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Increasingly heterogeneous ages at first birth by education in Southern-European and Anglo-American family-policy regimes: A seven-country comparison

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Abstract

Family-policy regimes unfavourable to combining employment with motherhood have been claimed to increase socio-economic differentials in fertility as combining employment and motherhood has become more normative. This claim has to date been explored mainly in reference to 'liberal' Anglo-American regimes. Comparing education differentials in age at first birth among native-born women of 1950s and 1960s birth cohorts in seven countries representing three regime types, we find persistence in early first births among low-educated women not only in Britain and the United States but also in Greece, Italy, and Spain. Shifts towards later first births, however, were more extreme in Southern Europe and involved to some extent women at all education levels. The educationally-heterogeneous changes in age patterns of first births seen in the Southern European and Anglo-American family-policy regimes contrast with educationally-homogeneous changes across birth cohorts seen in the study's two 'universalistic' countries, Norway and France.

Keywords

fertility; first births; education; family policy; combining data

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Introduction

Shifts towards later and lower fertility have occurred across developed countries (Frejka and Calot 2001). Cross-national comparisons of the finer-grained demographic features of these shifts (e.g., Chandola et al. 1999), however, reveal some striking variations in the patterns of fertility change. A common pattern in continental European countries is a simple rightward shift in a sharply-peaked age-specific fertility schedule. Meanwhile, shifts in Anglo-American countries exhibit a stretching of the fertility schedule in which rates of both teen fertility and fertility in women's late 30s are substantial while the intensity of fertility at the peak ages is reduced (see also Chandola et al. 2002).

Findings from single-country studies suggest a corresponding increase in the socio-economic differentiation of fertility in Anglo-American countries (Rindfuss et al. 1996; Sullivan 2005; Kneale and Joshi 2008; Sigle-Rushton 2008). Cross-national comparisons of changes in socio-economic differentials in fertility, however, have been few and limited to countries in which birth registration data can be linked to census or register microdata with socio-economic variables, namely France, the U.K., and the Nordic countries (Rendall et al. 2005, 2009; Andersson et al. 2009). These are among the developed countries with the highest fertility levels, attributed by Morgan (2003) among others to their greater institutional compatibility between family and employment. Using new data sources and new methods for combining data sources, the present study includes also three Southern European countries (Greece, Italy, and Spain) characterized by very low fertility and low institutional compatibility between family and employment. They form part of a seven-country comparison of changes in women's ages at first birth by education. The comparison is presented within a family-policy *regime* framework, in which fertility change in the group of the three 'conservative' Southern European countries is compared to change in two 'liberal' Anglo-American regimes, the U.K. and U.S., and to change in two 'universalistic' family-policy regimes, France and Norway.

In the remainder of this article, we first describe theory and evidence on institutional influences on fertility, indicating where this points towards potential sources of growth in, or mitigation of, socio-economic differentials in fertility. We next describe the unique combination of large-scale population data sources and methods for combining population and survey data in our study that allows for more precise estimation of educational differentials by age and parity across cohorts. Results and discussion follow.

Theory and Evidence on Institutional Influences on Fertility

Theoretical explanations for trends and cross-national differences in lower and later fertility have emphasized women's increasing employment opportunities and institutional environments for combining employment and motherhood (Morgan 2003; Adsera 2004). The positive relationship between fertility and women's labour force participation that has emerged since the mid-1980s (Ahn and Mira 2002) has added considerable impetus to this argument. Family policies that facilitate the combining of employment and motherhood through the provision of subsidized child-care and maternity-leave compensation and rights to return to work after the leave are believed to be especially important for mitigating role incompatibility (Pampel 2001; Castles 2003). Strong effects on employment continuity have been found (Ruhm 1998; Stier et al. 2001; Rønsen and Sundström 2002). The effects of family policy on fertility, however, have typically been found to be small (Gauthier 2007).

Brewster and Rindfuss 2000, among others, argue that the low estimated effects of family policy on fertility may be due to the crudeness of measurement in aggregate-level analyses, and not to a lack of any real effect. Gauthier and Hatzius 1997 also note, in discussing the limitations of aggregate measures, that family policies may differentially influence the fertility

of women with different labor-market opportunities. Milligan (2005) provides evidence of such differential effects of cash benefits for higher-income women in the Quebec province of Canada, while Aasve, Billari, and Spéder (2006) find that Hungary's switching from a universalistic to means-tested childcare benefits policy, and then back again to a universalistic policy, had large effects only on the childbearing of more educated women. Aasve et al further note that the switch to a means-tested regime thereby resulted in a widening of socio-economic differentials in childbearing. Single-country findings such as these, however, are vulnerable to the interpretation that the effects of any family-policy change are often short-lived. Moreover, estimating the effects of single policy changes does not address the argument that the effects of family policies are best understood as an interacting and, in the best case, mutually-supporting family-policy "regime" (see again Brewster and Rindfuss 2000). Salles et al. 2010 argue additionally that a family-policy regime's level of support for the combining of employment and motherhood can influence cultural shifts in attitudes towards mothers' remaining in the labor force.

In the context of socio-economic differentials in fertility and the potential for family policy to mitigate or accentuate them, education may play a major role through its strong positive effect on women's labor-market opportunities. Some theoretical treatments of fertility timing make career-interruption costs the foundation of socioeconomic differentials (e.g., Cigno and Ermisch 1989); others add to this mechanism the interruption of career progress even while employment is continued (e.g., Blossfeld and Huinink 1991). Family policy may facilitate the combining of family formation with employment continuity and career progress, but do so differentially by education level. Ermisch (1989) theorizes that the price of child-care is a key variable through which the state can intervene to facilitate continued employment after childbearing. The more that child-care provision is subsidized, the more universally across earnings levels will child-care be used by mothers to maintain their employment. Gustafsson and colleagues (Gustafsson et al. 1996; Gustafsson and Wetzels 2000; Gustafsson 2001) take this argument a step further by arguing that a well-integrated set of family-policy provisions provides strong incentives for women across socio-economic levels to first secure permanent employment before entering parenthood, and then to proceed quickly to childbearing with their jobs held for their return after each maternity leave. Such provisions include publicly-subsidized child-care and maternity-leave that guarantees job reinstatement and that compensates for lost earnings while on leave. Gustafsson and colleagues claim empirical support from comparisons (in a single period) revealing smaller differentials by education in fertility timing in Sweden than in either Germany or the U.K. Additional indications of the potential power of institutional context to influence fertility distributions are seen in findings of less marked socio-economic differentials in higher-order births in the universalistic countries of Scandanavia and France than elsewhere in Europe (Ekert-Jaffé et al 2002; Callens and Croux 2005).

Conversely, the means-tested structure of family policy in a 'liberal' regime such as the U.S. has been claimed to induce early, non-marital fertility among women whose low educational attainment gives them poor labor-market prospects (Rosenzweig 1999; Hoffman and Foster 2000). The character of means-tested family-policy regimes may be significant also for what they *don't* include among their family-support provisions, notably subsidized childcare and replacement income that is contingent on first securing employment. In empirical findings for France, where such provisions are part of the family-policy regime, Meron and Widmer (2002) find postponement of childbearing in response to unemployment to be at least as great among low-educated women as among women with higher education levels.

