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Abstract

Contrary to the expected negative link between rising female education and fertility it has been shown that in Sweden (Sandström, 2014a) and many other Western countries (Van Bavel, 2014a; Van Bavel et al., 2015) fertility differentials across educational strata decreased sharply during the baby boom. Studies on contemporary data find that the field of education/occupation has a larger net effect than the level of education (Hoem, Neyer, & Andersson, 2006a; e.g. Michelmore & Musick, 2014a; Van Bavel, 2010). Little is however known about the fertility patterns among economically active women prior to the 1960s and how they changed over time. Using individual level data this paper investigates the fertility of women in different sectors of the economy in Sweden during the early expansion of female labor force participation and higher education during the first half of the 20th century. The analysis reaches three main findings. Firstly, there is a marked shift in the effect of female economic activity on fertility in the 1940s and 1950s in Sweden. During this period a strong convergence of fertility behavior across female economic strata occurs and a two child norm is established that has persisted in Sweden since then. Secondly, the negative impact of female economic activity especially for upper strata women is strongly reduced among women that came of age during the 1940s and 1950s. Thirdly, this was especially the case for upper strata women engaged in the so called ‘caring professions’ that exhibit by far the largest changes in behavior. The pattern found in contemporary Western contexts where women in healthcare and education have substantially higher fertility formed already during the 1940s and 1950s in Sweden. The finding of the study illustrates how the mid-twentieth century baby boom works as a “hinge” between contemporary fertility patterns and those that prevailed during the historical decline up until the 1930s.

Paper title: “Fertility differentials in Sweden during the first half of the twentieth century -the changing effect of female labor force participation and occupational field.”

Introduction

This paper addresses how female labor force participation and occupational field influenced family formation for Swedish women during the first half of the twentieth century. Increased

educational attainment and female labor force participation have been pointed out as an important shift explaining decreasing fertility in Western countries since the nineteenth century. Female economic activity and rising education is thought to increase the price of time for women and result in incentives to invest more in market activities and reduce the share of non-market investments. This results in a higher cost of childbearing and rearing and consequently in lower nuptiality and fertility (Becker, 1991; Willis, 1973). Incompatibility between the economic activity of women and family formation was indeed pointed out already by contemporary demographers in the 1930s and 1940s as a main cause for the “lowest-low” fertility levels experienced in Sweden in the 1930s (Van Bavel, 2010b).

Today, rising female education and labor force participation combined with a lack of gender-egalitarian norms and developed welfare state structures that reconcile work and family life is pointed out as a main structural determinant of the lowest-low fertility exhibited by many contemporary European countries (Anderson & Kohler, 2015; Esping-Andersen & Billari, 2015; Group, 2010; Billari & Kohler, 2004). However, contrary to this expected negative link between rising female education and fertility it has been shown that in Sweden (Sandström, 2014a) and many other Western countries (Van Bavel, 2014; Van Bavel m.fl., 2015) fertility differentials across educational strata decreased sharply as early as during the mid-twentieth century baby boom in the 1940s and 1950s.

Although we have some findings regarding the effect of education less is known about the impact of labor force participation prior to the 1960s. Also the constraints to family formation for women in different types of occupations during this period are only known on the basis of qualitative accounts. The primary reason that this issue has not been investigated further is the lack of individual level data with socio-economic information for the period covering the late stages of the fertility transition and the subsequent baby boom (for most Western countries late 19th – 1960s).

How fertility varied depending on the occupational field of the women is interesting as studies on contemporary data find that the field of education/occupation has a larger net effect than the level of education. Further, it has been shown that women in the so called “caring professions” in health care and teaching have substantially higher fertility than women employed in other sectors of the economy (J. M. Hoem, Neyer, & Andersson, 2006a, 2006b; Lappegård, 2002; Lappegård & Rønsen, 2005; Martín-García & Baizán, 2006; Neyer & Hoem, 2009; Van Bavel, 2010a). Women within the health care and educational fields also start their family formation earlier and have a lower chance to remain childless than women in other sectors with the same educational level (Michelmores & Musick, 2014). However, we do not know if such differences across sectors of employment were present before the 1960s and to what extent they changed during the baby boom. What we do know is that the right for married women to work was a frequently debated issue during the first decades of the 20th century among the largest female academic professions such as teachers and nurses (Å. Andersson, 2002; Florin, 1987; Frangeur, 1998). During the 1920s female labor force participation increased rapidly especially among young women in urban areas at the same time as fertility continued to fall (Stanfors, 2003, s. 81–84; Åmark, 2006).

In 1934, Sweden reached the lowest period fertility recorded in the world up until that time, when the TFR dropped to 1.71 children per woman. In the same year the so called “crisis in the population question” was declared by the Social Democratic intellectuals Gunnar and Alva Myrdal in a highly influential book (Myrdal & Myrdal, 1934), made the population question the center of political debate in Sweden in the 1930s and 1940s (Hirdman, 1989, s. 117). A population commission was formed in 1935 as well as a women labor commission in 1938, were the Myrdal’s and other members of the two commissions argued that the incompatibility

between wage labor and family formation especially for women had resulted in unsustainably low fertility that would result in population decline. Consequently, they argued that a population policy's that tried to limit the possibilities for female economic activity would be counterproductive and policy's with any hope of success should rather attempt to make marriage and childbearing more compatible with female labor force participation. In 1939 this debate resulted in a law that prohibited employers to dismiss women on the basis that they got married or had a child (Frangeur, 1998; Göransson, 2006; SFS 1939:171, 1939). Recent studies on the changes in the educational gradient of fertility during the baby boom in Sweden and other western countries indicate that women that achieved higher levels of education did not experience the same strong penalty on fertility during the baby boom as had been the case among highly educated women in pervious cohorts (Reher & Requena, 2014; Sandström, 2014b; Van Bavel, 2014). What we don't know is if this increase in fertility among highly educated women was a general trend that affected all highly educated women equally or if some groups spearheaded the change.

The paper addresses three central questions:

1. How did female labor force participation influence fertility during the first half of the twentieth century in Sweden and did the effects change over time?
2. Was there substantial differentials in fertility among gainfully employed women depending on their social strata during the first half of the twentieth century in Sweden and did the effects change over time?
3. How did fertility differ between women in different occupational groups belonging to the middle and upper social strata such as nurses and teachers that became more numerous after the 1930s when women entered higher education in greater numbers?

Data and method

This paper utilizes the recently developed POPLINK database housed at the Demographic Database, Umeå University, Sweden. The POPLINK database has primarily been developed for medical research to link the historical population registers to the modern registers at Statistics Sweden and The National Board of Health and Welfare. However, the source also gives unique opportunities for research on long term demographic processes stretching from pre-transitional times up until the present. The database contains rich longitudinal information on all vital events including: marriages, childbirths, divorces, moves within the region as well as detailed information on the labor market experience for more than 100,000 men and women living in the county of Västerbotten in Northern Sweden during the period 1900-1960 (Westberg, Engberg, & Edvinsson, 2016). The dataset thus covers both the fertility bust of the 1930s as well as the following baby boom in Sweden during the 1940s and 1950s. The parishes included in the database are distributed throughout the coastal region of Västerbotten and include more than 2/3 of the population in the province during the nineteenth and twentieth centuries. The economic development presents the typical traits of most Swedish regions; being mainly rural up until the early 20th century and thereafter characterized by rapid industrialization and a growing public sector. Västerbotten conform closely to the national trends in fertility although with somewhat higher levels of completed fertility up until the early 1960s, after which both period and cohort fertility exhibits an almost perfect match with the national average (Hofsten & Lundström, 1976, s. 101-106; Statistics Sweden, Population Register, 2015).

To analyze the transition to first, second and third birth for women in different socio-economic and occupational groups we use event history analysis in terms of non-parametric Kaplan Meier estimates of the proportion having experienced the event in question at age t . For the analysis 54,870 women born 1880-1939 are followed from the time they become at risk of experiencing a childbirth which we set to the year the woman turned 15 years of age. The simple reason for this choice is that we observe no childbirths of women younger than that in this dataset. Women moving in to the region with no accompanying children who has no records of prior childbirths in the church books are assumed to have not experienced first birth and enter the study at the age they come under observation. The women are followed from onset of risk until a birth is observed or the woman is censored due to either out-migration, death or reaching age 50. For women that were alive and present in the country in 1960 we can follow them also after outmigration from the POLINK area, as we have linked the data to the registers at Statistics Sweden (SCB). If the woman was not present in the registers at SCB and they out-migrated from the area covered by the POPLINK we set the censoring date to the time they out-migrated from the parishes under observation in Västerbotten.

