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ABSTRACT

Maternal Employment and Child Outcomes: Evidence from the Irish Marriage Bar*

This paper investigates the relationship between maternal employment and child outcomes using micro-data collected in the third wave of *The Irish Longitudinal Study on Ageing*. A novel source of exogenous variation in the employment decisions of women is used to investigate this relationship. Between the 1920s and the 1970s in Ireland, women working in certain sectors and jobs were required to leave their jobs once they married. The majority of women affected by this “Marriage Bar” then became mothers and never returned to work, or returned only after several years. Regression analysis is used to compare the educational attainment of the children of mothers who were required to leave employment on marriage because of the Marriage Bar to the educational attainment of the children of mothers who were not required to do so. It is found that the children of mothers affected by the Marriage Bar were about seven percentage points more likely to complete university education than the children of mothers who were not. This is a sizeable effect when compared to the observation that about 40% of the children in the sample completed university education. This effect is found to be robust to alternative specifications that include variables aimed at controlling for differences in maternal occupation, personality traits, and differences in paternal education.

JEL Classification: J12, J16, J20

Keywords: marriage, mother, employment, child, university education

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1. Introduction

It is difficult to establish a priori whether maternal employment has a positive or negative impact on child development. Maternal employment can have a negative effect on child development for two main reasons. First, as time constraints exist, the children of working mothers spend on average less time in maternal care than the children of non-working mothers. Spending less time in maternal care can be detrimental to child development if non-maternal childcare arrangements are of inferior quality or are a poor substitute for maternal care. Second, maternal employment can indirectly negatively affect the quality of maternal care through its effect on the mother's mental and physical health. For example, mothers who work long hours can be subject to emotional distress, and this can in turn have a negative effect on the quality of their childcare.

On the other hand, maternal employment can have a positive effect on child development also for two reasons. First, maternal employment increases family income. Increased family income can be used to purchase child development inputs such as books and educational trips, and possibly to purchase high-quality childcare. Increased family income can also be used to purchase domestic services such as cleaning and home maintenance, which in turn can have a positive effect on the quality of the mother's childcare by making available more of the mother's time for child-parent interaction. Second, the indirect effect of maternal employment on child development through mother's health, can also be positive. For example, mothers who derive satisfaction from work might be in better mental health, and this can in turn have a positive effect on the quality of their childcare.

The direction of the effect of maternal employment on child development can only be established empirically. Therefore, it is not surprising that a large empirical

literature has evolved (somewhat independently) in the fields of economics, psychology and sociology. The empirical studies to date have used a wide array of what can be termed “child outcomes” to measure child development. These include child cognitive development test scores, school grades and educational attainment. As discussed in the next section, there is little consensus in the literature on either the direction of association or the relative importance of maternal employment on child outcomes. While most of these studies assume that the causal direction is from maternal employment to child outcomes, fewer studies consider the opposite causal direction. More specifically, child outcomes may impact on the employment decisions of mothers. For example, it is not unreasonable to believe that if a child is doing poorly in school, a mother may reduce the amount of work she is doing, or stop working completely, in order to spend more time with the child in an attempt to improve the child’s performance in school.

This paper adds to the body of research that investigates the causal effects of maternal employment on child outcomes using data from Ireland. We believe our methodological approach is both novel and in several ways an improvement on previous studies. Section 2 critically reviews the research to date that has examined the relationship between maternal employment and child outcomes in countries other than Ireland. The two main aims of this section are to evaluate the strengths and weaknesses of previous studies and to highlight the key contributions of this paper. Section 3 is an empirical investigation of this relationship that addresses some of the weaknesses of previous studies, using data collected in *The Irish Longitudinal Study on Ageing* (TILDA). Between the 1920s and the 1970s, women working in certain sectors or in certain jobs were required to leave paid employment upon getting married in Ireland. The majority of women affected by this “Marriage Bar” then became mothers and never

returned to work, or returned only after several years. As the Marriage Bar was abolished only in the 1970s, many of the women affected are still alive and are among the TILDA respondents, and we have information on their children. We argue that a comparison of the two groups of mothers, those affected by and those not affected by the Marriage Bar, forms a good test of the relationship between maternal employment and child outcomes. Empirical results are reported in Section 4. Regression analysis suggests that the children of mothers who left employment because of the Marriage Bar have a considerably higher probability of completing university education compared to the children of mothers not affected by the Marriage Bar, even after controlling for other factors. This result is found to be robust to alternative empirical specifications. Conclusions follow in Section 5.

2. Previous Research

Assessing the causal effect of maternal employment on child outcomes is complicated by two empirical issues. The first issue is unobserved heterogeneity, which arises because of the presence of non-measured factors that likely affect both maternal employment and child outcomes. Examples of such factors are motivation, productivity, ability and personality traits. To illustrate, assume that mothers who work have higher ability than mothers who do not. If higher ability is a family trait that is passed along to children, then the children of high ability mothers will likely have better outcomes. If ability is unobserved, then maternal employment may be spuriously related to child outcomes. In other words, the observed relationship may not be causal. Similarly, mothers who are more productive in the labour market may also be more productive in their parenting. If productivity is unobserved, the econometric estimates

on the effects of maternal employment on child outcomes are likely to be biased upward.

The second empirical issue is the direction of causation. It seems reasonable to assume that the causal direction is from maternal employment to child outcomes. However, it is also possible that child outcomes affect maternal employment if there is a feedback mechanism between child outcomes and maternal employment. For example, if a child is not achieving an expected outcome (such as doing well in school), a mother might choose to leave or reduce employment and spend the newly available time with the child attempting to improve the child's performance in school. Another example is given by a mother who compares the outcomes of her children at a given point in time, such as after the first year in school. If a younger child is doing less well than an older child did, she might choose to leave employment and spend the newly available time with the younger child.

Different approaches have been employed to overcome the empirical problems created by unobserved heterogeneity and reverse causation. One group of studies employs what can be termed "quasi-natural experimental" designs, which are created by changes in the rules and regulations relating to maternity leave. These studies use administrative datasets to track the educational performance of children born before or after the date when maternity leave periods were increased. As a group, these studies find very mixed results. Two studies using Norwegian data find positive effects of maternity leave period increases on child outcomes (Carneiro et al, 2015; Bettinger et al., 2014). The findings of two studies using Swedish and Austrian data suggest that the effect of maternity leave period increases is highly dependent on the education level of mothers (Liu and Skans 2010; Danzer and Lavy 2017). Liu and Skans (2010) find that an expansion in maternity leave periods led to improved test scores and grades at age

sixteen for children of highly educated mothers but not for children of lowly educated mothers. Danzer and Lavy (2017) find a positive effect of maternity leave period increases for highly educated mothers of boys and a negative effect for lowly educated mothers of boys. Five studies using Canadian, German, Danish and Norwegian data find no effects of maternity leave period increases on child outcomes (Baker and Milligan 2010 and 2015; Dustmann and Schonberg 2012; Rasmussen 2010; Dahl et al. 2016). It is worth noting that most of these studies focus on children's performance at secondary-level education.