The relationship of education to fertility, however, may also operate through mechanisms other than labour-market opportunities. In sociological, "ideational change" theory (Lesthaege and Surkyn 1988), increases in educational attainment of women and lower and later fertility are

both driven by ideational change affecting every sphere of social-demographic behavior. Lesthaege and Surkyn further suggest that an educated elite leads this ideational change, implying that more educated women are at the vanguard of social-demographic change that includes fertility behavior. The view that educational changes are coincident with, more than the cause of, the radical changes in fertility over the last decades of the 20th Century figures prominently also in van de Kaa's (2006) skeptical view that family-policy can either be a major explanation for fertility change thus far, or be expected to have much impact on fertility change to come.

Invoking a more "structural" sociological approach, however, Schulze and Tyrell (2002) take an opposing view. They critique the view of increased individualization ("individuation" in Lesthaege and Surkyn's terminology) in demographic behavior and replace it with an interpretation of increasing heterogeneity in family formation as being structured along socioeconomic lines. They refer to the emergence of much greater socio-economic differentials in fertility in countries with regimes unsupportive of the combining of employment and motherhood as "reproductive polarization." This thesis may be seen on one hand as drawing out the societal consequences of micro-economic forces. On the other hand, however, it combines "ideational change" and microeconomic theories through its claim that economic opportunity costs have become a stronger driver of differential fertility behavior as a result of changes in societal values about the importance of employment and earnings for women (see also McLanahan 2004).

As noted above, a limitation of empirical studies of change in fertility differentials is that they are confined to two groups of countries only, with both groups being considered to in different ways facilitate or allow for the combination of employment and motherhood (Joshi 2002; Morgan 2003). A third, 'conservative' group of countries is claimed to be least facilitative of women's employment-family compatibility (DiPrete et al. 2003). In their archetypal form, 'conservative' regimes provide cash support for women to raise children at home, and while they may regulate maternity leave, they do not offer the complementary support of large-scale subsidized day-care programs that facilitate women's combining of parenthood with employment (Gauthier 2002).

State support of all kinds for families, including those with stay-at-home mothers, tends to be lower in Southern European than in Central and Western European 'conservative' countries such as Germany. Ferrara (1996), moreover, argues that Southern European countries should be classified separately due to the structure of their welfare support having a "…dualistic, almost 'polarised' character…" (p.19). An associated dualistic type of labour market structure in Spain has been described by Adam (1996) as an "insider-outsider" economy, and this characterization has been applied similarly to other Southern European labour markets (Adsera 2004). If women's careers evolve such that young adults who begin in the "outsider" economy eventually enter the "insider" economy, a general pattern of extended fertility delay may be expected. This "extended delay" characterization has been the dominant one of scholarly work on changes in ages at entry to parenthood in Southern European countries, corresponding to multiple obstacles to the attainment of adult roles (Bettio and Villa 1998; Kohler et al. 2002; Billari 2004; Bernadi 2005; Sánchez-Barricarte and Fernández-Carro 2007). To the extent, however, that those in the "insider" economy have distinct life courses from those in the "outsider" economy, correspondingly-distinct fertility patterns may also emerge among women who never join the "insider" economy. These patterns may conceivably include persistent early fertility associated with social exclusion, as seen among low-educated women in Anglo-American regimes. A greater life-course persistence of social exclusion in Southern European countries is suggested by the findings of Aassve, Iacovou, and Mencarini (2006) that youth poverty differs much less by household living arrangements there than elsewhere in Europe.

Data and Methods

Changes in the timing of first births by education were estimated for 1950s and 1960s birth cohorts of native-born women in seven countries representing three models of family policy: (1) The "Universalistic" model, represented by France and Norway; (2) the Liberal "Anglo-American" model, represented by the United Kingdom and the United States; and (3) the Conservative "Southern European" model, represented by Greece, Italy, and Spain. Although the standard classification of countries, following Esping-Andersen 1999, places France among the Conservative welfare regimes, we argue that its large-scale, publicly-subsidized day-care puts France much more among the Social Democratic regimes specifically in the family-policy domain of welfare regimes. France has long had a similar family-policy regime of subsidized child-care integrated with maternity leave (Paihlé et al. 2008). Gornick et al. 1997 and Pampel 2001 accordingly rank France with the Nordic countries on their respective "employment support for mothers" and "women-friendliness" scales (see also Henderson and White 2004). Hantrais (2004) similarly classifies France with the Nordic countries, in a "de-familialised" group of countries characterized especially for their strong support for non-family child-care. Among the "de-familialised" group, France, Finland, and Norway all offer subsidies for in-home care (Mahon 2002; Paihlé et al 2008), and in this sense are less "de-familialised" than are Denmark and Sweden. These differences are argued elsewhere, however, to be better characterized as variations in policies with an overall strong orientation towards promoting the combination of career continuation and motherhood (Ellingsæter and Leira 2006). To avoid confusion with the exact groupings of countries used by Esping-Andersen and subsequent authors, henceforth we use the term 'Universalistic' in place of Social Democratic, 'Southern European' in place of Conservative, and 'Anglo-American' in place of Liberal.

A major innovation of our study is its joint use of population and survey data sources to achieve statistically precise and cross-nationally comparable estimates. This allowed us to include at least two countries from each of the above three family-policy regime types. Recognizing the considerable challenges of achieving comparability between countries, however, a very simple analytical structure was used. Year of birth, age, and education were the only individual dimensions analyzed for each of the seven countries. A range of data sources was used for our analyses (see Appendix for details). Full population data were used for Greece (2001 Census) and Norway (linked education and birth registration databases up to 2001). For France and the United Kingdom (England and Wales only), Census microdata linked to birth registrations were used.

For three of our countries, Italy, Spain, and the U.S., available population-level data on births and years of exposure included age, cohort, and parity, but not completed education. To obtain the advantages of large sample sizes also in these countries, the Fertility and Family Surveys (FFS, United Nations 2002) were used for Italy (1995), Spain (1995), and the United States (being the 1995 and 2002 National Survey of Family Growth) in combination with other sample survey data and with population-level data on fertility rates by age, cohort, and parity. The additional survey data were: for Italy the 1998 Multipurpose survey; for Spain the 1999 Fertility Survey; and for the United States, the 1995 Current Population Survey. The pooled FFS and additional survey data were combined with population-level data in those countries using the constrained estimation method of Handcock and colleagues (Handcock et al. 2000, 2005). We first pooled person-years across the sample surveys in each of these three countries and then estimated a binary logistic regression equation with constraints equal to population age-specific first birth probabilities for each of the two cohorts (1951–55 and 1961–65). At each age, the weighted sum of first-birth probabilities of low, medium, and high-educated women equals the cohort age-specific first-birth probability from the population data. The weights are the age-specific low, medium, and high-educated proportions of women at risk of a first birth (that is, women who were childless at the beginning of the year) in the pooled-survey sample. The

education-by-age relationship was fitted through a parameterized regression specification. This method greatly reduces sampling error about predicted first-birth probabilities by age, cohort, and education in two ways: first, the overall age-specific first birth probability is assumed to be measured without sampling error, and this in turn greatly reduces sampling error around the age-by-cohort schedules for each of the three education levels; and second, the pooling of two survey samples reduces the sampling error about the estimated education-by-age relationship. An illustration of this method and its effect on narrowing the confidence intervals about predicted probabilities of first birth by age, cohort, and education after age 25 in Italy is seen in Rendall et al. 2008.