To analyze differences across birth cohorts the women are divided in to three different cohorts according to the year they reach age 20. For women born 1880-1939 this gives us three groups 1900-1919, 1921-1939 and 1940-1959. These cohorts are used throughout the analysis to contrast women having most of their reproductive years prior to the baby boom (1900-1919) against woman that had their peak reproductive years around the shift from baby bust to baby boom in the 1930s (1920-1939) and additionally women that entered their reproductive years during the peak baby boom period in the 1940s and 1950s (cohort 1940-1959).

The main independent variable in the analysis is the socio-economic position of the woman prior the birth of the first child and how this predicts the incidence and timing of childbirths. This is determined by using the occupational information coded according to the HISCO-classification system for historical occupations. For the analysis of different social strata rather than specific occupational groups the HISCO-codes was coded into a social stratification indicator (SES) according to the Social Power coding scheme (SOCPO) developed by Van de Putte and Miles (2005). If more than one occupation was registered prior to the birth of the first child the variable was set to the highest achieved SES of the individual prior to experiencing first birth or being censored. When specific occupational groups are analyzed we have binned the occupations according to their HISCO minor group's e.g. Teachers having all HISCOs in the group 13.XXX and Nurses having all HISCOs in the group 07.XXX (Van Leeuwen, Maas, & Miles, 2004).

The focus on specific occupational groups within the middle class and elite is motivated by two main arguments. Firstly, previous research has shown that the educational gradient was reduced for women with secondary and post-secondary education in Sweden during the baby boom but little is known regarding if there were large variations between middle class women in different sectors. Research on women born from the 1950s show that individuals in the so called caring professions such as nurses and teachers have substantially higher fertility than other women with post-secondary education. However, we do not know when these patterns formed and to what extent they were present already during the first half of the twentieth century.

Secondly, even if we know that the negative impact of female education on fertility decreased during the baby boom, we do not know how female economic activity prior to first childbirth impacted fertility. Also we do not know to what extent the impact of female economic

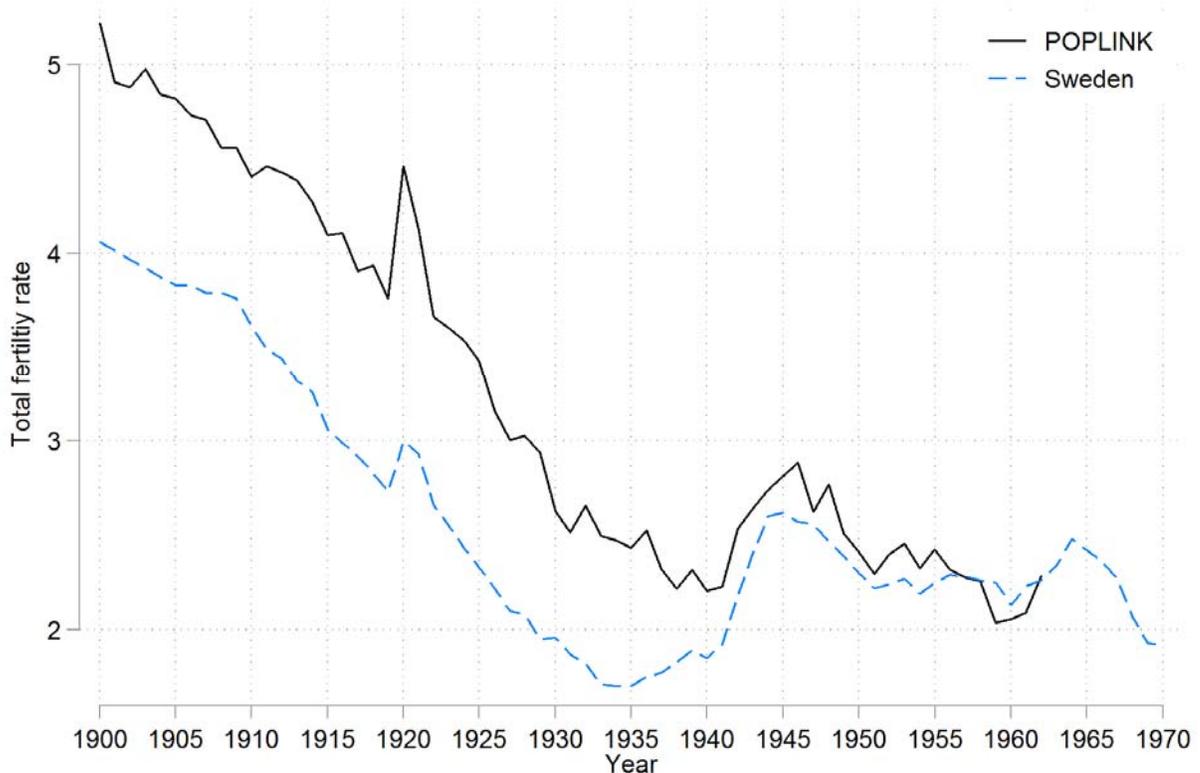
activity differed across social strata or between specific occupations that required higher education.

The large sample size and quality of the occupational data in the POPLINK database makes it possible to do a detailed analysis of how female occupational status influenced fertility over a long period of time covering both the late stages of the fertility transition as well as the subsequent baby boom in Sweden.

Results

Figure 1 shows the total fertility rate (TFR) for the included parishes in Västerbotten (1900-1962) compared to the corresponding numbers on the national level (1900-1970). During the period leading up to the Second World War fertility in Västerbotten was substantially above the average levels of the country as a whole. These differences reflect the tendency for the fertility decline to be slightly delayed in the northern part of Sweden and that the decline started from higher pre-transitional fertility levels in the North as opposed to the South (Hofsten & Lundström, 1976, s. 96). The break in the trend and subsequent recovery of the total fertility rate for Västerbotten during the 1940s and 1950s is still substantial. From the low in 1940 the TFR increases from 2.2 children per woman to 2.9 in 1946 and the TFR continues to stay above the 1940 level in to the latter part of the 1950s when the TFR for Västerbotten converges with the average rate for the country as a whole (Hofsten & Lundström, 1976, s. 101–106; Statistics Sweden, Population Register, 2015). In sum the close match to the trend in the rest of the country and the marked increase in period fertility during the baby boom show that the data from Västerbotten can be used to analyze the fertility swings during this period.

Figure 1: Total fertility rate (TFR) 1900-1963 in the POPLINK-sample from Västerbotten and in Sweden 1900-1970



Source: POPLINK-database, Demographic Database, Umeå University and Statistics Sweden (2002:95)

To understand fertility changes during the period under study it is important to take nuptiality and timing of marriage in account. Previous research show that the proximate cause for increased fertility during the baby boom was earlier and more universal marriage in the cohorts born after 1910 (Glass, 1968; Caldwell, Caldwell, Bracher, & Santow, 1988) and that this link was especially strong in Sweden (Van Bavel & Reher, 2013, s. 273). During the fertility boom in the 1940s the propensity to marry and to do this at a younger age increased sharply. Given the strong link between marriage and fertility at the time this meant that couples were exposed to the risk of childbearing for longer periods of time and during the most fertility period of their reproductive life. This meant that more couples ended up with more children than they would have if they had married later.

