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Pronatalist policies' backlash in authoritarian regimes*

Thomas Baudin[†] and Robert Stelter[‡]

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Abstract

European fascist regimes have attached great importance to nationalistic families and designed policies to perpetuate them. Most offered policy packages with interest-free loans repayable through childbirth, along with allowances and tax deductions for large families. Using a difference-in-difference approach and Nazi Germany as a case study, we show that these policies may have counterproductive effects due to negative selection mechanisms in the marriage market. The excessive pressure to marry exerted on singles results in lower quality, ultimately less fertile, and more fragile unions. This finding is important as the main European far-right parties today propose reinstating these policy packages.

Keywords: Family policies, Fascism and Nazism, Fertility, Marriage, Divorce, Female labor force participation

JEL Classification Numbers: N3, D1, J1.

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1 Introduction

Authoritarian regimes place the enhancement of national fertility at the heart of their political agenda, employing radical family policies to achieve this goal (Ginsborg, 2000). Such practices are also characteristic of far-right political manifestos nowadays.¹ Their focus on increasing fertility stems from a desire to promote certain populations over others, especially those they consider pure or desirable. As a result, these policies encompass a wide range of measures, from incentivizing specific marriages to promoting a particular vision of women’s roles in society, all with a strong emphasis on encouraging higher birth rates. In this paper, we aim to deepen the understanding of these interventions by using Nazi Germany as a case study and its flagship family policy, the *Law for the Encouragement of Marriage (LEM)*. Despite the extreme nature of its implementation, the LEM represents the standard-bearer of an authoritarian approach to family policy in Europe. This approach transcends borders and eras, serving as a cornerstone of Franco’s policies in Spain in the 1940’s, but also of Viktor Orban’s policies in Hungary today.

A central element of authoritarian and fascist pro-natalist family policies is the promotion of new family establishments through loans granted to newly married couples. These loans are pro-natalist in essence, as each birth entitles couples to a reduction in the amount to be repaid. In all the regimes concerned, this core element is complemented by a variety of generous child allowances and tax deductions (see Sections 2 and 6 for details). The key point of our paper is to show that the social and political context in which these policies are implemented is crucial for their effectiveness. Specifically, we show that if regimes exert excessive economic and social pressure on young people to marry quickly, the resulting negative selection mechanisms in the marriage market may lower the overall quality of marriages and ultimately depress fertility rates. Using a difference-in-difference approach and Nazi Germany as an example to establish causal links, we demonstrate that this indirect effect can outweigh the direct positive impact of the policy and persist over time.

Like other fascist regimes, the Nazis exerted influence on every aspect of German life through indoctrination, propaganda, and a series of destructive policies. Notably, their family policy aimed to promote the ‘Aryan Volk’² stands out as one of the most distorting measures in the history of family policy. Promulgated in June 1933, the LEM granted an interest-free loan to newly married couples where the bride had worked for at least six months in the previous two years, on the condition that she gave up her job upon marriage. The loan was up to 1,000 Reichsmark (hereafter RM) and its repayment was reduced by a quarter for each birth. This policy, which applied to marriages celebrated after its promulgation, was complemented by substantial tax cuts and child allowances, especially for large families. We describe this policy in detail in Section 2.

Using census data from 1933, 1939, and 1970, we develop a stepwise difference-in-difference approach to compare married women living in the Third Reich (treatment group) with married women living outside the Third Reich (control group) in order to understand the impact of these Nazi policies on German fertility.³

¹See for instance the program of Rassemblement National’s leader Marine Le Pen for the presidential elections in France in 2022 for what concerns the family, <https://rassemblementnational.fr/documents/projet/projet-la-famille.pdf>. Same applies to the program of Giorgia Meloni for Italy in 2022 when she accessed power, <https://www.programmafidi2022.it/sostegno-alla-natalita-e-alla-famiglia/>. See also the policy implemented by Viktor Orban in Hungary, <https://2015-2022.miniszterelnok.hu/hungarian-government-based-its-family-policy-on-five-pillars/> or the policy agenda of the right German parties (AFD) <https://www.afd.de/familie-bevoelkerung/>.