Across the data sources for the seven countries of our study, there is differential censoring of fertility histories according to the woman's age and the year of most recent observation in the population or survey data source. For each country, therefore, we first estimated annual first birth probabilities (hazards) by cohort, age, and educational attainment, and then used a first-birth life table (e.g., Chen and Morgan 1991) to transform these into cumulative proportions of women in the cohort and education category having a first birth by given ages. For the 1950s cohorts, these proportions extend to age 43, close to the end of the reproductive lifetime. For the 1960s cohorts, they extend to age 33. Given the calendar-year structure of most of our data, the French "generation" definition of age, defined as age in years attained in the current calendar year, is used in place of the more usual "age at last birthday" definition. In general, age according to the "generation" definition will be about half a year younger than according to the "age at last birthday" definition.

Five-year groups of 1950s and 1960s birth cohorts ten years apart are defined for each country. Although ideally we would use exactly the same birth cohorts across our seven countries, differences in right-censoring and numbers of observations near the right-censored ages across the data sources (and left-censoring of the 1950s cohorts' data for the U.K. and France, see Appendix for details) prevent us from achieving this ideal. In general, we use the most recent five-year cohorts for which the closest reasonable approximation to the 1955–59 and 1965–69 cohorts can be achieved. To achieve maximum balance across the three family-policy country groups, however, we used the 1951–55 and 1961–65 cohorts in addition to the 1955–59 and 1965–69 cohorts for Norway. The linked Census and birth registration data of England and Wales allowed us to derive estimates for the 1954–58 and 1964–68 cohorts. For France, constraints of left-and right-censoring in the linked Census and birth registration data allowed for analysis of the 1955–59 and 1963–67 cohorts. The 1951–55 and 1961–65 cohorts groups were used for three FFS countries (Italy, Spain, and the U.S.), as the FFS was conducted in 1995 in each of these countries, and later sample surveys are either not sufficiently recent (1998 and 1999 respectively for Italy and Spain) or not sufficiently large (the 2002 survey for the U.S.) to allow for precise estimates for more recent cohorts. The 1951–55 and 1961–65 cohorts groups were used for Italy additionally because population data on first births were no longer compiled after 1999. For Greece, for which we have 100 percent population data, the 1955–59 and 1965–69 cohorts were used.

The comparisons of cohorts approximately ten years apart in each country are important for both substantive and methodological reasons. Substantively, they allow us to explore the hypothesis that *growth* in socio-economic differentials in fertility will occur in less facilitative family-policy regimes as the importance of labor-market activity for women increases. Methodologically, the cross-cohort data provide a form of "difference in difference" analysis that controls for differences in education systems between the countries. That is, our main measures of comparison between the countries are not the levels of the first-birth differentials by education, but instead are the changes in these differentials between the 1950s and 1960s cohorts.

We restricted our analyses to native-born women for both substantive and empirical reasons. Substantively, we are interested in comparing cohorts of women who, ten years apart, received that country's education and were exposed throughout their reproductive lives to that country's family policy and labor market institutions. Empirically, our methods of analysis involve combining person-years of exposure to first birth in surveys collected at different years with population data for those same years of exposure to produce cohort estimates. Implicitly, this combination of data assumes a closed population over the reproductive years, an assumption that will be reasonably approximated only for native-born women. This results in an imperfect match between survey and population data in Italy, Spain, and the U.S. Our comparisons of the first-birth by age relationship estimated from the survey and population data demonstrated no significant mismatches in levels for our age and cohort combinations in the U.S. and Italy (see also Rendall et al 2008 for Italy). First-birth probabilities are significantly higher in the survey than population data, however, for Spain's 1960s cohort, a difference that may be due to biases from either source. Some overstatement of the shifts towards later childbearing across cohorts may therefore result. This has relatively little effect on the contrasts by education, however, as the population data scale and smooth the education-specific patterns equally for the three education categories. In particular, our result of no decline in proportions of low-educated women giving birth by age 20 holds whether or not the estimates are constrained to population-level age-specific first birth probabilities (results not shown).

Education presents the greatest challenges for developing comparable definitions between countries (see Gustafsson and Kalwij 2006, ch.1). Educational systems vary considerably between the seven countries. Our cross-cohort analytical framework is especially useful here for controlling for these contrasts in educational systems, as these system contrasts between countries are largely constant over time. Variability is found also between the different data sources in different countries. This includes variability in when the individual is asked to report education and in level of detail reported. In the countries where surveys were pooled, an additional element of complexity was generated due to women's ages differing according to survey date. Our solution was to apply as closely as possible a common, three-category educational attainment classification based on the International Standard Classification of Education (ISCED, see OECD 2003) to measure lifetime educational attainment. We coded education as follows. "High" education level was coded for women who had completed any level of tertiary education (ISCED levels 5 and 6). The tertiary level was defined to include both vocational and general education, including two-year, three-year, four-year and longer programs. The "medium" education level was assigned to women with ISCED level 3 or 4. This included those who have completed secondary school or who had obtained secondary-school qualifications at the ISCED level 3 and those with "post-secondary, non-tertiary" vocational qualifications at the ISCED level 4. The "low" education level was coded for those with no secondary school qualification or with the lowest secondary qualifications, recognized as level '2' in the ISCED classification system. Thus women at ISCED level 1 or 2 constitute the "low" group.

Methodological work on estimation of the relationship of education to fertility has shown that it matters greatly whether education is measured before or after fertility exposure, and whether schooling is still in progress (Kravdal 2004). We handle this problem here by measuring education always at the most recently observed point in the data, interpreting this as a measure of lifetime completed education. In practical terms, this is the only common educational-timing definition possible across the diverse data sources. It does, however, raise some issues of comparability between countries and between cohorts. In the survey data sources, education is observed at different ages depending on the year of the survey. In both the survey and population data sources, the age at observation is ten years younger for the 1960s cohorts than for the 1950s cohorts. Educational attainment is measured between ages 25 and 35 for the 1960s cohorts but between ages 35 and 45 for the 1950s cohorts. Problems of comparability

between cohorts and data sources are therefore only likely to affect the high education group, and are not likely to be severe. A second issue is the potential two-way causal relationships between education and fertility. As Hoem and Kreyenfeld (2006) show with an illustration to childlessness by education in Germany, differentials by education are exaggerated by using eventual educational attainment as we do here. This needs to be borne in mind when interpreting the results. The interpretation we give here is that estimated differentials indicate how compatible with family-formation at younger and older reproductive ages are the career trajectories associated with low, medium, and high levels of educational attainment.

Results

We first compare the distributions by education of women from the 1950s and 1960s cohorts of the seven countries (see Figure 1). Recall that educational attainment is observed at ages typically 10 years younger for the 1960s cohort (between ages 25 and 35) than for the 1950s cohort (between ages 35 and 45). Women in the Southern European countries had the highest proportions of low-educated women in both the 1950s and 1960s cohorts, notwithstanding major decreases in these proportions across cohorts. Between half and three-quarters of their 1950s cohorts and between 30 and 60 per cent of their 1960s cohorts were low-educated. Greece and Spain, however, both realized major increases in their proportions of high-educated women between the 1950s and 1960s cohorts, to 33 and 23 per cent respectively of their 1960s cohorts. These are similar proportions to those found for high-educated women in the other two country groups. The U.S., U.K., and Norway had the lowest proportions of low-educated women and highest proportions of medium-educated women in each cohort. France increased its proportions of both medium-educated and high-educated women across the 1950s to 1960s, but its larger proportions of low-educated women (one third of its 1950s cohort and a quarter of its 1960s cohort) mark it as different from Norway, the U.K., and the U.S.