Of particular relevance to the analysis of this paper are the studies by Carneiro et al. (2015), Dustmann and Schonberg (2012) and Bettinger et al. (2014). Carneiro et al. (2015) and Dustmann and Schonberg (2012) focus on adult child outcomes. Carneiro et al. (2015) study a change in maternity leave entitlements in Norway in 1977. One of the outcomes of interest is children's wages at age 30. They find that the increased time spent with the child led to a five percent increase in wages at age 30. Dustmann and Schonberg (2012) evaluate the impact of three major expansions in maternity leave coverage in Germany. Among the outcome variables employed are highest educational achievement by age 28/29 and wages earned at age 28/29. Comparing educational and labour market outcomes of children born shortly before and after a reform, they find no evidence that the expansions improved children's outcomes. Bettinger et al. (2014) investigate how the 1998 reform that increased parents' incentives to stay home with children under the age of three in Norway affected the educational outcomes of the older siblings of the children affected by the reform. They find a small positive significant effect on older siblings' grades in secondary school.

The mixed results of this first group of studies are not surprising because, as with all quasi-natural experimental designs, the results have to be interpreted in the

institutional context of the country and time period in focus. For example, one needs to be aware of the generosity of the existing maternity leave system before the expansion, the nature of the expansion in terms of duration and financial generosity, whether the alternative to maternal care is formal or informal care, and, if the alternative care is formal, the costs involved. In addition, the studies based on this methodology assume that mothers who give birth before and after the expansions of maternity leave have full knowledge of the welfare, maternity leave and tax systems and are rational agents.

A second group of studies use data from social surveys, where detailed fertility and employment histories are collected. With this type of data, it is possible to “map” maternal work history information onto child outcomes. Different empirical strategies have been used to control for systematic differences between working and non-working mothers. Some studies include a very large number of exogenous maternal background characteristics (for example, Baum 2003; Berger et al. 2005; and Ruhm 2004 and 2008). Other studies investigate differences in outcomes of sibling pairs, whose mother decided to work when one sibling was born but not when the other was born. With this approach, mother-specific fixed-effects can be used to help control for time-invariant factors that potentially influence both a mother’s employment decisions and their parenting style (Waldfogel et al. 2002; James-Burdumy 2005; Ermisch and Francesconi 2013 and Schildberg-Hoerisch 2011). It is worth noting that all analyses based on “sibling differences” have to exclude by design single child families. This is a weakness of this approach. One cannot exclude that maternal employment affects single children in a systematically different way than it affects children with brothers and/or sisters. In addition, in most high-income countries, one-child families are growing at a fast pace.

A few studies attempt to address the potential “two-way” relationship between maternal working and child outcomes using time and geographic variation in local

labour market conditions as instruments for a maternal employment (Baum 2003; James-Burdumy 2005; Ermisch and Francesconi 2013). The logic behind the choice of local labour market conditions is that different local labour markets are characterised by different frictions, such as different levels of unemployment, and that these, in turn, differentially affect mothers' decisions to participate in the labour market. In the analyses of James-Burdumy (2005) and Baum (2003), these instruments prove to be weak and to lead to very large standard errors in the maternal employment variables in the second stage equations. In addition, while labour markets conditions vary geographically so do other factors that likely impact on employment. Therefore, it is not clear if geographical differences in labour market conditions are capturing the true factors determining labour market decision. It also difficult to argue that they do not have a direct effect on child outcomes.

The results using this approach are also mixed. Some support is found for maternal employment during the child's first year of life having a negative impact on child outcomes when children are young (James-Burdumy 2005; Baum 2003; Waldfogel et al. 2002). Other studies find mixed evidence that maternal employment affects child outcomes when children are aged 1-3 years (Waldfogel et al. 2002; Ruhm 2004) or when the children are aged 10-11 years (Ruhm 2008). Only two studies consider longer-term child outcomes (Ermisch and Francesconi, 2013; Schildberg-Hoerisch, 2011). The lack of studies that examine the effect of maternal employment on later-life/longer-term outcomes of children is not surprising since datasets that link together later child outcomes and employment histories of their mothers are rare. What is required is a dataset that collects detailed information about children when they are adults and their parents, ideally with both generations being interviewed independently.

The findings of Ermisch and Francesconi (2013) and Schildberg-Hoerisch (2011) do not agree. Using data from a sample of just over 1,000 children included in the *British Household Panel Study* (BHPS), Ermisch and Francesconi (2013) examine the effect of maternal employment on the probability of her children obtaining upper secondary-level qualifications. The authors use “sibling differences” in the timing of maternal employment and instrument maternal employment using local labour market conditions. They find a negative and statistically significant effect of full-time maternal employment (during the first five years of her child’s life) on the probability that the child would achieve upper secondary qualifications. They argue that this finding is important for two reasons. First, early parental investments are important in the pre-school period and not only in the child’s first year of life. Second, early parental investments have an impact on a child’s later-life achievements.

Using data from the *German Socioeconomic Panel* (SOEP) and estimating a sibling difference model, Schildberg-Hoerisch (2011) does not find an effect of maternal employment when the child is less than three years of age on the probability that the child would attend academic-track secondary schooling rather than vocational schooling. She attempts to avoid inconsistent estimates due to reverse causality (i.e. the causal direction is from child outcomes to maternal employment) using two approaches. The first is to exclude disabled children and children with very low ability from the analysis. The logic behind this exclusion is that if it is true that mothers condition employment decisions on child ability, then one would expect the mothers of a child with a disability or very low ability to reduce hours of work or to cease work completely to spend more time with the child. In other terms, one would expect that for this group of mothers, the direction of causality is from child ability to maternal employment, and not the other way round. The second is to focus on the effect of maternal employment

when children are relatively young (less than age three). Schildberg-Hoerisch (2011) argues that that signals about child ability should still be scarce at such an early age. If it is too early for mothers to assess child ability, then it is not plausible to assume that they condition employment decisions on child ability. We argue that whether signals about child ability are too scarce between birth and age three is, however, debatable, especially if mothers compare the development of a younger child to the development an older child showed at a similar age.

In a nutshell, the empirical research to date has generated mixed evidence about the relative importance of maternal employment on child outcomes. As indicated there are both methodological strengths and weaknesses with the approaches followed in these studies. We believe that the analysis in this paper contributes to the existing literature in four important ways. The first is that we use a novel source of exogenous variation in the employment decisions of women caused by the “Marriage Bar” in Ireland. The Marriage Bar was the legal requirement that women working in certain sectors or jobs leave paid employment on getting married. It was established in the 1920s, a time of high unemployment amongst males, and abolished in the 1970s. Crucially for our research question, the Marriage Bar affected the employment of women, particularly well-educated women, but did not directly affect their parenting ability.

The second is that we focus on later-life child outcomes. More specifically, the outcome is the probability that the child has graduated from university. With the exception of Carneiro et al. (2015) and Dustmann and Schonberg (2012), the papers that examined the effects of increase in maternity leave periods focus on children’s educational performance in secondary school. Of the studies using sibling differences, only Ermisch and Francesconi (2013) and Schildberg-Hoerisch (2011) focus on the

probability that the child has graduated from secondary school. Their choice of outcome was mostly driven by the data that they used. However, evidence suggests that university education is a much stronger predictor of labour market and economic success than secondary education. For example, in 2015, just under 85% of young adults aged 25 to 34 in OECD developed countries had completed secondary education (OECD 2016). This compares to 40% having completed tertiary education. In 2014, university graduates earned nearly 50% more than those who had only completed secondary school.