²Throughout this paper, we use the term ‘Aryan’ to refer specifically to the Nazi regime’s concept of true Germanhood. In all other contexts, we use the term ‘German’.

³For the sake of clarity, we refer to the German territory as the German Empire for the period before 1918, the Weimar Republic for 1918 to 1932, and the Third Reich for 1933 to 1945, and use the term Germany or German territory to describe it in general, e.g., when referring to more than one period.

Although they lived outside the Reich, most of the women in our control group were of German descent. As a first step, we examine women who married in the last years of the Weimar Republic and were therefore not eligible for the LEM, regardless of their place of residence. Comparing their fertility in 1933 and 1938,⁴ we find a positive effect of exposure to Nazism on marital fertility.

In a second step, in order to avoid comparing fertility rates measured at two different points in the marital life, as in the previous exercise, we measure the fertility of women after x years of marriage in 1933 and in 1938. In this way, we compare the fertility of women who were not affected at all by the Nazi regime, and in particular by its policies on marriage (untreated group in 1933), with women who received the full set of incentives provided by the regime (treated group in 1938), holding exposure to the risk of pregnancy constant. We again find a positive association between exposure to Nazism and fertility.

In a third step, we compare women who married before and after the rise of Nazism and measure their fertility in 1938. Although both groups were exposed to Nazi ideology and some common welfare policies, they were not confronted with the same marriage policy, since the LEM was reserved for persons who were unmarried by 1933 (treated group). Surprisingly, we find a negative effect of this family policy on marital fertility. This suggests that the marriage policy tended to depress marital fertility rather than increase it. We show that this effect persisted until 1970, a date by which the fertility lives of all women in our sample had ended.

In order to understand our empirical results, we develop a theoretical model of fertility and marriage in which men and women make their marriage decision individually, but if and once married, they make their family decisions in a collective cooperative manner, as in Chiappori (1988). Our model is able to reproduce and explain our two main findings: (i) general exposure to Nazism tends to increase fertility, at least temporarily, because of the glorification of motherhood and economic incentives to have children, but (ii) in relative terms, the women who married under the Nazi rule reduced their fertility compared to their counterparts who married before. The key mechanism driving this last result is the severe penalty imposed by the regime on unmarried women. This penalty encourages them to accept lower quality matches on the marriage market, which are consequently less fertile. Our model suggests that women treated by the regime's marriage policy (LEM) tend to marry earlier to avoid the costs of singlehood, accept lower quality husbands, have fewer children, and divorce more often once divorce becomes a legal and truly available option.

In a series of three auxiliary regressions, we test the mechanisms formalised by our theory. In the first set of regressions, we extend our main estimation model to a triple-difference approach taking into account whether women were eligible for the LEM or not. We show that the negative effect of Nazism on fertility in the long run is driven by women who were eligible to receiving the loan, which was the population targeted by the Nazi administration. This result supports the claims of Pine (1996), who argues that the loan was not large enough to positively affect the fertility of German women, it even shows that strong counterproductive effects were at play dominating the incentive to have more children. In a second exercise, returning to our difference-in-difference approach, we show that the Nazi period is associated with an increased probability of marriage for women in the Third Reich, but not for women outside the Reich. Within the Reich, a strong redistribution of marriages to younger ages is observed, a redistribution driven mainly by women eligible for the loan. This suggests that Nazi family policy was effective in increasing marriage at younger ages, thus pushing young women out of the labour market and into the family sphere.

⁴We measure fertility in 1938 to avoid any effect of the war on fertility and marriage decisions, these latter occurring at the latest in 1937.

In a final regression, we compare the probability of divorce between women who married under the Nazi regime and women who married before the Nazi regime. We show that women who married young under the Nazi regime were more likely to divorce later after the Nazi regime disappeared. This result supports our theory predicting that Nazi family policies depressed the fertility of German women through negative selection into earlier and more fragile marriages.