We begin our analyses of first births by education by comparing the distributions of ages at first birth between the 1950s and 1960s cohorts. This allows us to address the main objective of our study, being to evaluate differences in growth in educational differentials in first births between countries of the three different family-policy regime types. For this analysis, three age groups are formed: under-21 (that is, up to age 20), 21 to 25, and 26 to 33 years old (see Table 1). Recall that age is defined as that attained at the end of the calendar year, which is on average half a year younger than age in completed years. For the 1950s cohort only, age 43 is used to mark close-to-final proportions having a first birth. Note that all estimates presented are constructed to be directly comparable between the 1950s and 1960s cohorts, using life-table principles (e.g., Smith 1992) to treat the greater censoring (at age 33) for the 1960s cohorts than for the 1950s cohorts (at age 43). All percentages are of the whole cohort, respectively born in the 1950s or 1960s.

Remarkably for a period of substantial increases in average age at childbearing especially in Southern Europe (Frejka and Sardon 2007), the proportions of low-educated women having a first birth up to age 20 were largely unchanged between the 1950s and 1960s cohorts in all three of our Southern European countries. Two-fifths of low-educated Greek women and a quarter of low-educated Italian women continued to have first births by age 20. The proportion in Spain was under a fifth of the 1960s cohort, but this was slightly higher than it was for the 1950s cohort of low-educated women. The finding of no change in early-childbearing proportions among low-educated women is also seen in the two Anglo-American countries, consistent with previous studies cited earlier. Half of all low-educated U.S. women and one-third of all low-educated U.K. women had a first birth by age 20 in both the 1950s and 1960s cohorts. In contrast, however, substantial declines in the proportion of low-educated women giving birth by age 20 were seen in both France and Norway: from 29 to 25 per cent in France;

and from 46 to 37 per cent and from 44 to 32 per cent respectively for Norway's 1951–55 to 1961–65 and 1955–59 to 1965–69 cohorts.

A major difference in the pattern of fertility change among low-educated women between the Anglo-American and Southern European countries, however, is seen at ages 21 to 25. Very large shifts out of childbearing at ages 21 to 25 are seen among low-educated women in Southern Europe, while no shift at all occurred in the U.S. and the U.K. This suggests an increasing heterogeneity in age at first birth *within* the low-educated group in the Southern European countries. In one way this is not surprising, since the large sizes of the low-educated groups of these countries even in their 1960s cohorts imply potentially more within-group heterogeneity, for example in the occupational paths of low-educated women.

An additional strong indicator of growth in timing differentials by education in the Anglo-American and Southern European countries is found in the proportions childless at age 33 by education in the 1950s versus 1960s cohorts. Already in the 1950s cohorts, differences by education were smaller in France and Norway, at 13 percentage points respectively between low-educated and high-educated women in France, and 10 and 12 percentage points in the two sets of Norwegian 1950s cohorts. In the Anglo-American and Southern European countries, the equivalent gaps ranged from 16 and 17 percentage points respectively in Spain and in the U.K. to 32 and 41 percentage points respectively in the U.S. and Italy. For the 1960s cohort, only in France and Norway were less than a third of high-educated women childless at age 33. Of the Anglo-American and Southern European countries, in contrast, only in the U.K. (45 per cent) and in Greece (40 per cent) were less than half of high-educated women childless at age 33. In Spain two thirds, and in Italy three quarters, of high-educated women in the 1960s cohort were childless at age 33.

We have concentrated the discussion so far on education-specific differentials in fertility. These will be only part of the explanation of why the overall distribution of ages at first birth may be more homogeneous in the Universalistic countries. Changes in the education distributions will also explain some of the change in the overall age distributions of first birth. Education-specific relationships, and changes to them across cohorts, will have a greater or lesser impact on the changes in the overall distribution of first births by age depending on the nature and magnitudes of changes in educational composition between cohorts. For example, where the proportions of low-educated women have declined substantially, persistently high early childbearing among this group will have a smaller effect on overall early childbearing. To separate out the effects of distributional change on the overall distribution of age at first birth from those of behavioral change, we compare the changes that would have resulted from behavioral change alone, counterfactually maintaining the educational distributions for the 1960s cohort at the 1950s cohorts' values (see the "all (1950s cohort education distribution)" rows of Table 1).

Overall shifts towards first births at older ages in the 1960s cohort than in the 1950s cohort are seen in all countries (see the "all" rows), although higher concentrations of first births in the middle (21 to 33 year old) age range are still seen in the Universalistic countries in the 1960s cohorts. Around 70 per cent of the 1960s cohorts of both France and Norway had a first birth between the ages of 21 and 33. In the other five countries, between 40 and 60 per cent only of the 1960s cohort had a first birth in this age range. The effects of changes in education-specific fertility are seen to be mostly much larger than the effects of changes in the distribution of education between the 1950s and 1960s cohorts. Positive effects of educational advancement on increasing ages at first birth between the 1950s and 1960s cohorts are seen in all countries except in the U.S., where the observed education distributions did not change. A large effect of educational advancement between the 1950s and 1960s cohorts on the distribution of age at first birth, however, was seen only in Greece. Educational progress in Greece explains all

of the 7percentage-point decline in women having a first birth by age 20, and half of the 12 percentage-point in the proportion of women still childless at age 33.

We provide more detailed analyses of first births by education for the 1960s cohorts by presenting graphically distributions of ages at first birth up to age 33, separately for each of the three education levels (see Figure 2a to 2g). The two Universalistic countries, France and Norway (1961–65 cohort only presented), are the most consistently distinct from both the Anglo-American and Southern European countries for their younger ages at which high-educated women enter motherhood. In both France and Norway, the modal age of first birth is 27. This is only five to eight years older than for low-educated in these two countries (modal ages 22 and 19 respectively) and only three years older than for medium-educated women (modal age 24 for both). The first-birth distributions of French women from the three education groups are similar in their shapes. A more peaked distribution for low-educated Norwegian women and a more dispersed distribution for medium-educated Norwegian women is seen. This will reflect, in part at least, the smaller and therefore more homogeneous low-education group and the larger and therefore more heterogeneous medium-educated group in Norway than in France,

In all the Anglo-American and Southern European countries, a large variability in both shape and location of their first-birth distributions is seen between education categories. The distributions of ages at first birth for high-educated women tend to be flatter and are stretched towards lower peaks in women's late 20s to early 30s. Their modal ages at first birth for high-educated women are also significantly later, at or around age 30. The youngest modal age among these five countries is seen to be in the U.S., at age 28. This is, however, at a level that is significantly lower (around 0.06 as a proportion of all high-educated women in the cohort) than for France and Norway (around 0.08). Italy and Spain's high-educated women provide exceptions to the stretched shape of the distribution of ages at first birth. The very few first births that occur to high-educated women under age 25 will in part be responsible for the more peaked distribution around age 30 (0.07 to 0.075 of the cohort), since the first-birth *hazards* around age 30 are lower than those for France and Norway (results not shown). Differences of ten years in modal ages at first birth between low-educated and high-educated women are seen in the U.K. (30 versus 20 years old), in the U.S. (28 versus 18 years old), and in Italy (30 to 31 versus 20 to 21 years old). Even though in Spain the difference between low- and high-educated modal ages is only five years, the humped shape of low-educated women's ages at first birth, extending from age 20, contrasts greatly with the more peaked shape about age 30 of Spain's high-educated women.