The third is that our analysis of maternal employment is not limited to the first few years of a child's life but is captured over the life-time since most mothers affected by the Marriage Bar never returned to work or returned only after several years. There is no doubt the first few years of life are an important in terms of child development (Lewis and Brooks-Gunn 1979). However, much less is known about the impacts of maternal employment when children are older, such as when they are in primary and secondary school. With the exceptions of Bettinger et al. (2014) and Ruhm (2008), none of the existing papers have investigated the impacts of maternal employment when children are older. If there is a sizable impact of maternal employment when their children are older, then policy-makers need to consider introducing policy that allows mothers to have flexible work arrangements beyond the first few years of motherhood.

The fourth is that Ireland is an ideal quasi-natural experimental design to examine the effect of maternal employment on child outcomes. As is discussed below, for the generation of women included in our sample, almost all child bearing occurred in marriage and almost all women married. These cultural norms were largely an outcome of the importance of the Catholic Church in Irish society. In addition, most women worked for a period after leaving school. There was no paid maternity leave

until 1969 and no employment-protected maternity leave until 1981. State-subsidised childcare was introduced many years later. In the 1960s, 1970s and early 1980s, when many of the children of the women in the TILDA sample were born, the alternative to maternal childcare would have been a choice between family and friends or informal paid arrangements. Therefore, many of the factors that confound the relationship between maternal employment and child outcomes in other higher-income countries, are in a sense “held constant” in Ireland.

3. Method

Data

The analysis is based on data from the third wave (2014/2105) of *The Irish Longitudinal Study on Ageing* (TILDA), a nationally representative sample of community dwelling individuals aged fifty and older resident in Ireland. The survey collects information on the economic, health and social aspects of the respondents’ lives. It is modelled closely on the US *Health and Retirement Study* (HRS), the *English Longitudinal Study on Ageing* (ELSA) and the *Survey of Health, Retirement and Ageing in Europe* (SHARE). Data from the third wave of TILDA are used because in this wave, all women who reported that they had worked and married during their lives were asked about the Marriage Bar. Interviewers were instructed to explain what the Marriage Bar was in case the respondent was unsure. More detail about TILDA can be found in Kearney et al. (2011), Whelan and Savva (2013), and Cronin et al. (2013).

The sample is restricted to women born before 1955. This is because women born after 1954 who married before 1973, the year in which the Marriage Bar was abolished in the Civil Service, would have married before their eighteenth birthday. At that time, it was unusual for women to marry at such a young age. For example, in 1971,

only 12% of marriages involved women aged younger than twenty years old (CSO, 1971). Women who married at such an early age might have behaved differently as a parent relative to women who married at older ages. Furthermore, women who married at such a young age might have done so because they became pregnant. The initial sample of women in the TILDA sample born during or before 1954 consists of 2,642 observations.

The main aim is to compare the educational outcomes of children born to women who were required to leave their job because of the Marriage Bar to the outcomes of children born to women who were not required to leave a job when they married. As the Marriage Bar could only affect women who worked and married, women who never worked ($n = 240$) and never married ($n = 200$) have to be excluded from the sample. By definition, women who never had children ($n = 122$) have to be excluded from the sample. One might argue that the exclusion of women who never worked, never married or never had children might bias the estimates of the effect of the Marriage Bar. For example, we do not know what the outcomes of the children would have been for mothers who did not engage in paid work but who would have chosen to engage in paid work had the Marriage Bar never existed. Similarly, for women who did not have children but who would have chosen to become mothers had the Marriage Bar never existed, we do not know what the outcomes of their hypothetical children would have been.

Crucially, the Marriage Bar did not appear to affect the decision of women to work, marry or have children in a major way. We argue that it is likely that the Marriage Bar did not affect these major decisions because of the legal, social and cultural context of Ireland before the 1980s. We provide evidence in support of this statement in Figures 1 to 5. It is important to note that although women born in 1955-1960 are excluded from

the empirical analysis of this paper, they are included in Figures 1 to 5 as they serve as an important comparison group for the period after the Marriage Bar was abolished.

First, we argue that the Marriage Bar did not affect the decision to participate in the labour market. Figure 1 shows the percentage of each three-year birth cohort of women born between the early 1900s and 1960 who “ever worked for pay” and “never worked for pay”. Figure 1 shows that younger cohorts — born in the 1950s — were less likely to have never worked for pay than cohorts born during the 1940s. However, there was no significant change or discontinuity in the percentage of women who never worked for pay for the youngest cohorts in the TILDA dataset, born during the second half of the 1950s and who entered the labour force after the abolition of the Marriage Bar, when compared to the cohorts born during the first half of the 1950s.

Second, we argue that the Marriage Bar did not affect the decision to get married. If the Marriage Bar forced more women to choose a career instead of getting married, one would expect to observe a higher percentage of women who never married in Ireland when compared to other countries, and a higher percentage of women who married for cohorts born after the mid-1950s compared to cohorts born before the mid-1950s. Figure 2 shows the percentages of women who never married and who did marry, calculated from the TILDA and SHARE surveys, by birth cohort for various countries. Data are presented for Ireland, Austria, Denmark, France, Germany, Greece, the Netherlands, Spain, and Sweden. Figure 2 shows that that the percentage of “never married” women in Ireland is similar to that of other European Countries. Furthermore, the marriage rate does not vary by birth cohort. Figure 3 shows the percentage of each three-year birth cohort that never married. For the cohorts born in the late 1950s, the percentage who never married is around the same as for slightly older cohorts who would have entered the labour market while the Marriage Bar was still in place.

Third, we argue that the Marriage Bar did not affect the probability of having children. During the time period we are considering, marriage and having children were linked. Only about 12% of women in the TILDA sample who never married had children, whereas around 95% of women who married had children. In Ireland, there was a social stigma attached to motherhood outside of marriage. For example, under Irish law until the 1990s, children were classified as either legitimate or illegitimate. Thus, if the Marriage Bar did not affect the probability of marrying, it is likely that it did not affect the probability of having children. Furthermore, when the Marriage Bar was in effect, there was less of an element of choice in fertility outcomes than is the situation today. In Ireland, the availability of contraception was legalized in stages from the late 1970s to the early 1990s. Abortion remains illegal except in limited circumstances. Relatively few women in the TILDA sample, around 11% of the total, never had children. Figure 4 and Figure 5 show that both having any children at all and the number of children, conditional on having any children, has been falling for successive birth cohorts since the 1950s, most likely because younger cohorts have used contraception to control their fertility.

After the exclusion of women who were born after 1954, who never worked, never married and never had children, the sample consists of 2,080 women. A total of 213 women are excluded because of missing information on one or more control variables (described below). Finally, 122 women are excluded as their children were aged less than 25 at the time of the Wave 3 interview. The final sample consists of 1,745 women. In total, these women had 6,241 adult (aged 25 and older) children. The average number of adult children per women is 3.6. The information provided by the women in the sample about themselves and about their children is used to construct a

child-level dataset. The empirical analysis introduced in the next section is based on this child-level dataset.