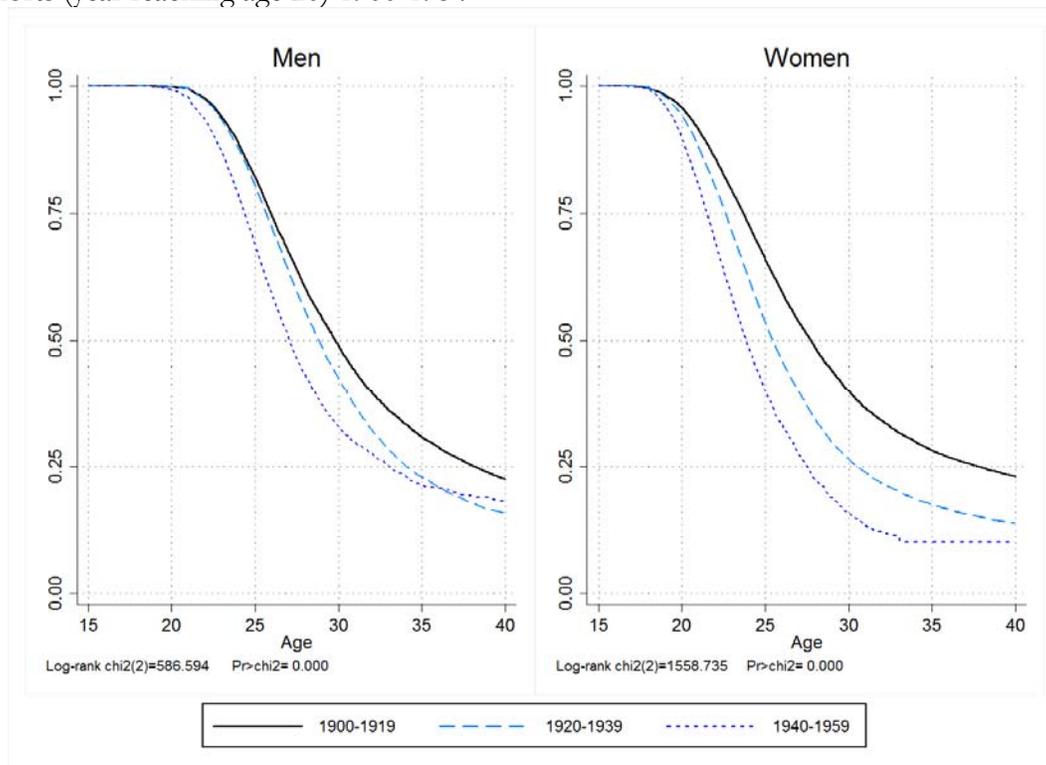
Figure 2 shows Kaplan-Meier survival estimates of the proportion of never married men and women as a function of age for the three risk cohorts (year reaching age 20) in the POPLINK-sample. As seen in Figure 2 it is clear that the increase in period fertility during the baby boom in Västerbotten occurred in tandem with very strong increases in nuptiality typical of settings that experienced substantial recoveries of fertility during the mid-twentieth century.

Two major shifts can be seen in Figure 2, firstly substantial drops in the median age at marriage and secondly an increased proportion of ever married individuals at age 40. These changes are evident for both men and women, but the shift towards younger ages at marriage are more substantial for women. That women changed their behavior more than the men also explain why nuptiality had a strong impacted on fertility as the age-component of fecundity is more substantial for women than for men. A comparison between individuals in the first risk

cohort, that turned 20 between 1900-1919 and had most if not all their reproductive years prior to the onset of the baby boom, and the last (1939-1959) that came of age during the peak baby boom years, show substantial differences both regarding the number of unmarried at age 40 and especially in terms of an earlier timing of marriage.

For the first cohort nearly 25 % of both men and women remained unmarried at the time they turned 40, while this proportion drops to 20% for men and to only 10% for women in the 1940-59 risk cohort. However, the big change is rather in the timing of marriage as the median age drops from 27.7 to 23.8 years for women and from 30.0 to 26.5 years for men. The age when 75% of the cohort had married changed even more drastically, for women it decreases by approximately 10 years to just 27.5 years. This illustrates the massive change in marriage behavior among women that contributed to the baby boom.

Figure 2: Proportion of never married men and women as function of age for different at risk cohorts (year reaching age 20) 1900-1954



Source: POPLINK-database, Demographic Database, Umeå University

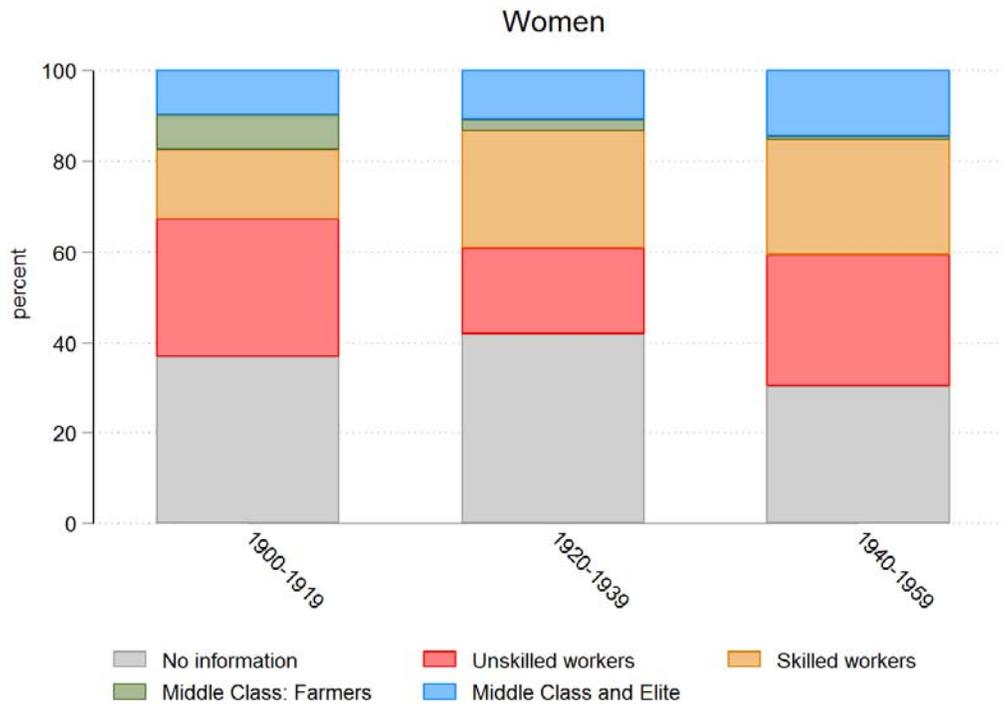
In Figure 3 the relative distribution of social strata (SOCPO-classification) is shown for the three cohorts under study based on the best occupation recorded prior to or at the time of the first birth. The highest SOCPO-category 'elite' mainly comprised of higher professionals with university degrees have been merged into the category 'middle-class' since less than 1% of all women belonged to this stratum. This is because teachers and nurses are all counted as lower professionals/middle-class in the SOCPO-classification rather than elite/higher professionals. To further reduce complexity the categories semi-skilled and skilled workers

have been merged into one category as they were found to exhibit almost identical fertility patterns.

Unfortunately there is little information about how the socio-economic composition of the female labor force developed during the first half of the century in the current literature and research has primarily focused on changes in the overall levels of participation (Silenstam, 1970; Stanfors, 2003; Åmark, 2006). For women the strong increase of female labor force participation seen between 1920-1939 cohort and those that came of age during the 1940s and 1950s is in line with previous research for the national level in Sweden. For unmarried women aged 20-39 the employment rate on the national level increased from approximately 55% in the 1920s to around 75% of the women in this age-group in 1950 (Silenstam, 1970, s. 105), which corresponds fairly closely to the figures found in Figure 3.

Regarding changes in the socio-economic composition the increase of economically active women in the last risk cohort is primarily explained by an increase of women in middle-class having middle-class occupations as well as more women working in unskilled occupations. Looking more closely on the changes in occupational titles across the cohorts it is clear that the growing middle-class is primarily explained by an increased number of clerical personnel working in offices and various administrative jobs especially in the last risk cohort. However, teaching and nursing is by far the most common occupations among women in the middle-class as more than 50% of the middle-class category consist of these type of occupations although their relative share decreases in the last risk cohort due to a growing number of women doing various white-collar clerical work. This illustrates that the labor market for qualified women started to get more diversified during the 1940s and 1950s in terms of expanding out of the typical female white collar occupations in education and healthcare. Across the cohort's female farmers nearly vanishes, from a small group (7 %) to only 0.5 % amount women in the 1940-59 cohort.