A greater range of shapes and locations of first-birth distributions is seen across countries within a given regime type for medium-educated women. The patterns of first births by education in U.S. and Greece are remarkable for the very large gaps between the modal ages of medium-educated and high-educated first births: 20 versus 28 years old for the U.S. and 23 versus 28 to 30 years old for Greece. In Spain, the U.K., and Italy, medium-educated women have distributions of ages at first birth that are more similar to the distributions for high-educated than low-educated women. In the U.S., medium-educated women have distributions of ages at first birth that resemble more those of low-educated women. More detailed attention to differences in education systems and labor-market opportunities for women educated only to secondary-school level between the countries may be needed to uncover reasons for these patterns of greater similarity respectively to low-educated and high-educated women. A strong commonality across countries, however, is nevertheless that the proportions of medium-educated women having first births in their early to mid-20s are substantially greater than for high-educated women.

Discussion

We used a combination of population and survey data sources to estimate changes in the timing of first births by education in seven countries representing three different family-policy regime types. These estimates allowed us to explore further the "reproductive polarization" hypothesis that family policy mediates the growth of socio-economic differentials in fertility (Ekert-Jaffé et al 2002; Schulze and Tyrell 2002; McLanahan 2004; Rendall et al 2009). The evidence we found of educationally-homogeneous shifts in ages at first birth in the Universalistic countries of our study (France and Norway) and educationally-heterogeneous shifts in ages at first birth in both the Anglo-American countries (U.K. and U.S.) and the Southern European countries (Greece, Italy, and Spain) is consistent with this hypothesis. In particular, an increasingly strong mediating role of family policy for the socio-economic distribution of fertility timing is suggested by our findings. First, likelihood of very early entry to motherhood (up to age 20) was unchanged among low-educated women in both the Anglo-American and Southern European countries, whereas it decreased in the Universalistic countries. Second, a much greater proportion of high-educated women in the Universalistic countries than in the Anglo-American and Southern European countries continued to enter motherhood before their mid-30s.

The direction of the contrasts at early ages is surprisingly similar between the Anglo-American and Southern European country groups. The group of low-educated women is smaller as a proportion of the 1960s than the 1950s birth cohort in the Southern European countries and in the U.K. (though not in the U.S.), and thus low-educated women have become more selective in the 1960s cohorts. This is true also, however, for France and Norway, where low-educated women of the 1960s cohorts exhibited substantial declines in early childbearing compared with the larger 1950s cohorts of low-educated women. Although previous studies have shown persistence of early childbearing at relatively high levels among low-educated women in Anglo-American countries, particularly the U.S., we are not aware of previous studies that have highlighted persistent early childbearing among low-educated women across Southern Europe. We have done so here for three Southern European countries, for which the main concern has been for late rather than early childbearing. This concern is clearly justified also by our findings. We find that only a quarter and a third respectively of high-educated women of the 1960s cohorts of Italy and Spain had given birth by age 33. This makes an especially large contrast with the two thirds and three quarters of high-educated women of the 1960s cohorts of France and Norway who had already had a first birth at this age. The middle position of the Anglo-American countries with respect to late childbearing among high-educated women, between the Southern European and Universalistic countries of our study, is consistent with the conclusions of previous research that private solutions ease the constraints on combining employment and childbearing for higher-income women in 'liberal' countries more than in 'conservative' countries (Davies et al. 2000; DiPrete et al. 2003).

Our cross-regime comparison indicates, moreover, that educational advancement itself is not sufficient to explain the magnitudes of shifts towards later first births. With the exception of Greece, changes in the educational distribution explained a small part only of these shifts. Arguments by Gustafsson and colleagues, in particular, that the universalistic regimes of publicly subsidized child-care integrated with maternity leave facilitate "on time" childbearing for all socio-economic groups are instead supported by these comparisons. In the present study, we have shown this for only two universalistic countries, France and Norway (see also Winkler-Dworak and Toulemon 2007 and Kravdal and Rindfuss 2008 for similar findings in single-country studies). Results in Andersson et al. 2009, however, show similarly moderate increases only in median ages at birth across equivalent education groups also in Denmark, Finland, and Sweden.

Increasing socioeconomic differentials in fertility have previously been emphasized in studies of patterns in the 'liberal' Anglo-American countries (McLanahan 2004; Sigle-Rushton 2008). Consistent with this, we find here that the U.S., with half its low-educated women giving birth by age 20, continues to exhibit the highest proportion of early childbearers among the low-educated group. Greece, however, with two fifths of its low-educated women giving birth by age 20, and very low prevalence of early childbearing among other education groups, exhibits at least as strong an educational differential in the timing of early fertility as does the U.S., and a stronger educational differential than that seen in the U.K. And whereas the proportions of low-educated Spanish and Italian women giving birth at early ages was much lower than in the Anglo-American countries, they similarly persisted across the 1950s to 1960s cohorts, and they involved substantial fractions of the total cohort size due to the relatively low educational attainment of women in Spain and Italy.

The larger-sized low-educated groups of the Southern European countries, however, exhibit a much greater within-group heterogeneity in their changes in timing of first birth than seen for the U.K. and the U.S. In particular, low-educated Southern European women's proportions of first births at ages 21 to 25 decreased dramatically between the 1950s and 1960s birth cohorts, and their proportions of low-educated women still childless at age 33 correspondingly increased substantially. We suggest that this heterogeneity in fertility change may be due in part to the relatively poor approximation of "low education" to labor-market disadvantage in the Southern European countries. When Rendall et al (2009) used early-career occupation and employment status in place of education in the U.K., for example, they found that only among the low-skilled and unemployed young women was there a persistence of early childbearing, up to and including the early 20s across the 1950s and 1960s birth cohorts. For women in the next lowest occupational category, clerical/secretarial occupations, a dramatic decrease in first births through women's early 20s was seen. Such occupational differentiation may be encompassed within the Southern-European countries' low-educated groups, though further research is needed to test for this occupational heterogeneity.

Based on earlier treatments of the fragmented, dualistic welfare system of the Southern European countries (Ferrara 1996) and of their associated "insider-outside" labour markets (Adam 1996), we speculate that the persistence of early childbearing among low-educated women may be associated with permanent (that is, across the reproductive lifetime) exclusion from participation in regular, protected employment and entitlement programs. This represents a theoretically distinct characterization of fertility change in Southern Europe from the dominant, "delayed adulthood" characterization of, among others, Kohler et al. 2002. Further research into this topic, however, is needed to better understand the relationship between economic polarisation and demographic polarisation in those countries, and thereby to test more persuasively how general is the applicability of the "reproductive polarisation" thesis to countries outside the Universalistic family-policy group.