Statistical Model

A reduced-form specification is used to estimate the impact of maternal employment on child outcomes. More specifically:

$$Prob(UNIV_{ik} = 1) = \Phi (MB_k, X_k, Z_{ik})$$

where $Prob(UNIV_{ik} = 1)$ is the probability that child “ i ” of mother “ k ” graduated from university. MB_k is a dummy variable coded “1” if mother “ k ” reports leaving work because of the Marriage Bar upon getting married and coded “0” if not. “ X_k ” is a vector of characteristics of the mothers thought to affect the educational attainment of their children. “ Z_{ik} ” is a vector of characteristics of the children thought to affect their educational attainment. As is discussed below, “ X_k ” and “ Z_{ik} ” are assumed to be exogenous. Φ is the standard normal cumulative distribution. A probit model is estimated using maximum likelihood estimation.

Variables

The Marriage Bar was the legal requirement that women leave certain jobs when they married. The policy existed in different forms from the 1920s until the 1970s in the Republic of Ireland. There were two motivations for the policy. First, there was a belief at the time that a woman’s place was in the home. Indeed, Article 41.2 of the Irish Constitution, written in 1936 and still in effect today, reads that “mothers shall not be obliged by economic necessity to engage in labour to the neglect of their duties in

the home.” Second, given that there was high unemployment in Ireland at the time, the aim of the Marriage Bar was to reduce male unemployment by limiting households to one income earner: “one man, one job”.

The first laws to curb female employment in the Civil Service were introduced in the 1920s. From 1933, married women had to stop working as primary teachers. The Civil Service introduced a comprehensive Marriage Bar in 1956 (Cullen Owens, 2005). Once married, women could not work in the Civil Service, although exceptions were made for women who could prove desertion or who were widowed (Pyle, 1990). Although not legally obliged to do so, many semi-state and private organisations, including banks, utility companies, and large manufacturers dismissed women when they married. Private sector employers dismissed women working in primarily clerical and skilled jobs; but, in some cases, they dismissed unskilled workers (Kiely and Leane, 2012, p.91).

The Marriage Bar was repealed because of the demand for equality and the effects of labour shortages on the economy. It was scrapped for primary school teachers in 1958 because the Marriage Bar, along with a declining number of nuns, had caused shortages of trained female teachers. By the 1960s, labour shortages were becoming a macro-economic problem. In 1970, the government established a commission “to examine and report on the status of women in Irish society and to make recommendations on the steps necessary to ensure the participation of women on equal terms and conditions with men” (Commission on the Status of Women, 1972). After the report of the Commission in 1972, the Civil Service repealed the Marriage Bar 1973.

The labour force participation rate of married women doubled from 1971 to 1975, jumping from 7.5% to 14.5% (see Pyle, 1990). Since this sharp response was not the result of demographic changes, it most likely reflects the termination of the

constraint on labour force participation of married women in those occupations closed to them by the Marriage Bar. In 1977, discrimination in employment on the grounds of sex or marital status was made illegal in both the private sector and the public sector. Once the Marriage Bar was removed, more married women worked in Ireland.

Crucially for our purposes, the data from TILDA supports the view that the employment trajectories of women who were affected by the Marriage Bar differed over the life-time from the trajectories of women not affected by the Marriage Bar. Three measures are used to investigate employment trajectories of the two groups of women. Results are presented in Table 1. The first measure is the number of years spent in employment. Row (a) in Table 1 shows that women who were forced to leave their jobs when they married worked 21.1 years over the course of their lives whereas women unaffected by the Marriage Bar worked 26.7 years on average. The 5.6 year difference between the two groups is statistically significant at the 1% level.

The second measure is the proportion of potential working-life span spent in employment. Potential working-life span is defined as age minus age at labour market entry for women younger than sixty-five, and as sixty-five minus age at labour market entry for those older than sixty-five. Row (b) in Table 1 shows that women affected by the Marriage Bar spent about 44% of their “potential working-life” in employment. This compares to 56% for women not affected by the Marriage Bar. The 11.7% point difference between the two groups is statistically significant at the 1% level. The third measure is the number of years elapsed since the last job ended. Row (c) in Table 1 shows that the women affected by the Marriage Bar have not, on average, worked in the past 25 years. For women unaffected by the Marriage Bar, it has been just under 17 years since they last worked. The 7.9 year difference between the two groups is statistically significant at the 1% level.

The variables included in “ X_k ”, the vector of characteristics of the mothers thought to affect the educational attainment of their children, comprises year of birth, educational attainment, age at first birth, and the number of living children. A set of dummy variables capturing the childhood socioeconomic circumstances of the mother are also included based on the woman’s self-reporting of childhood conditions before the age of 14. These capture whether she recalls her family being “poor” during her own childhood; whether she recalls being in “fair/poor health” health during her own childhood; whether she recalls there being “at least ten books” in her childhood home; whether she grew up in a “rural area”; her “number of siblings”; whether her own “mother worked”; and whether her “father worked”. Educational attainment is measured by the number of years of schooling completed. The variables included in “ Z_{ik} ”, the vector of characteristics of the children thought to affect their educational attainment, are age and sex.

4. Results

Descriptive Statistics

Descriptive statistics are presented in Table 2. It is important to note that the outcome variable and child characteristics are presented at child-level (N=6,241). Maternal characteristics are presented at mother-level (N = 1,745). Focusing first on the outcome variable, the first row of Table 2 shows that 47.1% of the children of mothers affected by the Marriage Bar completed university compared to only 35.9% of the children of women unaffected by it. The difference in educational attainment is statistically significant at the 1% level.

Turning then to the maternal characteristics, the results of Table 2 show that women affected by the Marriage Bar were, on average, four years older than women

unaffected by it. Concerning their own childhood, women affected by the Marriage Bar came from more favourable backgrounds. About 21% of women unaffected by the Marriage Bar reported their family was relatively poor during their childhood which is considerably different to the 12% reported by those women not affected by it. The two groups of women reported a similar level of poor health during their childhoods (6-7%). Women affected by the Marriage Bar were about seven percentage points more likely to recall having books in their childhood home. Recollection of books in the childhood home has been shown to be a good indicator of early life conditions and possibly also a good indicator of parental care in early life (Brunello et al., 2017).

Women affected by the Marriage Bar were less likely to report they grew up in rural areas. Perhaps women who grew up in rural areas were less likely to enter public sector jobs where the Marriage Bar was more prevalent because the public sector was centralised in Dublin. Both groups of women grew up in large families, as they reported to have an average of five brothers and/or sisters (even if deceased at the time of interview). The mothers of women not affected by the Marriage Bar (the grandmothers of the children of the TILDA respondents) were more likely to have been working during the woman's childhood. Given that these families were poorer, the greater female employment may have been due to economic necessity rather than choice. However, their fathers (the grandfathers of the children of the TILDA respondents) were equally likely to have been working during the childhoods of the TILDA respondents. Perhaps because of their more favourable family backgrounds, and despite being from an older generation, women affected by the Marriage Bar left school 0.7 of a year later than the other women. This difference in years of schooling is statistically significant at the 1% level.

On average, age at first birth for women affected by the Marriage Bar was 0.6 years later than for women unaffected by it. On average, women affected by the Marriage Bar had four children, which is 0.5 more children than women unaffected by it. Despite their mothers giving birth at an older age, the average year of birth of the children of women affected by the Marriage Bar was three years earlier than that of the other children. As one would expect, there is no statistically significant difference in the gender between the children of both groups of mothers.