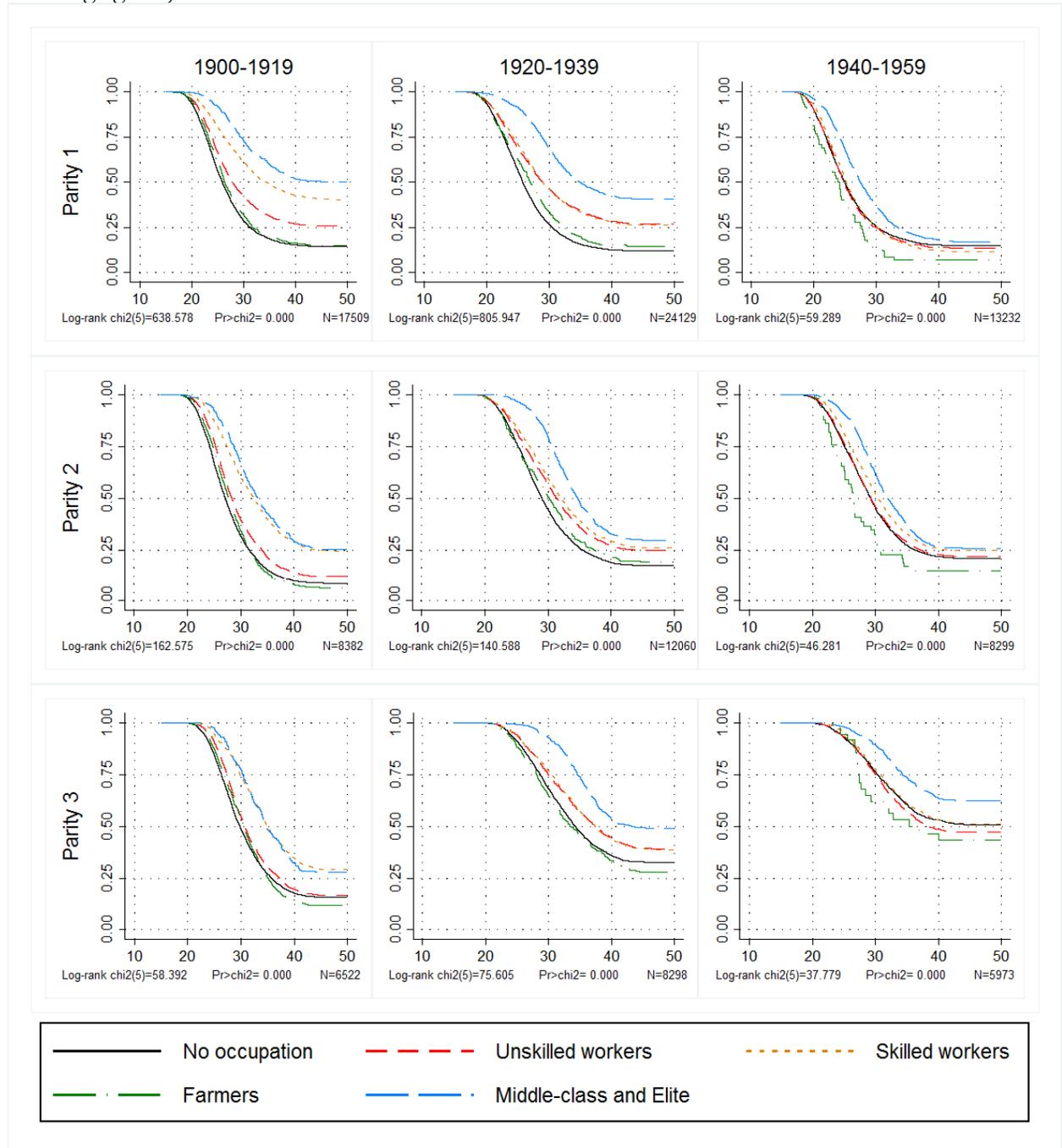
Figure 3: Relative distribution of socio-economic strata for at risk cohorts (year reaching age 20) 1900-1959 for Swedish women in Västerbotten county.



Source: POPLINK-database, Demographic Database, Umeå University

After covering the general development in period fertility, nuptiality and changes in the socio-economic composition of women we now turn to the main focus of the analysis in terms of fertility differentials according to socio-economic strata and occupational field.

Figure 4: Kaplan-Meier estimates of the proportion not having experienced first, second and third birth as function of the woman's age by socio-economic strata and at risk cohort (year reaching age 20) 1900-1959.



Source: POPLINK-database, Demographic Database, Umeå University

Transition rates to first, second and third child in different female socio-economic strata for women born 1880-1939

Figure 4 gives the Kaplan-Meier estimates of the proportion not having experienced first, second and third birth as function of the woman's age by socio-economic strata and risk cohort. Looking at the general changes over time what stands out is a strong convergence of fertility behavior among the women that entered their childbearing years during the baby boom. Over time there is a sharp reduction in the difference between economically active women and those outside the labor market in terms of female employment being less and less negative for fertility outcomes. There is a sharp reduction in the number of childless women as well as a strong tendency for more and more women to stop childbearing after having their second child. This is in line with previous research that have stressed the increased significance of a two-child norm in Sweden during the baby boom (Sandström, 2014a; Statistics Sweden, 1992, s. 6–11).

Regarding the socio-economic patterns, it is clear that the women exhibiting the by far the biggest changes in behavior are women in the middle-class/elite strata where employment in general required secondary or tertiary educational qualifications. Women in skilled worker positions that also required relatively high qualifications in terms of having secondary education exhibit similar substantial changes in behavior across the cohorts. Unskilled women and especially women registered as farmers on the other hand appear to have experienced less constraints and/or a stronger preference to form a family. Being economically active is clearly less negative for their fertility than what is the case for women in the skilled and middle-class strata's. However, in the first two risk cohorts that have a substantial part of their reproductive history prior to the baby boom, also unskilled women exhibit higher proportions of childless at age 50. This highlights that female gainful employment regardless of the educational requirements clearly was at odds with family formation for women prior to the baby boom although the negative impact varied along a strong negative socio-economic gradient.

In the *first risk cohort* made up of women that had their peak reproductive years during the rapid fertility decline in the first three decades of the century the differences between economically active women and those with no record of having an occupation were large. The general pattern found in Figure 4 is a strong negative SES-gradient for economically active women where the highest middle-class/elite strata apparently experienced strong barriers to family formation. In the first risk cohort approximately 50% of the middle-class women never experienced a first birth. Comparing them to the groups that has no record of being employed prior to having a child or being censored only 15% of these women remained childless.

For women in the first risk cohort (1900-1919) transition rates to second and higher parities after experiencing a first birth remained high during the late stage of the fertility decline reflecting the typical Northern European fertility regime described by John Hajnal (Hajnal, 1965, 1982). In Northern Europe marriage was on average much later than in southern Europe and a substantial proportion of women remained unmarried and ultimately childless. However, cohort fertility rates still reached levels substantially above replacement as married couples on average had large families. Still there is some SES-differences also in the transition to parities above 1 during among the women belonging to the first cohort (1900-1919). It is clear that stopping at only 1 or 2 children were much more common for women in middle-class and skilled worker occupations indicating both that even when they formed a family they tended to be much more prone to stop childbearing at low parities and in this sense acted as early adopters of the shift to the small family sizes of 1-2 children typical of most post-transitional societies in Europe.

For women in the *second risk cohort* that entered their twenties during the late stage of the fertility decline and early baby boom years (1920-1939) socio-economic patterns had only changed marginally as opposed to the prior cohort and the general trend is one of continuity rather than a radical shift. The negative SES-gradient had to some extent weakened especially for skilled women but it remained strong for the more qualified women in the middle-class. Looking at the transition rates to parity 2 and parity 3 it is clear that the most substantial change in this cohort of women is that the shift towards a two-child norm is well underway. This is reflected by a general drop across all strata's in the transition rate to parity 3.

Changing the focus to the last risk cohort (1940-1959) it is clear that these women experienced a major shift in the way that female economic activity impacted fertility. Socio-economic differences the transition into motherhood are almost eliminated apart from some postponement of first birth among women in the middle-class that on average had the longest education. Still, even though they had their first child later than women in the other SES-strata's the proportion of childless at age 40 is almost as low as in the other social strata's. Interestingly, even though all SES-groups increase their transition rates to the first child, women having no record of economic activity do not but rather show a slight increase in the proportion of childless.

