmins (1995) "Echoes of the baby boom and bust – Recent and prospective changes in living alone among elderly widows in the United States," *Demography*, 32 (1): 17-28.
- Mankiw, NG; Weil, DN (1989) "The baby boom, the baby bust, and the housing market," *Regional Science and Urban Economics*, 19 (2): 235-258.
- Manton, Kenneth G, Gene R Lowrimore, Arthur D Ullian, XiLiang Gu and Dennis H Tolley (2007) "Labor force participation and human capital increases in an aging population and implications for US research investment," *Proceedings of the National Academy of Sciences of the United States of America*, 104 (26): 10802-10807.
- Matthijs, Koen. 2002. "Mimetic appetite for marriage in nineteenth-century Flanders: gender disadvantage as an incentive for social change," *Journal of Family History* 27(2): 101-127.
- Notestein, Frank W. 1950 . "The population of the world in the year 2000," *Journal of the American Statistical Association* 45(251): 335-345.

- Painter, Gary and KwanOk Lee (2009) "Housing tenure transitions of older households: Life cycle, demographic, and familial factors," *Regional Science and Urban Economics*, 39 (6) 749-760.
- Philipov, Dimiter and Julia Schuster. 2010. *The Economic Situation of Older Cohorts in Europe. Part II: The Economic Situation of Baby-Boom Cohorts*. Vienna: Vienna Institute of Demography (working paper).
- Reher, David S (2004) "The Demographic Transition revisited as a global process," *Population, Space and Place*, 10, pp. 19-41.
- Reher, David S (2007) "Towards long-term population decline: a discussion of relevant issues," *European Journal of Population*, 23, 189-207.
- Reher, David S (2010) "Economic and Social Implications of the Demographic Transition," in *The Long Term Implications of the Demographic Transition*, supplement to *Population and Development Review* (under review)
- Rowland, Donald T. 2007. "Historical trends in childlessness," *Journal of Family Issues* 28(10): 1311-1337.
- Russell, Cheryl. 2006. *The baby boom: Americans born 1946 to 1964*. Ithaca, N.Y.: New Strategist Publications.
- Rutherford, Robert. 1999. "Fatherhood, masculinity, and the good life during Canada's baby boom, 1945-1965," *Journal of Family History*, 24 (3): 351-373.
- Ryder, Norman. 1964. "The process of demographic translation," *Demography* 1(1): 74-82.
- Ryder, Norman B. 1965. "The cohort as a concept in the study of social change," *American Sociological Review* 30(6): 843-861.
- Sauvy, Alfred. 1948. "La reprise de la natalite dans le monde. Ses causes, ses chances de durée," *Population (French Edition)* 3(2): 249-270.
- Sell, RR and SJ Kunitz (1997) "Trends in American family size diversity," *Population Research and Policy Review*, 16 (5): 415-434.
- Slack, Tim and Leif Jensen (2008) "Birth and Fortune Revisited: A Cohort Analysis of Underemployment, 1974-2004," *Population Research and Policy Review*, 27 (6): 729-749.
- Sobotka, Tomáš and Laurent Toulemon. 2008. "Overview Chapter 4: Changing family and partnership behaviour: Common trends and persistent diversity across Europe," *Demographic Research* 19 - Special Collection 7: Childbearing Trends and Policies in Europe(06): 85-138.
- Stolnitz, George J. and Norman B. Ryder. 1949. "Recent Discussion of the Net Reproduction Rate." *Population Index* 15(2):114-28.

- Strunk, Bradley C., Paul B. Ginsburg and Michelle I. Banker (2006) "The effect of population aging on future hospital demand," *Health Affairs*: W141-W149 Suppl.
- Sweeney, MM (2002) "Two decades of family change: The shifting economic foundations of marriage," *American Sociological Review*, 67 (1): 132-147.
- Thornton, Arland. 1978. "The Relationship between Fertility and Income, Relative Income and Subjective Well-Being," in JL Simon (ed) *Research in Population Economics, Vol.1*. JAI. Press, Greenwich, CT: 261–290.
- Van Bavel, Jan. 2003. "Does an effect of marriage duration on pre-transition fertility signal parity-dependent control? An empirical test in 19th century Leuven, Belgium," *Population Studies* 57(1): 55-62.
- Van Bavel, Jan. 2010. "Subreplacement fertility in the West before the baby boom: past and current perspectives," *Population Studies* 64(1): 1-18.
- Van Bavel, Jan and Jan Kok. 2010. "Pioneers of the modern life style? Childless couples in early-twentieth century Netherlands," *Social Science History* 34(1): 47-72.
- Vere, James P. (2007) "Having It All" no longer: Fertility, female labor supply, and the new life choices of generation X, *Demography*," 44 (4): 821-828.
- Villa, P (1997) "The capital in education: A demographic approach," *Population*, 52 (1): 77-101.
- Wallace, Paul (1999), *Agequake: riding the demographic rollercoaster shaking business, finance and our world*, London: Nicholas Brealey.
- Wattelar, Christine and Guillaume Wunsch, eds. 1967. *Etude démographique de la nuptialité en Belgique*. Louvain: Université Catholique de Louvain.
- Weiss, Jessica (2000), *To have and to hold : marriage, the baby boom, and social change*, Chicago ; London: University of Chicago Press.
- Winston, Norma A. & Barnes, Jo (2007) "Anticipation of retirement among baby boomers," *Journal of Women and Aging*, 19 (3-4): 137-159.
- Wolf, DA (1999) "The family as provider of long-term care: Efficiency, equity, and externalities," *Journal of Aging and Health*, 11 (3): 360-382.
- Wolff, Edward N. (2007) "The retirement wealth of the baby boom generation," *Journal of Monetary Economics*, 54 (1): 1-40.
- Wright, Robert E. 1989. "The Easterlin Hypothesis and European Fertility Rates," *Population and Development Review* 15(1): 107-122 .