Regression Results

The regression estimates are shown in Table 3. What is reported are the marginal effects. Standard errors clustered at the family level are presented in parentheses. Focusing first on the variable of most interest to us, the results of Table 3 show that the children of women affected by the Marriage Bar were on average 7.9 percentage points more likely to have completed university compared to the children of mothers who were unaffected by the Marriage Bar. The difference is statistically significant at the 1% level.

Turning then to the controls, the year of birth the mother did not have a statistically significant effect on the probability of her children completing university. In agreement with the work by Brunello (2017), the probability of obtaining a degree was higher for children with a mother who grew up in a home “with books”. The number of the mother’s siblings had a small negative effect on the outcomes of her own children. The number of siblings of the mother might be an indicator of her family attitudes (Fort et al., 2016, p. 1837). Her recollection of her own childhood health, whether she grew up in a rural area and whether her parents worked did not have a significant effect, at the 10% level, on the outcomes of her children. A mother’s level

of education affected the education of her children. Each additional year of maternal education raised the probability of her children completing university by five percentage points. This intergenerational return to years of education is statistically significant at the 1% level.

The age at which the mother first gave birth had a positive effect on her children completing university. The children of women who delayed entering motherhood by an additional year are about 1.2 percentage points more likely to have completed university. The effect of waiting another year to become a mother on children's educational attainment is smaller than the effect of maternal education, but it is also statistically significant at the 1% level. This positive age effect of delaying motherhood on child educational attainment could reflect greater maturity and readiness for motherhood at older ages. The number of children the woman had, has a negative effect on the probability of a child completing university. The year of birth of the now adult child has a positive effect on the probability of them attaining a degree. There has been an upward trend in educational attainment in Ireland (see Denny 2014 for further discussion). Female children were about 6.4 percentage points more likely to have completed university.

Robustness Checks

The results of Table 3 suggest that the children of mothers affected by the Marriage Bar were about 7.9 percentage points more likely to have completed university than the children of women unaffected by the Marriage Bar. This is a sizable difference. In an attempt to assess the robustness of this finding, regressions were fit based on alternative specifications. As explained above, and illustrated in Table 2, the Marriage Bar primarily affected women who came from more favourable backgrounds

and who had more schooling. Although controls for maternal childhood characteristics and educational attainment are included in the regression model, there is a concern that the results may be driven by the likely non-randomness of women affected by the Marriage Bar. If these women also had “better” parenting skills and married men with “better” parenting skills, then a statistical analysis that does not account for these sources of endogeneity would likely overestimate the effect of the Marriage Bar variable on child outcomes.

To control for these potential sources of endogeneity, regressions are estimated where controls for the sector, social class of the woman’s first job and for the years the children’s father spent in full-time education are also included. The results are presented in Table 4. All of the estimated models presented in Table 4 control for the maternal background and child characteristics discussed above. The marginal effects for the controls capturing maternal background and child characteristics are not displayed in Table 4 for the sake of brevity. In any case, the estimates are very similar to those in Table 3.

Columns (1) and (2) of Table 4 are the estimated marginal effects when the characteristics of the mother’s first job are controlled for. The Marriage Bar was a legal barrier in the public sector, but many private sector companies also operated a Marriage Bar. Women who selected into the public sector, where the Marriage Bar was in place, may have had different parenting skills. In particular, women who chose to be teachers may have had quite different parenting skills than non-teachers. Secondary school teachers, the majority of whom worked in the public sector, were not subject to a legally binding Marriage Bar. However, an informal expectation that a married woman would resign may have existed in some schools. Furthermore, the Marriage Bar on primary school teachers was lifted in 1958.

In an attempt to capture these possibly confounding effects, a variable capturing whether the woman's first job was in the public sector is included and a variable that indicates whether she was a teacher. The omitted category for these dummy variables is whether the mother worked in the private sector. Column (1) in Table 4 shows that children of women who worked in the public sector were about 7 percentage points more likely to have completed university than the children of women who worked in the private sector. Furthermore, the children of teachers were 11.3 percentage points more likely to have completed university. Despite controlling for whether the mother was a teacher or whether she worked in the public sector, the children born to a woman affected by the Marriage Bar were still more likely to have completed university. The size of the Marriage Bar marginal effect is, at 6.9 percentage points, only slightly smaller than the estimate presented in Table 3 when the sector of the woman's first job was not controlled for.

Column (2) in Table 4 presents regression estimates that include variables that attempt to control for the social class differences in the woman's first job. The Marriage Bar was not applied to all occupations. Often women in less skilled jobs, such as cleaners, especially in the public sector, were not required to retire when they married. Thus, the estimated Marriage Bar marginal effect could be picking up differences associated with occupation, such as maternal income, which are correlated with child outcomes. In line with the classification proposed by the Irish Central Statistics Office (CSO, 2012), the woman's first job was classified as being: Professional; Managerial/Technical; Non-manual; Skilled Manual; Semi-skilled; and Unskilled. The omitted category is whether the woman's first job was classified as Unskilled Manual.

It is found that the children of women who worked as professionals were nearly 50 percentage points more likely to complete university than the children of women

who worked in unskilled positions. The children of women who worked as managers, who worked in other non-manual jobs, or who worked in skilled manual positions were also more likely to earn a degree than the children of women who worked in unskilled manual jobs. Despite controlling for both the sector and the social class of the mother's first job, we still find that the children of women who were directly affected by the Marriage Bar were statistically more likely to have completed university than the children of women not affected by the Marriage Bar. The marginal effects for the Marriage Bar dummy variable in Column (2) of Table 4 is only slightly smaller than it is in Table 3.

In Column (3) of Table 4, a control for the number of years the father of the children spent in full-time education is included. One might be concerned that women who selected into jobs subject to the Marriage Bar were more likely to have married men whose characteristics, such as his parenting ability or his income, were correlated with positive child outcomes. Ideally, one would control for the life-time income of her husband or her husband's income over the course of their children's schooling. Unfortunately, such data is not available. However, the number of years her husband spent in education is likely to be a good proxy variable for his permanent income. It is found that if the husband spent an additional year in education, then the children were about 2.8 percentage points more likely to complete university. It is worth noting that the effects of maternal and paternal education on child outcomes were similar in size. One should note that in the third column of Table 4, the sample size falls considerably compared to the first column. The main reason for the decline in the sample size is that women who were widows (29% of the sample), separated (5.4%) or divorced (3.2%) at the time of the survey were not asked about their (late/former) husband's education. The remainder did not answer the question about their husband's education.

Although controls for selection into certain occupations and sectors as well as the characteristics of fathers were included, one still might worry that unobserved idiosyncratic differences that are correlated with selection into jobs that were subject to the Marriage Bar as well as child outcomes cause bias in the results. A measure of personality traits of the mother is employed to capture at least some of this idiosyncratic component.