Much of the same changes as for parity 1 is also apparent in the transition to parity 2 where SES differentials almost disappear. The proportion progressing to the second child remains high indicating the growing significance of the two child norm in the peak baby boom cohort. This pattern of a growing proportion of couples having exactly 2 children is further illustrated by the rather substantial fall in the proportion progressing to parity 3 among women in the 1940-1959 cohort were only 35-60 %, depending on which group, continued with a third child compared to 70-90 % in the first risk cohort. Here we find an interesting difference between women in the middle-class and women in the other social strata's in terms of middle-class women being by far the most prone to stop childbearing at exactly 2 children. We know that the difference in family sizes decreased across the baby boom cohorts and reached a minimum with women born in 1945 that reached their twenties in the mid-1960s when the baby boom shifted to the baby bust of the 1970s (Statistics Sweden, 1992, s. 6–11). Here we only include women born up until 1939 but the results indicate that middle-class women acted as leaders in this development towards a convergence in family sizes and more and more families choosing to have exactly 2 children.

Transition rates to first, second and third birth in different female middle-class occupations for women born 1880-1939

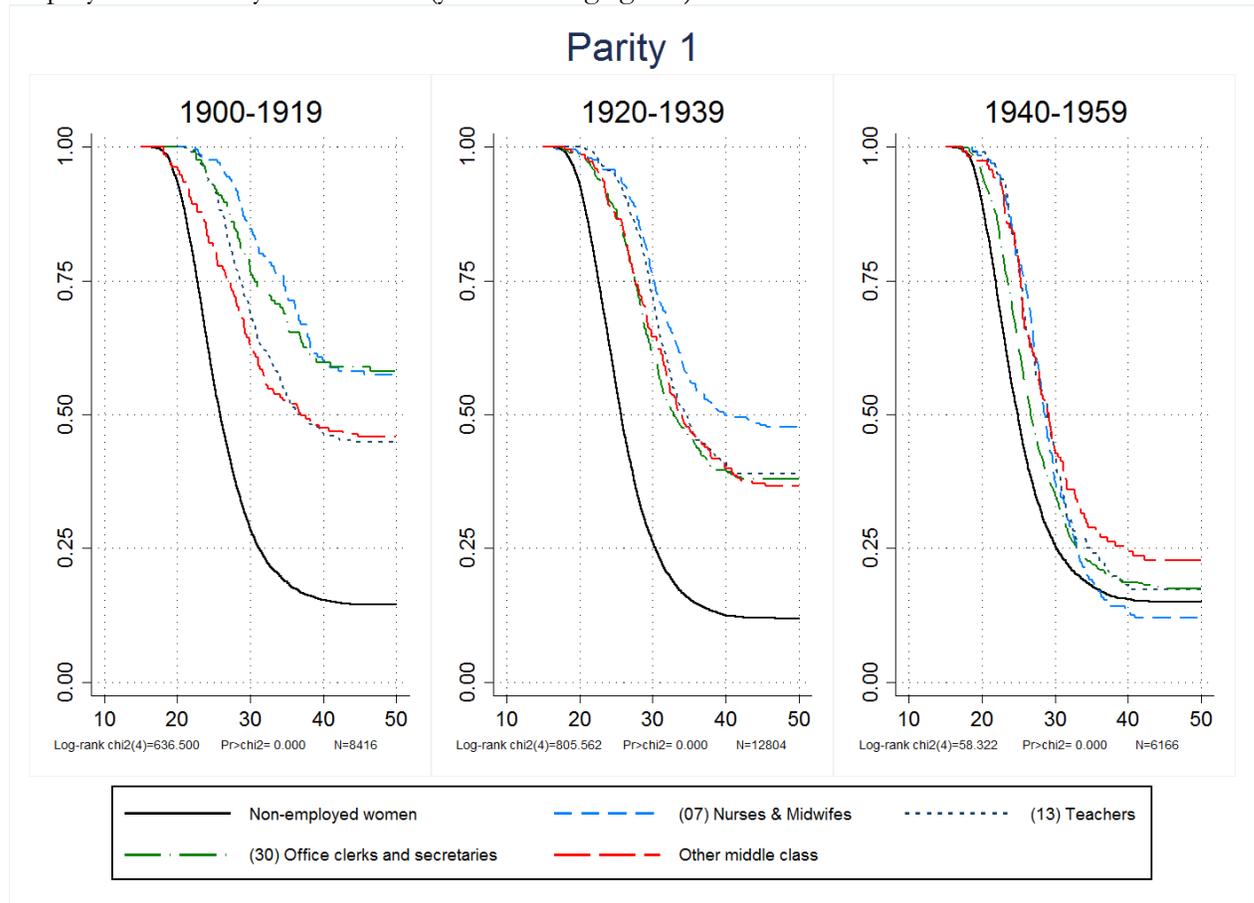
Based on the results for the broader socio-economic groups, as operationalized with the SOCPO-classification, it is evident that middle-class and elite women experienced the most substantial changes in fertility behavior during the shift from baby bust of the 1930s to the baby boom of the 1940s and 1950s. However, it is unclear if these changes occurred evenly for all economically active white-collar women or if the so called "caring professions" in health care and teaching spearheaded the change. We know that these groups had substantially higher fertility than other middle-class women in the cohorts born from the mid-1950s but fertility differentials according to occupational field

for women that produced the baby boom is so far unknown. To investigate these issues we will look at the fertility pattern of women in different occupational fields in the middle-class and compare them to women that remained outside the labor market across the risk cohorts 1900-1959. In the analysis we choose to differentiate between 3 different HISCO-minor groups: (07) Nurses and Midwives, (13) Teachers and (30) Office clerks and Secretaries that

together make up approximately 85% of all women classified as middle-class/elite. The remaining 15 % is binned into a separate category labeled 'other middle class'. Although this group is heterogeneous it contains a substantial number of higher professionals especially in the two later cohorts categorized as elite in the SOCPO classification. Further we use women having no record of being economically active prior to first birth or being censored as a comparison category that is contrasted against the fertility patterns found among middle-class women.

In Figure 5 the Kaplan-Meier estimate for transition to parity 1 is shown for different middle-class occupations according to the minor group HISCO-classification of the occupation. In all occupational groups within the middle class the proportion of childless women decreases throughout the period although there are differences in the timing and to what extent levels of childlessness decrease across different occupations within the middle-class. Looking at the separate occupations, it is clear that the same type of convergence of childbearing behavior that is evident for different social groups is also occurring within the middle-class. Also in the case of the middle-class we start out with big differences between different occupations but end up with much more similar behavior in the last risk cohort that became at risk during the peak baby boom years. It is clear that postponement as well as ultimate childlessness was very high for women that were employed in middle-class occupations during the first decades of the twentieth century when fertility was declining rapidly on the aggregate level. As we saw in Figure 4 about 50 % of all middle class women in the earliest cohort remained childless. However, there are marked differences within the middle-class where two clusters are clearly distinguishable in the first and second risk cohort.

Figure 5: Kaplan-Meier estimates of the proportion not having experienced first birth as function of the woman's age in different female middle-class occupations compared to non-employed women by risk cohorts (year reaching age 20) 1900-1959.



Source: POPLINK-database, Demographic Database, Umeå University

Firstly, nurses and women employed in clerical occupations stand out as the ones experiencing the greatest constraints to family formation during the first decades of the twentieth century where approximately 60 % of these women remained childless.

Secondly, teachers and women in other middle class occupations, that exhibit substantially higher transition rates to first birth compared to nurses and clerical workers although their levels of childlessness were far higher than women outside the labor market.

Across the risk cohorts there is a very large decrease in the levels of childlessness for all middle-class women but the most striking difference is how nurses and midwives switch from having the highest levels of childlessness to clearly having the lowest. This shift must be viewed as extraordinary. During a period of twenty years between the second and third risk cohort shown in Figure 5 the nurses and midwives moved from a situation where 47 % of them remained childless at age 50 to a situation where only 12 % never formed a family. This low proportion of childless women is not only low within the middle class; it is also lower than the corresponding number among non-employed women.

A contributing factor to this very marked change in behavior is likely the new law on female employment security from 1939 (Frangeur, 1998; SFS 1939:171, 1939, s. 171). The law from 1939 made it illegal for employers to fire women if they got engaged, married or pregnant

which made the alternative cost of family formation decrease for women with relative large investments in labor market skills and educational capital. It is clear that the incompatibility between female economic activity and marriage decreased markedly for women that entered their twenties during the first breakthrough period of the Swedish welfare state starting in the late 1930s. It is also clear that changes to the provider model was underway that lead to substantial increases in the share of the female labor force that were married. Married women only made up 10% of the female workforce in 1930 but their relative share had increased to 28.8% in 1950 and to 44.1% in 1960 just prior to the second peak of the Swedish baby boom (Frangeur 1998, 365).