We attribute our findings of cross-national differences in *changes* in timing of first births by education as being due to an increase in the salience of employment-fertility compatibility for women, in the context of family-policy regimes that vary greatly in the extent to which they facilitate the combining of employment and childbearing. At the same time, we are unable to categorically exclude other potential explanations for our findings. In the interests of being more comprehensive in our coverage of countries and family-policy regime types, our analyses omitted finer detail on differences in time spent in schooling associated with different levels of educational attainment (see, for example, Lutz et al. 2006) and omitted any explicit linkage of educational attainment to employment and career trajectories (see, for example, Blossfeld and Huinink 1991 and Winkler-Dworak and Toulemon 2007). We note, however, that in previous comparisons between France and the U.K. (Rendall et al 2009), large shifts towards remaining in the education system longer in France but not in the U.K. occurred over the same

period in which shifts towards much later first births occurred in the U.K. but not in France. Moreover, for the very high degrees of fertility postponement into women's mid-30s and beyond observed in the Southern European countries, we find incompatibility of the combining of motherhood and employment to be a more persuasive explanation than extended schooling. While admitting other plausible explanations, our findings therefore reinforce existing evidence in support of the hypothesis of an increasing importance of family policy for expanding or mitigating socio-economic differentials in fertility.

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Appendix: Data Sources and Estimation Methods

A. Census data: Greece 2001 Census data

The data on fertility and education and woman's country of birth used here come from the 2001 Census of population, with tabulations supplied to the authors by the National Statistical Service of Greece. The Census asks for number of children born and year of birth of the first child. Because the Census took place in March 2001, data on births in full calendar years up to 2000 only were used. Women were also asked for their highest educational qualification attained. Of the 12 possible categories, we included any tertiary qualifications as "high-educated," and upper-secondary qualifications as "medium-educated." Those with either lower-secondary or primary qualifications only were coded as "low-educated."

B. Birth registrations linked to administrative and census microdata: France, the U.K., and Norway

Linked census and birth registration data were used for France and the U.K. (specifically, England and Wales). The datasets used for France and the U.K. were respectively the French

Demographic Panel (EDP, INSEE 1995) and the ONS Longitudinal Study (LS, Hattersley and Creeser 1995). The LS links census and birth records since 1971 for a representative sample of 1 in 100 women in England and Wales, whereas the EDP does so since 1968 for a 1 in 200 sample in France. Because the two countries' populations are approximately the same size, the sample sizes are consequently approximately twice as large in England and Wales as in France. For both the EDP and LS, a type of "attrition" occurs due to non-linkage of approximately 10 to 15 per cent of births in the LS (Babb and Hattersley 1992), and somewhat less than this in the EDP (Robert-Bobeé 2003). We corrected for non-linkage for England and Wales using the national parity-specific fertility rates (Smallwood 2002), and for France using a sample from the 1999 Census called the Family Survey. In each case, we assumed no linkage differentials by education, consistent with the findings of Babb and Hattersley (1992) and Robert-Bobeé (2003). For both countries, we selected into our samples for analysis only those women present across all the censuses covering their childbearing ages, and we smoothed the first birth probabilities using a moving three-year weighted average that assigns a weight of 0.5 to the central age and 0.25 to each of the adjacent ages.

Special compilations of linked databases of population, birth registrations and educational qualifications were used for Norway. The Norwegian Statistical Population Register is updated continuously and the Educational Databases annually. We used extracts of longitudinal data up to and including 2001 linked across the two databases. No deficiencies of coverage or problems of linkage for native-born women are believed to be present in the Norwegian databases.

C. Combined Surveys Constrained to Population 1st Birth Probabilities: Italy, Spain, and the U.S.A

The Fertility and Family Surveys (FFS, United Nations 2002) and additional surveys with fertility by education are used for Italy (1995), Spain (1995), and the United States (being the 1995 and 2002 National Survey of Family Growth). A major advantage of the FFS datasets is that key variables are coded in an internationally comparable way. Of particular interest for the present study is the educational attainment variable that is coded to the ISCED (International Standard Classification of Education) categories. We coded "high-educated" for women with any tertiary education qualification (ISCED codes 5 and 6), and "medium-educated" for women who completed secondary education and obtained a secondary school qualification classified as ISCED code 3 or who completed a non-tertiary, post-secondary qualification (ISCED code 4). The equivalent educational levels were coded for the non-FFS sample survey datasets of each country. These additional survey data both increased total sample sizes and extended the period of observation to later years. They are: for Italy the 1998 Multipurpose survey (ISTAT 2000); for Spain the 1999 Fertility Survey; and for the United States, the 1995 Current Population Survey. Using the constrained estimation method of Rendall et al (2008), we first pooled person-years across the sample surveys in each of these three countries and then constrained to population age-specific first birth probabilities. We compare sample sizes and educational attainment between the 1995 and subsequent years' surveys in Table A1.

Sample sizes are of each survey's number of female respondents born in the years 1951–55 and 1961–65 respectively. The pooled samples are highest overall in the USA, at 7,699 for the 1951–55 cohort and 9,150 for the 1961–65 cohort. Only 1,234 observations are available after 1995, however, and these are for the 1961–65 cohort only. The Italian pooled sample is the next largest, at 3,042 for the 1951–55 cohort and 3,766 for the 1961–65 cohort. The Spain pooled sample is approximately half this size, at 1,590 for the 1951–55 cohort and 2,104 for the 1961–65 cohort. Fortunately, however, for both Italy and Spain the larger of their two surveys is the one with the more recent data collection, and so the greatest amount of fertility exposure at older ages. In Italy, there are approximately three times as many women from both

cohorts in the Multiscopo (2,098 and 2,694 respectively) as in the FFS (944 and 1,072 respectively). In Spain's 1999 Fertility Survey, however, there are approximately double the number of person-years of women compared to the 1995 FFS: 1,051 and 1,339 in the Fertility Survey and in the FFS respectively for the 1951–55 and 1961–65 cohorts. Some understatement of the percentages of high-educated women in both Spain and the U.S. are seen in the high proportions of the 1960s cohorts with a high education respectively in the 1999 Spanish Fertility Survey and the 2002 U.S. than in the 1995 surveys of those two countries.

Population data

For Italy, Giorgi (1993) calculated first birth probabilities by single-year cohort. We used these probabilities, subsequently updated by Giorgi to 1997, as our population-level estimates of first-birth probabilities by single-year age.

For Spain, we observed numbers of first births by year of birth from 1980 onwards, the first year in Spain for which birth order is available. We used assumptions of constant distributions of births by parity to allocate parity to births before 1980 in the Spanish birth registration data. We followed a procedure based on reducing the eligible population of calendar-year birth cohorts by first births in earlier years to members of the cohort, and adjusting for mortality using life tables and adjusting for net migration using Census to Census change in the total cohort and assumptions about the parity distribution on net emigrants or net immigrants among the native born. This affects only the 1951–55 cohort, at younger ages. For both Spain and Italy, we checked our population estimates for conformity to those in the European Demographic Observatory database. For Spain this check was possible only for the 1961–65 cohort.

For the US, we used the set of age, year, and parity-specific first birth probabilities compiled by Schoen (2005) from the National Center for Health Statistics series.