A large literature attests to the power of personality for predicting a whole variety of outcomes including educational and occupational success, lifestyle behaviours, subjective health and wellbeing, success in personal relationships, and physical health and longevity (Bogg and Roberts, 2004; Caspi et al., 2005; Ozer and Benet-Martinez, 2006). Indeed, a recent meta-analysis concluded that personality traits are as powerful a predictor of mortality, divorce and occupational status as socio-economic status or cognitive ability (Roberts et al., 2007). A key advantage of the TILDA study is that it contains a reliable measure of personality. We, therefore, controlled for the effect of maternal personality on the child outcomes. Crucially, personality has been found to have substantial heritability (Bouchard and Loehlin, 2001), so it is reasonable to assume that the personality of the mothers is correlated to the personality of their children which in turn might be correlated with the educational outcomes of their children.

Although psychologists continue to debate which personality traits have the greatest importance, consensus is increasing in favour of a five-dimensional model of personality structure: *Extraversion*, *Neuroticism*, *Conscientiousness*, *Agreeableness*, and *Openness* (Caspi et al., 2005). These traits are referred to as the *Big-5* personality traits. Briefly, *Extraversion* indexes a number of traits including warmth, sociability, activity, and optimism. *Neuroticism* reflects a dispositional tendency to experience the

world as distressing or threatening and is characterised by anxiety and hostility. *Conscientiousness* measures self-discipline, orderliness, competence, and planning. *Agreeableness* reflects traits including trust, altruism, and compliance. Finally, *Openness* reflects a number of traits including intellectual curiosity, imagination, and enjoyment of novelty. *Openness* has been found to correlate highly with intelligence (McCrae and Costa, 1997). In TILDA, the *Big-5* personality traits are measured using the 60-item NEO Five-Factor Inventory-3 (Costa and McCrae, 2004). A total of 12 items are used to measure each trait, with the final score ranging between 0 and 48 for each trait.

Column (4) in Table 4 shows that, despite also controlling for the *Big-5* personality traits, it is still found that the children of women affected by the Marriage Bar were about 6.3 percentage points more likely to complete university than the children of women not affected by the Marriage Bar. In the regression corresponding to the final column of Table 4, the sample size is nearly half that used in the main analysis. The response rate to the personality questions was much lower because the personality questionnaire was given to the respondent to complete and return in their own time whereas the main TILDA questionnaire was applied by an interviewer in a face to face interview.

5. Conclusion

The aim of this paper was to empirically examine the relationship between maternal employment and child outcomes with Irish data. The child outcome considered was educational attainment, measured in terms of whether the child completed university education. Regression was used to compare the educational attainment of children of mothers who were required to leave employment on marriage

because of the Marriage Bar to the educational attainment of children of mothers who were not required to do so. We believe that this comparison is particularly insightful since the Marriage Bar generates exogenous variation in maternal employment, with the majority of women who left employment because of the Marriage Bar never returning to employment or returning only after several years. There is a substantial difference in the employment histories of mothers who report being affected by the Marriage Bar, compared to those who do not. On average, mothers affected by the Marriage Bar worked around five years less, which is a differential of around 20% (see Table 1). Therefore, the presence of the Marriage Bar generated large differences in maternal employment that would not have existed in its absence.

Children of mothers who were legally required by the Marriage Bar to leave employment have a much higher probability of completing university education than the children of mothers who were not. The difference is around seven percentage points. This is a sizeable effect when compared to the observation that about 40% of the children in the sample completed university education. This effect was found to be robust to alternative specifications that included variables aimed at controlling for occupational differences, personality traits and husband's education. It is unlikely that the difference between these two groups is a product of specification error in the sense that it is a statistical artefact resulting from key variables not be included in the regressions. We believe that Marriage Bar is an excellent proxy for "time spent at home" and is not a proxy for other unmeasured factors that are associated with positive child outcomes.

It is probably more correct to conclude that mothers affected by the Marriage Bar had more opportunity to spend more time with their children compared to women not affected by the Marriage Bar. Therefore, it is important to understand more about

how working and non-working mothers differ in terms of how they spend their time with their children. In other words, it is not only about the quantity of time spent but also about the quality of time spent with children. One suspects the impact of a mother spending one hour reading to a child will differ from the impact of a mother spending one hour with a child while the child plays a video game or watches television. A working mother may have less time to spend with her children but she might spend that time that she has in a way that is more beneficial to her children than a mother who is not facing the same constraint. Unfortunately, there is no information in TILDA relating to how mothers, working or not, spend time with their children.

It is important to note that the TILDA data indicate that mothers affected by the Marriage Bar have higher levels of schooling and grew up in more favorable early-life socioeconomic environments. For example, mothers who grew up in households with a large number of books, likely believe that having a large number of books in their own households will benefit their children in the same way they benefitted. Likewise, a mother with a university degree likely understands the benefits of having a degree and would like the same for her children. Therefore, the positive relationship between children outcomes and the Marriage Bar might also be capturing what is essentially the intergenerational transmission of socioeconomic advantage.

Finally, much of the research concerned with the effects of maternal employment on both early-life and later-life child outcomes assumes one of the “costs” of mothers not working is that the household will have less money to spend. As a consequence, there will be less potential income to purchase goods and services that have a positive impact on child outcomes (such as books and educational trips). However, this reasoning basically ignores the role of fathers. For example, a father may work more to compensate for the loss of income caused by the mother leaving

employment. Or if a mother is working, and hence has less time available to spend with her children, the father might increase the time he spends with them. In other words, there is likely some degree of substitutability between mother's time, father's time and earned income. Therefore, in order to understand more fully what determines child outcomes, the quantity and quality of the time that fathers spend with their children must be taken into consideration.

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Table 1
Summary Statistics of Variables Capturing Maternal Labour
Market Attachment

		(1)	(2)	(3)	(4)
		All	Mother Affected by Marriage Bar?		p-value of test:
			Yes	No	(2) - (3) = 0
(a)	Number of years spent working	25.4	21.1	26.7	<0.01
(b)	Percentage of potential working life spent in employment since labour market entry	53.4%	44.2%	55.9%	<0.01
(c)	Years elapsed since last job	19.0	25.2	17.3	<0.01
	Number of mothers	1,745	371	1,374	

Table 2
Summary Statistics of Variables Employed in the Regression Models

	(1)	(2)	(3)	(4)
Sample	All	Mother Affected by Marriage Bar?		p-value of test:
		Yes	No	(2) - (3) = 0
Variable				
<u>Outcome variable</u>				
Child completed university	38.5%	47.1%	35.9%	<0.01
<u>Mother's Characteristics</u>				
Year of birth	1943	1940	1944	<0.01
Poor family during childhood	19.0%	12.3%	20.8%	<0.01
Poor health during childhood	7.1%	6.2%	7.3%	0.351
Recalls books in childhood	55.5%	60.8%	54.1%	0.026
Grew up in rural area	56.3%	50.4%	57.8%	0.016
Number of siblings	5.2	5.1	5.2	0.403
Own mother worked	26.6%	20.6%	28.2%	0.009
Own father worked	92.8%	94.7%	92.3%	0.166
Years of schooling	11.1	11.7	11.0	<0.01
Age at first birth	26.3	26.8	26.2	0.059
Number of children	3.6	4.0	3.5	<0.01
<u>Child's characteristics</u>				
Year of birth	1973	1970	1973	<0.01
Female	49.3%	51.2%	48.8%	0.144
Number of mothers	1,745	371	1,374	
Number of children	6,241	1,474	4,767	

Notes: The outcome variable and child's characteristics are presented at child's level. Mother's characteristics are presented at mother's level.