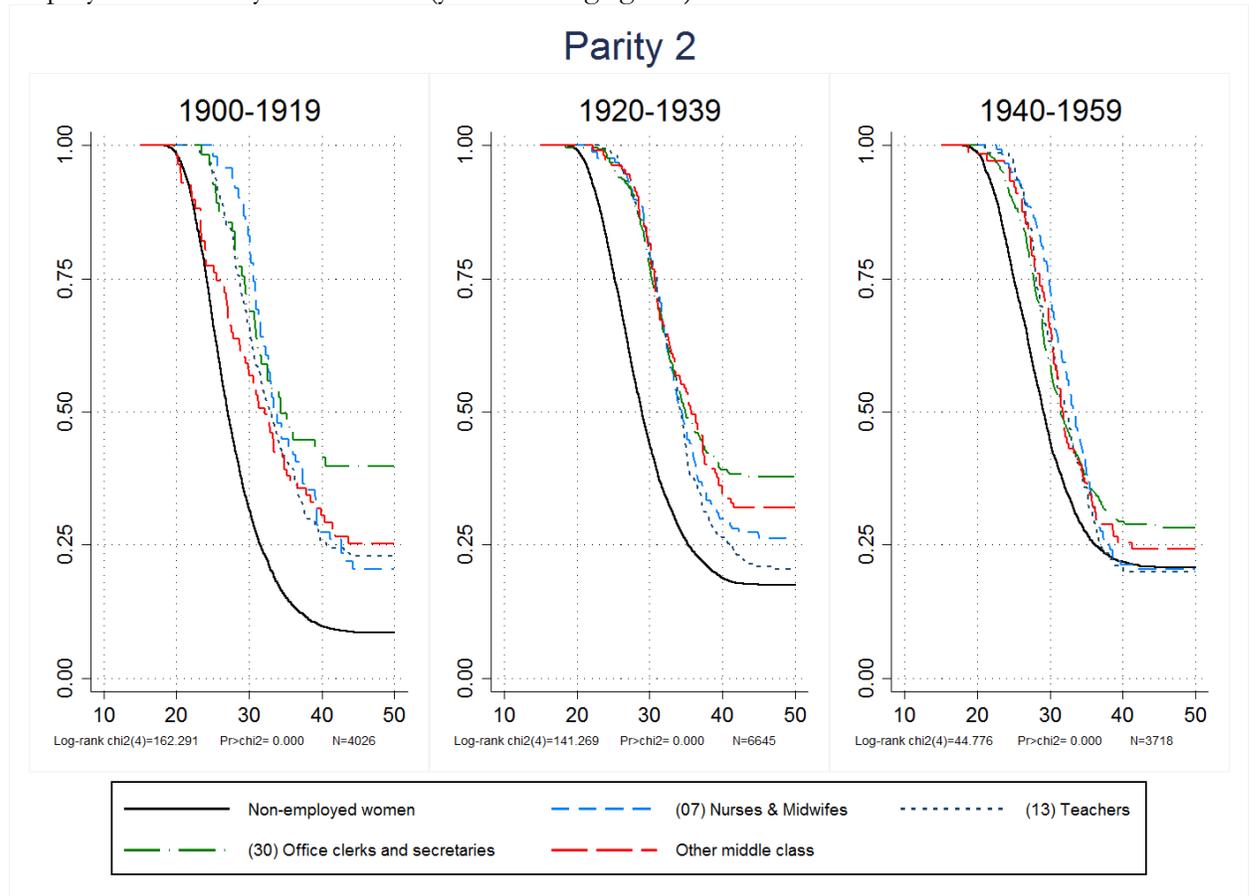
Many of the pronatalist reforms introduced after the report of the Population Commission in 1936 were explicitly designed to reduce the obstacles to marriage and childbearing for gainfully employed women. The new law of female employment protection passed by parliament in 1939 made all employers with more than 4 employees liable if they fired or made unfavorable changes to working conditions for a woman when she got engaged, married or pregnant. Further, a right to 3 months of maternity leave with pay that was further extended to 6 months in 1945 was implemented. The maternity benefit was not unsubstantial and most privately employed women received about 40% of the mean monthly female salary in benefits while government employees received even higher benefits (Frangeur 1998, 320–21). The social democratic government stated in the bill from 1939 that the intention of the law was to increase the possibilities for women to “combine marriage and motherhood with gainful employment” (Bill nr.114 1939).

That attitudes regarding the combination of family and employment for women in healthcare were changing is also evident from discussions within the nurses’ union during the mid-1940’s where married nurses were discussed as something common which only 15 to 20 years prior would have been regarded as a fringe behavior (Andersson, 2002:203-204). In the last risk cohort that turned 20 during the peak baby boom period in the 1940s and 1950s we can also see the formation of the high fertility pattern found among women in the caring professions as especially nurses but also teachers reach the lowest levels of childlessness and as we will find out below also the highest transition rates to parity 2.

It is also worth mentioning that women in white-collar clerical work also exhibit large decreases in childlessness. Although they do not reach quite as low levels as the ones found among nurses and midwives the decrease across the risk cohorts is larger than the one found among teachers. That the group defined as other middle-class change their behavior least of all the groups is in line with our expectation. This group contains a substantial proportion of higher professionals and that these women continue to have higher levels of childlessness is plausibly explained by their on average higher levels of investment in educational capital and higher alternative cost of childbearing in a setting where institutional support for working mothers was still very rudimentary.

Figure 6 shows the proportion progressing to have a second child by risk cohort and age. The tendency for middle-class women employed in teaching and healthcare to stand out by exhibiting the highest transition rates in the baby boom cohorts (1940-1959) is further reinforced in the transition to parity 2. In the two last risk cohorts, that both contributed to the baby boom, teachers and nurses have markedly higher transition rates than other middle-class women and reach the same levels as non-employed women in the last risk cohort.

Figure 6: Kaplan-Meier estimates of the proportion not having experienced second birth as function of the woman's age in different female middle-class occupations compared to non-employed women by risk cohorts (year reaching age 20) 1900-1959.