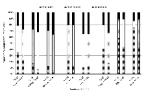


Figure 1.
Education distributions by country and cohort

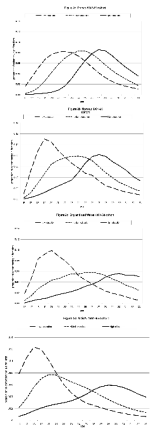
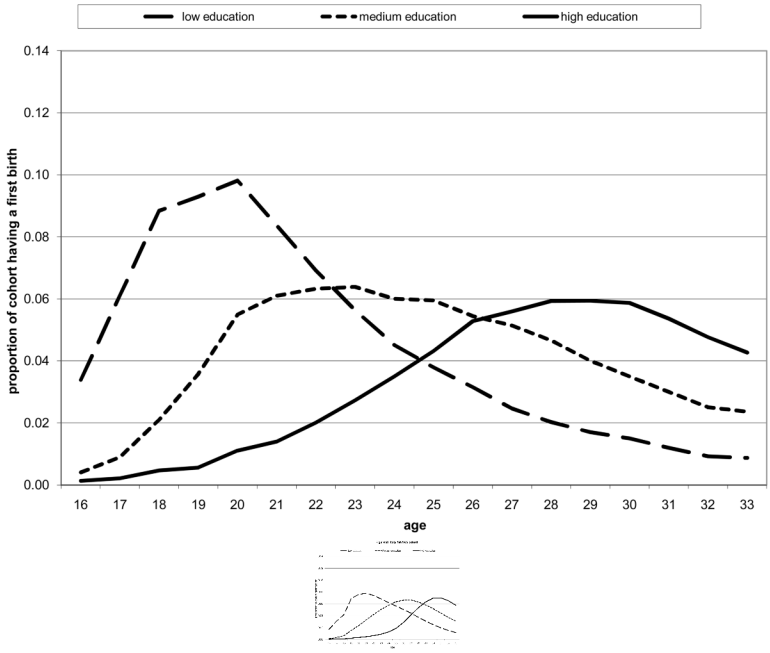


Figure 2e Greece 1965-69 cohort



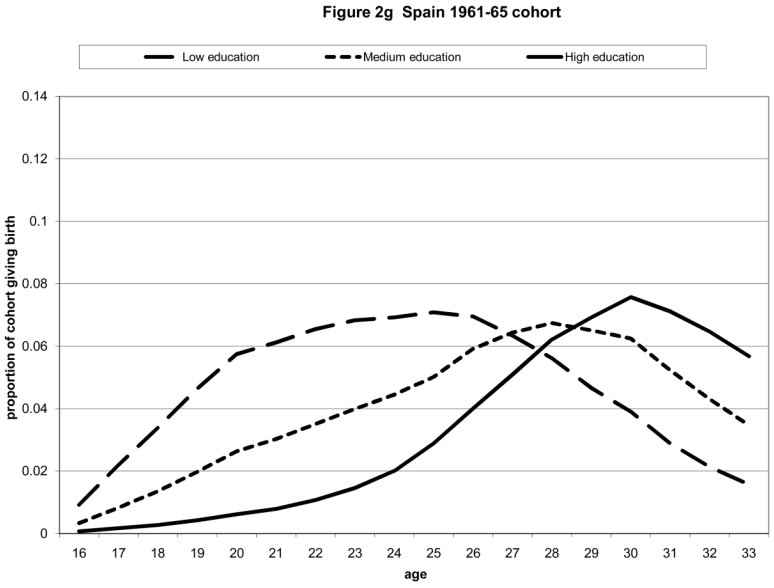


Figure 2.

Figure 2a France 1965–69 cohort
Figure 2b Norway 1961–65 cohort
Figure 2c England and Wales 1964–68 cohort
Figure 2d U.S.A. 1961–65 cohort
Figure 2e Greece 1965–69 cohort
Figure 2f Italy 1961–65 cohort
Figure 2g Spain 1961–65 cohort

Table 1

Percentage of the cohort having a first in given age ranges, and percentage of the cohort still childless at given ages, by cohort and education

	1960s cohort				1950s cohort						1960 – 1950 Change			
	per cent of 1st births			per cent of cohort childless	per cent of 1st births			per cent of cohort childless		per cent of cohort childless	in per cent of cohort having 1st birth in age interval			Change in per cent childless
A. Universalist Countries	**age < 21**	**21–25**	**26–33**	**at 33**	**age < 21**	**21–25**	**26–33**	**at 33**	**34–43**	**at 43**	**age < 21**	**21–25**	**26–33**	**at age 33**
France, 1955–59 & 1963–67														
low	24.7	38.1	21.3	*15.8*	29.1	41.3	18.1	*11.5*	2.6	*8.9*	−4.4	−3.2	3.3	*4.3*
medium	9.2	37.3	35.9	*17.6*	13.7	43.7	27.9	*14.7*	4.5	*10.2*	−4.5	−6.4	8.0	*2.9*
high	1.0	17.1	52.0	*30.0*	2.9	26.1	46.2	*24.8*	11.5	*13.3*	−1.9	−9.0	5.7	*5.1*
all	*10.5*	*31.9*	*37.0*	*20.6*	*16.6*	*39.1*	*28.5*	*15.8*	*5.4*	*10.4*	−6.1	−7.2	8.5	*4.8*
all (1950s cohort education distribution)	*12.7*	*33.2*	*34.4*	*19.7*										
Norway, 1951–55 & 1961–65														
low	36.6	33.8	17.1	*12.5*	46.4	33.2	10.4	*10.0*	1.8	*8.2*	−9.8	0.6	6.7	*2.6*
medium	15.4	38.2	30.8	*15.6*	26.3	41.4	20.0	*12.4*	3.4	*9.0*	−10.9	−3.2	10.9	*3.2*
high	4.2	20.5	49.6	*25.6*	8.4	31.7	39.8	*20.1*	8.0	*12.1*	−4.2	−11.2	9.9	*5.6*
all	*13.5*	*32.2*	*35.8*	*18.5*	*24.7*	*37.4*	*23.8*	*14.1*	*4.4*	*9.7*	−11.2	−5.1	11.9	*4.4*
all (1950s cohort education distribution)	*15.8*	*32.6*	*33.7*	*17.8*										
Norway, 1955–59 & 1965–69														
low	32.1	37.7	17.4	*12.8*	44.2	32.0	12.7	*11.1*	2.2	*8.9*	−12.1	5.7	4.7	*1.7*
medium	13.9	39.1	30.7	*16.3*	22.1	38.4	24.9	*14.6*	4.5	*10.1*	−8.2	0.7	5.9	*1.6*
high	3.2	18.8	51.1	*26.9*	7.1	25.5	44.8	*22.6*	9.6	*13.0*	−3.9	−6.7	6.3	*4.3*
all	*11.3*	*31.8*	*37.1*	*19.8*	*20.5*	*33.8*	*29.1*	*16.5*	*5.7*	*10.8*	−9.3	−2.0	8.0	*3.3*
all (1950s cohort education distribution)	*13.1*	*33.0*	*35.0*	*19.0*										
B. Anglo-American Countries														
U.K. (England and Wales), 1954–58 & 1964–68														
low	34.0	33.2	15.1	*17.7*	34.9	31.8	17.8	*15.6*	2.9	*12.7*	−0.8	1.4	−2.6	*2.1*
medium	12.7	26.6	34.2	*26.6*	15.5	30.6	31.3	*22.6*	6.5	*16.0*	−2.8	−4.0	2.9	*4.0*
high	3.5	11.7	39.3	*45.5*	5.6	19.5	42.2	*32.7*	11.8	*21.0*	−2.1	−7.8	−2.9	*12.8*
all	*13.6*	*24.5*	*32.7*	*29.2*	*18.6*	*28.6*	*29.9*	*22.8*	*6.6*	*16.2*	−5.0	−4.2	2.8	*6.4*