Table 3
Marginal Effects of the Probability of Child Completing University

Variable	(1)
Marriage Bar	0.079*** (0.020)
<u>Mother's Characteristics</u>	
Year of Birth	0.002 (0.002)
Poor family during childhood	-0.025 (0.023)
Poor health during childhood	0.022 (0.033)
Recalls books in home during childhood	0.065*** (0.018)
Grew up in rural area	0.015 (0.018)
Number of her siblings	-0.006* (0.003)
Own mother worked	-0.002 (0.020)
Own father worked	0.044 (0.031)
Years of schooling	0.050*** (0.004)
Age at first birth	0.012*** (0.002)
Number of children	-0.023*** (0.005)
<u>Child's characteristics</u>	
Year of birth	0.004*** (0.001)
Female	0.064*** (0.013)
Observations	6,241

Notes: Standard errors in parentheses: * p < 0.10, ** p < 0.05, *** p < 0.01. Standard errors are clustered at family level.

Table 4
Marginal Effects of the Probability of Child Completing University
Alternative Specifications

Variable	(1)	(2)	(3)	(4)
Marriage Bar	0.069*** (0.020)	0.059*** (0.020)	0.063** (0.026)	0.063** (0.027)
<u>Mother's sector of first job</u>				
Public Sector	0.070*** (0.024)	0.063** (0.027)	0.041 (0.032)	0.049 (0.035)
Teaching	0.113** (0.047)	0.133** (0.052)	0.107* (0.064)	0.124* (0.069)
<u>Mother's social class of first job</u>				
Professional		0.498*** (0.113)	0.309** (0.140)	0.127 (0.160)
Managerial & technical		0.176*** (0.047)	0.102 (0.066)	0.050 (0.070)
Non-manual		0.188*** (0.038)	0.095* (0.053)	0.060 (0.058)
Skilled manual		0.098** (0.040)	0.041 (0.056)	0.037 (0.062)
Semi-skilled manual		0.051 (0.038)	-0.002 (0.052)	-0.042 (0.059)
<u>Father's years of schooling</u>				
			0.028*** (0.004)	0.026*** (0.004)
<u>Mother's personality</u>				
Conscientiousness				0.004 (0.002)
Neuroticism				0.000 (0.002)
Extraversion				0.003 (0.002)
Agreeableness				-0.002 (0.003)
Openness				0.001 (0.002)
Observations	6,238	6,138	3,751	3,297

Notes: All of the maternal background and child characteristics shown in Table 3 are also controlled for in the estimated models in Table 4, but are not displayed for brevity.
Standard errors in parentheses: * p < 0.10, ** p < 0.05, *** p < 0.01. Standard errors are clustered at family level.