Source: POPLINK-database, Demographic Database, Umeå University

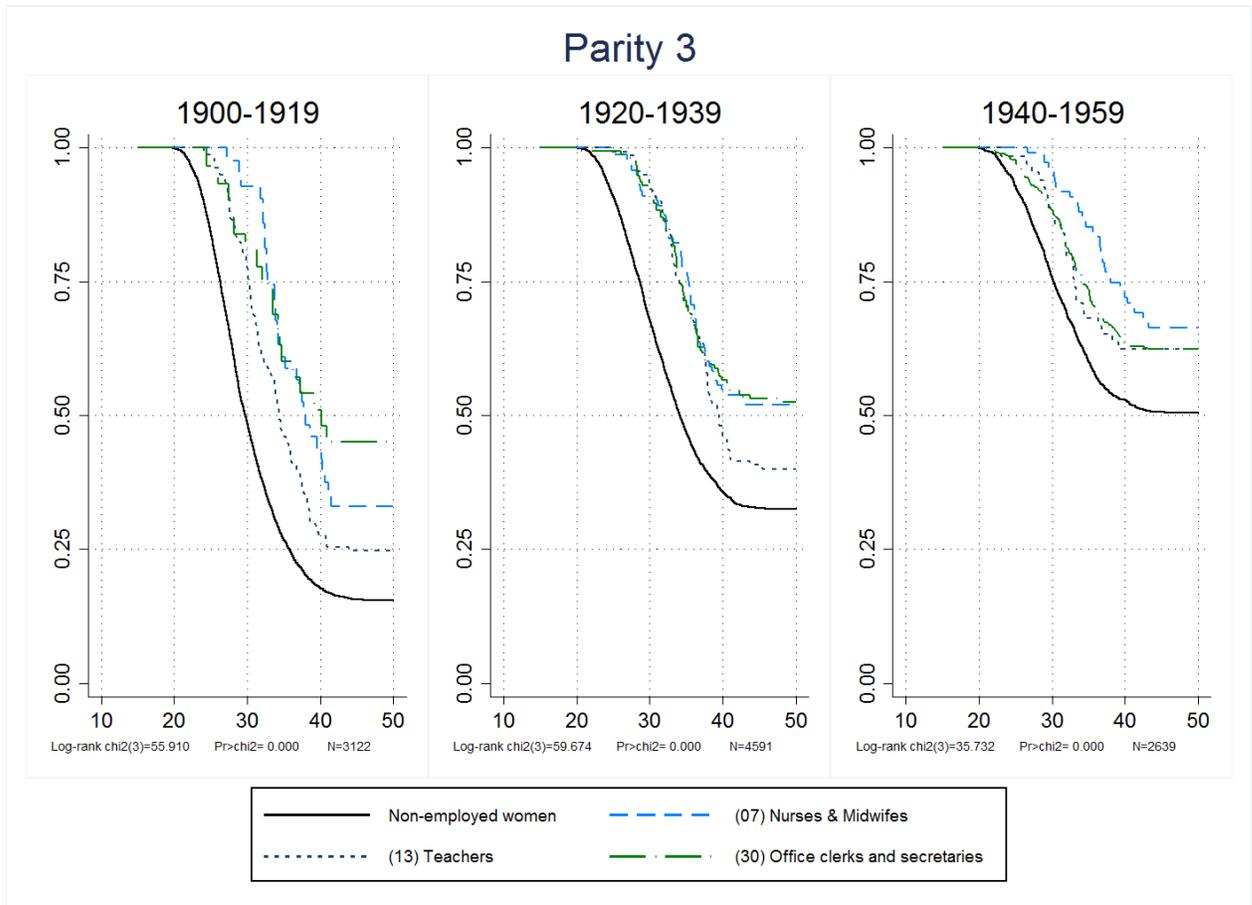
One of the most notable results for parity 2 is the low transition rates of the office clerks and secretaries across the risk cohorts. Women in the clerical occupations where either constrained to, or choose to, have small families and they stopped childbearing already after the first child to a higher degree than other middle-class women. The group 'other middle-class' show a similar pattern as women in clerical occupations in the last two cohorts, although they reach somewhat higher transition rates to child two compared to office clerks and secretaries given that they had progressed to the first child.

Lastly the transition to parity 3 for middle-class women is shown Figure 7. Here women in the group 'other middle class' had too small numbers to be meaningfully analyzed as they were fewer than 50 women in each of the risk cohorts. Consequently, we removed them from the analysis of parity 3.

What stands out across the risk cohorts is the strong shift towards smaller family sizes as shown by the rapidly falling proportions progressing to a family size of 3 or more children. This is the case both within the middle class as well as among women outside the labor market (see also Figure 4). In the first two cohorts teachers deviate from the other occupations in the middle class by having a higher probability to have a third child. This higher probability for teachers to have a third child is particularly strong for the second cohort that turned 20 years

between 1920-1939, in this cohort the survival curve for teachers is closer to the one for unemployed women than it is to other groups within the middle class. This is not the case for the last cohort where all occupations within the middle class show a similar probability to have a third child, a probability between 12 % and 16 % lower than unemployed women.

Figure 7: Kaplan-Meier estimates of the proportion not having experienced third birth as function of the woman’s age in different female middle-class occupations compared to non-employed women by risk cohorts (year reaching age 20) 1900-1959.



Source: POPLINK-database, Demographic Database, Umeå University

Concluding discussion

This paper set out to study how female labor force participation and socio-economic strata influenced fertility for women born between 1880 and 1839. Two apparent and general developments can be seen throughout the period of observation 1900-1959, more women got married and formed a family, however the size of these families’ shrinks and the proportion of families that have family sizes of 3 or more children is reduced by more than 30 % indicating a strong shift towards a two child norm during the peak baby boom decades of the 1940s and 1950s.

Regarding the changes in the impact of the woman’s socio-economic position, the main conclusion is that the negative impact of female economic activity, that was substantial during the fertility decline, essentially disappears among women that had their peak reproductive years

during the baby boom. This result is in line with the finding that the educational gradient of fertility decreased strongly during the baby boom in both Sweden (Sandström, 2014a) and many other Western countries (Van Bavel *m.fl.*, 2015) and that this was also reflected in the way actual labor market activity influenced fertility.

The main pattern found is a strong convergence of childbearing behavior across the different social-economic strata where a two child norm was combined with very low levels of childlessness almost regardless of the woman's socio-economic standing and labor market attachment. It should be noted that we do not consider if and to what extent women continued to be gainfully employed after having their first child. Institutional support for working mothers was still weak during the 1940s and 1950s and employment of mothers did not increase substantially until the late 1960s. Therefore, we can assume that most of the women in the cohorts under analysis here had at least some years out of the labor market when children were young. However, women with larger investments in labor market human capital such as those having longer educations can be assumed to have continued work after first birth to a higher degree than women with no record of being employed. Also it is likely that these women returned to the labor market earlier and to a higher degree than "never employed" women which in turn would raise their alternative cost of childbearing relative to women with a weaker labor market attachment. Therefore, it is intriguing that the results show that especially women employed in the higher social strata occupations changed their behavior by far the most in the baby boom cohorts. One explanation that highly educated women increased their fertility the most is surely the radically improved employment security for mothers that was introduced in 1939. This law prohibited employers to dismiss women when they got married or had a child. Consequently, women having secondary and tertiary education was not forced to choose between employment and family formation to the same extent as before and were able to leverage their investments in to labor market human capital to a larger extent even when they choose to have children.

Lastly, we find that there were also differences within the middle-class. Women engaged in the so called 'caring-professions' in healthcare and education made up a large proportion of the growth of women with high education in the baby boom cohorts (primarily women born 1920-1939) and these women that had the largest increases in fertility when women within the middle-class is compared to one another. We know that women in these sectors of employment reach substantially higher fertility in contemporary populations and that has been the case for women born since the 1950s in Sweden. What we can show here is that this pattern of high fertility among female nurses and teachers was established already during the 1940s and 1950s by women born during the 1920s and 1930s that had their peak reproductive years during the baby boom. Further, our results show that the women in caring professions in this cohort (born 1920-1939) were less likely to remain childless than other middle class women which was not the case for women born prior to 1920. This was especially the case for female nurses that reached substantially lower levels of childlessness than other middle class women during the baby boom.

Summarizing, the results shows how the fertility patterns established during the baby boom is the bridge that links the fertility regime of the fertility decline that ended in the 1930s, with its strongly negative SES-gradient, to the patterns found in Sweden today, where not only employment have become a prerequisite for female family formation (B. Hoem, 2000; Ministry of Social Affairs, 2001, s. 269–271; Statistics Sweden, 2002, s. 11), but also that recent cohorts of Swedish women with tertiary education have ended up having more children than those having only primary education (G. Andersson *m.fl.*, 2009). Going forward we need to investigate further what kind of economic, normative and institutional changes during the

baby boom that can explain why middle-class women and especially women in the 'caring professions' changed their fertility behavior to a much larger extent than other social strata. This will in turn likely give important insight into the dynamics of the baby boom itself.