	1960s cohort				1950s cohort						1960 – 1950 Change			
	per cent of 1st births			per cent of cohort childless	per cent of 1st births			per cent of cohort childless		per cent of cohort childless	in per cent of cohort having 1st birth in age interval			Change in per cent childless
A. Universalist Countries	**age < 21**	**21–25**	**26–33**	**at 33**	**age < 21**	**21–25**	**26–33**	**at 33**	**34–43**	**at 43**	**age < 21**	**21–25**	**26–33**	**at age 33**
all (1950s cohort education distribution)	*16.5*	*25.2*	*30.2*	*28.1*										
U.S.A 70														
low	52.8	22.3	10.8	*14.1*	54.3	22.0	10.7	*13.1*	4.0	*9.1*	−1.5	0.3	0.1	*1.0*
medium	26.3	27.2	20.9	*25.6*	32.2	26.5	17.6	*23.7*	9.4	*14.3*	−5.9	0.7	3.4	*1.9*
high	8.0	12.8	27.0	*52.2*	12.2	17.8	25.3	*44.6*	23.5	*21.2*	−4.2	−5.1	1.7	*7.6*
all	*22.9*	*21.5*	*21.9*	*33.7*	*27.7*	*23.0*	*19.5*	*29.8*	*13.7*	*16.1*	−4.8	−1.5	2.4	*3.9*
all (1950s cohort education distribution)	*22.8*	*21.7*	*21.9*	*33.6*										
C. Southern European Countries														
Greece, 1955–59 & 1965–69														
low	39.9	29.2	13.9	*17.0*	39.0	36.4	12.3	*12.2*	2.5	*9.7*	0.9	−7.2	1.6	*4.7*
medium	13.1	30.8	30.6	*25.5*	15.4	41.5	24.8	*18.3*	5.7	*12.6*	−2.3	−10.7	5.8	*7.2*
high	2.8	14.0	43.0	*40.3*	4.2	25.2	40.3	*30.3*	11.7	*18.5*	−1.4	−11.2	2.7	*10.0*
all	*17.9*	*24.8*	*27.2*	*30.1*	*24.7*	*35.7*	*21.8*	*17.7*	*5.4*	*12.4*	−6.8	−11.0	5.4	*12.3*
all (1950s cohort education distribution)	*24.2*	*26.6*	*24.9*	*24.3*										
Italy, 1951–55 & 1961–65														
low	23.5	28.2	21.9	*26.5*	25.8	39.2	20.2	*14.7*	6.4	*8.3*	−2.4	−11.1	1.6	*11.8*
medium	5.0	18.4	31.7	*44.9*	8.2	28.2	32.2	*31.4*	17.6	*13.8*	−3.3	−9.8	−0.5	*13.6*
high	0.8	3.3	20.6	*75.4*	4.8	11.9	27.3	*55.9*	34.4	*21.5*	−4.0	−8.7	−6.7	*19.4*
all	*12.5*	*20.9*	*26.2*	*40.4*	*18.1*	*32.8*	*24.7*	*24.4*	*13.0*	*11.4*	−5.6	−11.9	1.5	*16.0*
all (1950s cohort education distribution)	*15.3*	*22.4*	*24.8*	*37.6*										
Spain, 1951–55 & 1961–65														
low	16.9	26.4	30.6	*26.0*	13.5	39.3	28.6	*18.5*	10.8	*7.8*	3.4	−12.9	2.0	*7.5*
medium	7.1	15.0	30.6	*47.3*	9.1	29.3	28.7	*33.0*	17.2	*15.7*	−1.9	−14.3	2.0	*14.3*
high	1.6	5.3	25.1	*68.0*	5.7	24.1	35.5	*34.7*	21.3	*13.4*	−4.1	−18.8	−10.4	*33.3*
all	*11.9*	*19.9*	*29.4*	*38.8*	*11.9*	*36.1*	*29.6*	*22.4*	*12.9*	*9.5*	0.0	−16.2	−0.2	*16.4*

	1960s cohort				1950s cohort						1960 – 1950 Change			
	per cent of 1st births			per cent of cohort childless	per cent of 1st births			per cent of cohort childless		per cent of cohort childless	in per cent of cohort having 1st birth in age interval			Change in per cent childless
A. Universalist Countries	**age < 21**	**21–25**	**26–33**	**at 33**	**age < 21**	**21–25**	**26–33**	**at 33**	**34–43**	**at 43**	**age < 21**	**21–25**	**26–33**	**at age 33**
all (1950s cohort education distribution)	*13.7*	*22.2*	*29.9*	*34.2*										

Data Sources: French Demographic Panel (EDP); Norwegian population and education registers; ONS Longitudinal Study (England and Wales);
1995, 2002 U.S. National Survey of Family Growth, 1995 U.S. Current Population Survey; 2001 Greek Census
1995 Italian Fertilty and Family Survey, 1998 Multipurpose Survey;
1995 Spanish Fertilty and Family Survey, 1999 Fertility Survey.

Note: Age is that attained in the current calendar year. This is, on average, half a year younger than age in completed years.

Table A1

Education Distributions and Sample Sizes by Country, Cohort, and Survey

	Italy			Spain			USA			
Cohort 1951–55	**Fertility and Family Survey (FFS)**	**Multiscopo**		**FFS**	**Fertility Survey**		**Current Population Survey**	**National Survey of Family Growth**		
Education	**1995**	**1998**	**Pooled Surveys**	**1995**	**1999**	**Pooled Surveys**	**1995**	**1995**	**2002**	**Pooled Surveys**
low	58.6	57.9	58.1	77.7	73.1	74.7	10.7	11.3	-	10.8
medium	30.2	31.1	30.8	12.1	11.4	11.7	54.1	55.5	-	54.4
high	11.2	11.0	11.1	10.1	15.5	13.6	35.2	33.3	-	34.7
Sample N	944	2,098	3,042	539	1,051	1,590	5,729	1,970	-	7,699
Cohort 1961–65	FFS	Multiscopo		FFS	Fertility Survey		Current Population Survey	National Survey of Family Growth		
Education	1995	1998	Pooled Surveys	1995	1999	Pooled Surveys	1995	1995	2002	Pooled Surveys
low	42.8	43.6	43.4	62.5	61.6	61.9	11.5	11.3	11.0	11.5
medium	45.6	45.3	45.4	17.6	14.5	15.5	52.9	55.5	49.3	53.2
high	11.6	11.2	11.3	19.9	24.0	22.6	35.6	33.3	39.7	35.3
Sample N	1,072	2,694	3,766	765	1,339	2,104	5,786	2,130	1,234	9,150