Figure 1: Percent Ever/Never Worked for Pay by Birth Cohort, Irish Women

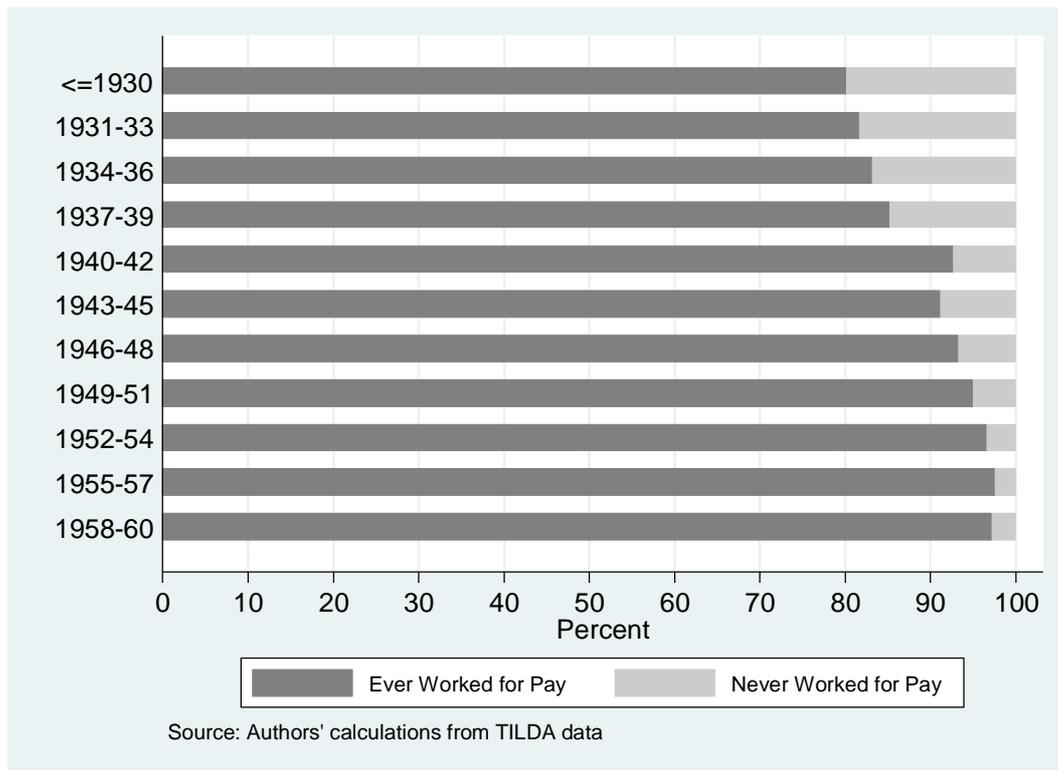


Figure 2: Percent of Never/Ever Married Women by Birth Cohort, Various Countries

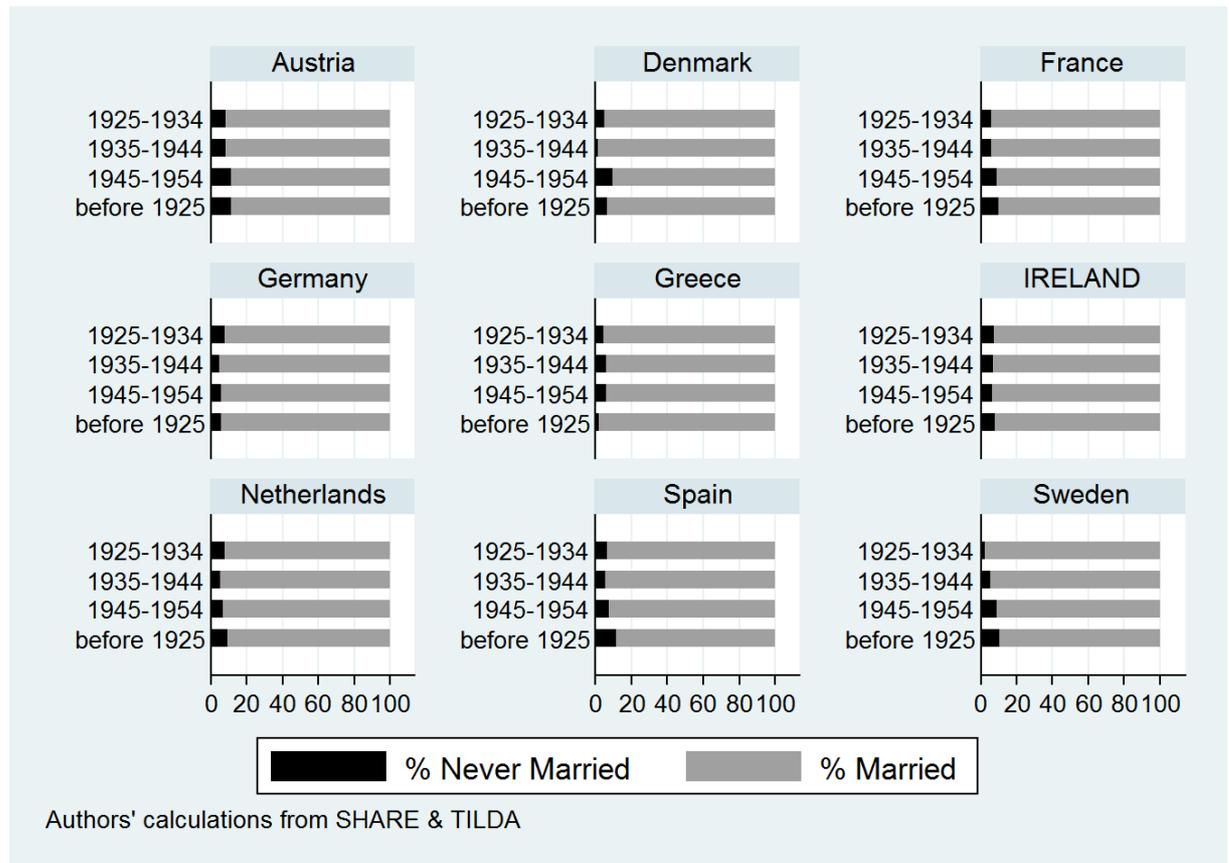


Figure 3: Percent of Ever/Never Married by Birth Cohort, Irish Women

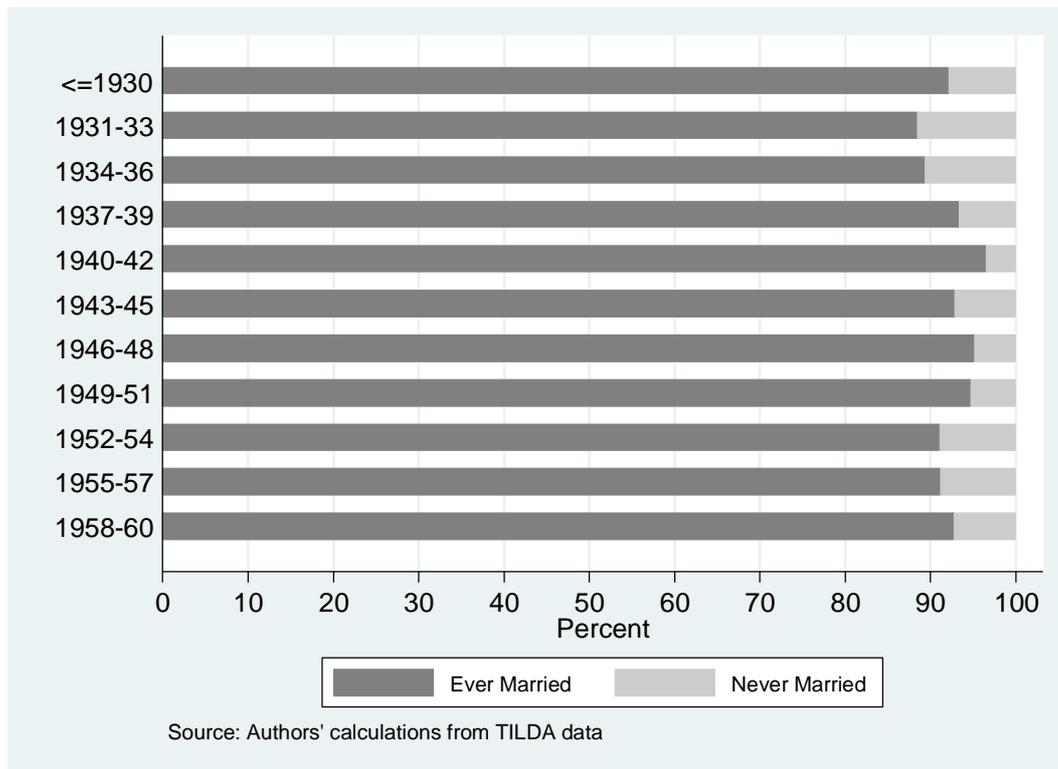


Figure 4: Percent Had Children and Childless by Birth Cohort, Irish Women

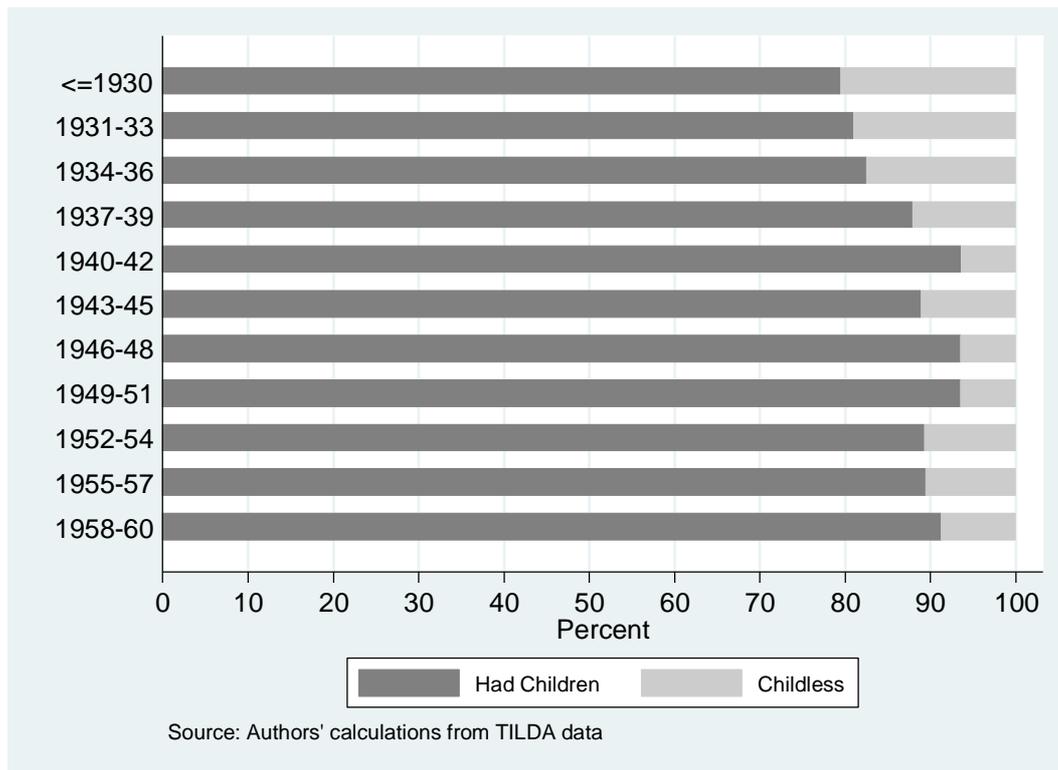


Figure 5: Average Number of Children (if Had Children) by Birth Cohort, Irish Women