References

- Anderson, T., & Kohler, H.-P. (2015). Low Fertility, Socioeconomic Development, and Gender Equity. *Population and Development Review*, 41(3), 381–407. <http://doi.org/10.1111/j.1728-4457.2015.00065.x>
- Andersson, G., Rønsen, M., Knudsen, L. B., Lappegård, T., Neyer, G., Skrede, K., ... Vikat, A. (2009). Cohort Fertility Patterns in the Nordic Countries. *Demographic Research*, 20, 313–352. <http://doi.org/10.4054/DemRes.2009.20.14>
- Andersson, Å. (2002). *Ett högt och ädelt kall: kalltankens betydelse för sjuksköterskeyrkets formering 1850-1933*. Univ., Umeå.
- Becker, G. S. (1991). *A treatise on the family*. Cambridge, Massachusetts: Harvard Univ. Press.
- Billari, F., & Kohler, H.-P. (2004). Patterns of low and lowest-low fertility in Europe. *Population Studies*, 58(2), 161–176. <http://doi.org/10.1080/0032472042000213695>
- Caldwell, J., Caldwell, P., Bracher, M., & Santow, G. (1988). The Contemporary Marriage and Fertility Revolutions in the West: The Explanations Provided by Australian Participants. *Journal of the Australian Population Association*, 5(2), 113–145.
- Esping-Andersen, G., & Billari, F. C. (2015). Re-theorizing Family Demographics. *Population and Development Review*, 41(1), 1–31. <http://doi.org/10.1111/j.1728-4457.2015.00024.x>
- Florin, C. (1987). *Kampen om katedern: feminiserings- och professionaliseringsprocessen inom den svenska folkskolans lärarkår 1860-1906*. Stockholm: Almqvist & Wiksell International.
- Frangeur, R. (1998). *Yrkeskvinna eller makens tjänarinna?: striden om yrkesrätten för gifta kvinnor i mellankrigstidens Sverige*. Lund: Arkiv.
- Glass, D. V. (1968). Fertility Trends in Europe since the Second World War. *Population Studies*, 22(1), 103–146. <http://doi.org/10.2307/2173355>
- Group, T. E. C. W. (2010). Europe the continent with the lowest fertility. *Human Reproduction Update*, 16(6), 590–602. <http://doi.org/10.1093/humupd/dmq023>
- Göransson, A. (2006). Från hushåll och släkt till marknad och stat. I S. Hedenborg (Red.), *Sverige - en social och ekonomisk historia*. Lund: Studentlitteratur.
- Hajnal, J. (1965). European marriage patterns in perspective. I D. V. Glass & D. E. C. Eversley (Red.), *Population in History* (s. 101–146). London: Edward Arnold. Hämtad från <http://www.popline.org/node/517620>

- Hajnal, J. (1982). Two Kinds of Preindustrial Household Formation System. *Population and Development Review*, 8(3), 449–494. <http://doi.org/10.2307/1972376>
- Hirdman, Y. (1989). *Att lägga livet till rätta : studier i svensk folkhemspolitik*. Stockholm: Carlsson.
- Hoem, B. (2000). Utan jobb inga barn [Without a job - no children? Fertility trends during the 1990s]. I *Välfärdens förutsättningar* (s. 119–139). Stockholm: Socialdepartementet.
- Hoem, J. M., Neyer, G., & Andersson, G. (2006a). Education and childlessness: The relationship between educational field, educational level, and childlessness among Swedish women born in 1955–59. *Demographic Research*, 14, 331–380. <http://doi.org/10.4054/DemRes.2006.14.15>
- Hoem, J. M., Neyer, G., & Andersson, G. (2006b). Educational attainment and ultimate fertility among Swedish women born in 1955–59. *Demographic Research*, 14, 381–404. <http://doi.org/10.4054/DemRes.2006.14.16>
- Hofsten, E., & Lundström, H. (1976). *Swedish population history : main trends from 1750 to 1970*. [Stockholm]: [LiberFörlag].
- Lappegård, T. (2002). *Statistics Norway Department of Social Statistics* (No. 18). Oslo: Statistics Norway Department of Social Statistics. Hämtad från https://www.ssb.no/a/english/publikasjoner/pdf/doc_200218_en/doc_200218_en.pdf
- Lappegård, T., & Rønsen, M. (2005). The Multifaceted Impact of Education on Entry into Motherhood. *European Journal of Population / Revue Européenne de Démographie*, 21(1), 31–49.
- Martín-García, T., & Baizán, P. (2006). The Impact of the Type of Education and of Educational Enrolment on First Births. *European Sociological Review*, 22(3), 259–275. <http://doi.org/10.1093/esr/jci056>
- Michelmores, K., & Musick, K. (2014). Fertility patterns of college graduates by field of study, US women born 1960–79. *Population Studies*, 68(3), 359–374. <http://doi.org/10.1080/00324728.2013.847971>
- Ministry of Social Affairs. (2001). *Barnafödandet i fokus: från befolkningspolitik till ett barnvänligt samhälle*. Stockholm: Fritzes offentliga publikationer. Hämtad från <http://www.regeringen.se/content/1/c4/08/91/a3c91b40.pdf>
- Myrdal, A., & Myrdal, G. (1934). *Kris i befolkningsfrågan*. Stockholm: Bonnier.
- Neyer, G., & Hoem, J. M. (2009). Education and Permanent Childlessness: Austria vs. Sweden. A Research Note. *Demographic challenges for the 21st century: A state of the art in demography*, 91.
- Reher, D., & Requena, M. (2014). The mid-twentieth century fertility boom from a global perspective. *The History of the Family*, 0(0), 1–26. <http://doi.org/10.1080/1081602X.2014.944553>

- Sandström, G. (2014a). The mid-twentieth century baby boom in Sweden – changes in the educational gradient of fertility for women born 1915–1950. *The History of the Family*, 19(1), 120–140. <http://doi.org/10.1080/1081602X.2013.871317>
- Sandström, G. (2014b). The mid-twentieth century baby boom in Sweden – changes in the educational gradient of fertility for women born 1915–1950. *The History of the Family*, 19(1), 120–140. <http://doi.org/10.1080/1081602X.2013.871317>
- SFS 1939:171. SFS 1939:171 (1939).
- Silenstam, P. (1970). *Arbetskraftsutbudets utveckling i Sverige 1870-1965*. Stockholm: Almqvist & Wiksell.
- Stanfors, M. (2003). *Education, labor force participation and changing fertility patterns : a study of women and socioeconomic change in twentieth century Sweden*. Stockholm: Almqvist & Wiksell.
- Statistics Sweden. (1992). *Fruksamhet ur livsperspektiv : [Fertility in a life-perspective]*. Örebro: Statistics Sweden (SCB).
- Statistics Sweden. (2002). *How many children will I have? Fertility in a life-perspective*. Stockholm: Statistics Sweden (SCB). Hämtad från http://www.scb.se/templates/publdb/publikation___2725.asp&plopnr=575
- Statistics Sweden, Population Register. (2015, september 21). Summed fertiltiy after region and sex 1970-2014. Hämtad 21 september 2015, från http://www.statistikdatabasen.scb.se/pxweb/en/ssd/START__BE__BE0701/Frukt samhetSumNy/
- Van Bavel, J. (2010a). Choice of study discipline and the postponement of motherhood in Europe: The impact of expected earnings, gender composition, and family attitudes. *Demography*, 47(2), 439–458. <http://doi.org/10.1353/dem.0.0108>
- Van Bavel, J. (2010b). Subreplacement fertility in the West before the baby boom: Past and current perspectives. *Population Studies*, 64(1), 1–18.
- Van Bavel, J. (2014). The mid-twentieth century Baby Boom and the changing educational gradient in Belgian cohort fertility. *Demographic Research*, 30, 925–962. <http://doi.org/10.4054/DemRes.2014.30.33>
- Van Bavel, J., Klesment, M., Eva Beaujouan, Zuzanna Brzozowska, Allan Puur, David Reher, ... Krystof Zeman. (2015). Women's Education and Cohort Fertility during the Baby Boom. I *Population Association of America 2015 Annual Meeting, Session 48 Families and Households in Comparative and Historical Perspective*. San Diego, California. Hämtad från <http://paa2015.princeton.edu/abstracts/150211>
- Van Bavel, J., & Reher, D. S. (2013). What We Know and What We Need to Know about the Baby Boom. I *Population Association of America*.
- Van de Putte, B., & Miles, A. (2005). A social classification scheme for historical occupational data: partner selection and industrialism in Belgium and England, 1800-1918. *HISTORICAL METHODS*, 38(2), 61–92.

- Van Leeuwen, M. H. D., Maas, I., & Miles, A. (2004). Creating a Historical International Standard Classification of Occupations An Exercise in Multinational Interdisciplinary Cooperation. *Historical Methods: A Journal of Quantitative and Interdisciplinary History*, 37(4), 186–197.
<http://doi.org/10.3200/HMTS.37.4.186-197>
- Westberg, A., Engberg, E., & Edvinsson, S. (2016). A Unique Source for Innovative Longitudinal Research: The POPLINK Database. *Historical Life Course Studies*, 3, 20–31.
- Willis, R. J. (1973). A New Approach to the Economic Theory of Fertility Behavior. *Journal of Political Economy*, 81(2), 14–64.
- Åmark, K. (2006). Women's labour force participation in the Nordic countries during the twentieth century. I *The Nordic model of welfare: a historical reappraisal* (s. 299–333). Copenhagen: Museum Tusulanum Press.