We contribute to three strands of literature: the study of authoritarian regimes' approaches to the family, the effects of family policies on fertility in general, and the consequences of Nazism in particular. Throughout European history, authoritarian regimes and extreme right-wing parties have emphasised marriage for national couples in order to increase fertility. We are the first one to examine the causal impact of such policies on fertility.⁵ Other extreme policies have been implemented with the objective of reducing fertility rather than increasing it. The most famous one is probably the one-child policy implemented in China between 1979 and 2015. In their literature review, Zhang (2017) shows how this policy was quite effective in reducing fertility in the short run, while in the long run it was less conducive to fertility decline than China's rapid economic growth. The fertility decline induced by the one-child policy came with significant social costs for the Chinese population, the most emblematic and crucial of which are the imbalance in the sex ratio and the deprivation of human rights.

Another important set of extreme policies distorting fertility behaviour concerns eugenic sterilisation. This type of policy, which targeted individuals deemed unworthy of reproduction, was implemented by the Nazi government itself, in addition to the policies we examine in this paper. As shown by Reilly (2015), eugenic sterilisation was far from being limited to the Nazi regime; it was implemented in China, Scandinavia (1930s), Japan (1948) and the USA. In the case of the USA, eugenic sterilisation laws targeted the mentally handicapped. Between 1907 and 1939, some 30 states enacted such laws. During this period, Reilly (2015) estimates that around 60,000 mentally ill people were sterilised without choice.

The study of family policies covers a wide range of reforms and instruments, including direct cash transfers (e.g. Milligan (2005) for Quebec; Cohen et al. (2013) for Israël; González (2013) for Spain and Riphahn and Wijnck (2017) for Germany), child-related tax allowances (e. g. Moffitt (1998); Rosenzweig (1999); Baughman and Dickert-Conlin (2003, 2009); Kearney (2004); Brewer et al. (2012); Egger and Radulescu (2012)), or parental leave benefits (see Olivetti and Petrongolo (2017) for a review). This literature consistently shows positive effects of these policies, ranging from modest to substantial. We show that these positive effects can be partially and even completely reversed by negative selection into marriage, resulting in lower quality unions. Putting too much pressure on the population to marry at all costs backfires against extreme regimes.

A growing body of literature examines the origins and consequences of National Socialism. Voigtländer and Voth (2012) study the roots of the persecution of Jews across Germany in the interwar period. They show that areas where Jews were persecuted during the Black Death in 1348-50 had a much higher prevalence of anti-Semitic acts during both the Weimar Republic and the Nazi period. Cultural and geographical isolation are the driving forces that explain the persistence of anti-Semitic violence. Subsequent papers examine the aftermath and political economy of Nazism. Satyanath et al. (2017) show that the density of social networks accelerated entry into the Nazi Party, while Voigtländer and Voth (2015) find evidence that Nazi propaganda,

⁵In the case of Germany, the non-economic literature has so far agreed on the dramatic decline in fertility that preceded the Nazi regime but has not reached a consensus on the consequences of National Socialism, and in particular the Law for the Encouragement of Marriage, on fertility. Demographers of the 1940s, such as Taeuber and Taeuber (1940) or Kirk (1942), without discussing specific policies in detail, were impressed by the increase in German fertility. More recent authors, such as Stephenson (2013) or Somcutean (2022), have a different evaluation. In their comprehensive work, Pine (1996) argues that the LEM has been globally ineffective in increasing fertility.

particularly through indoctrination in schools, permanently altered the antisemitic beliefs and attitudes of those treated. Studies such as Becker et al. (2024) or Buggle et al. (2023) have shown how the effect of Nazism was modulated by the migratory response of populations. To our knowledge, we are the first to examine the quantitative causal relationship between Nazism and fertility.

The rest of the paper is organised as follows. Section 2 describes the historical context of Germany before and during the Nazi rule and presents the LEM in details. Section 3 discusses our identification strategy while Section 4 presents our main results and robustness checks. Section 5 develops a theoretical model that suggests a number of mechanisms that we test quantitatively. It also rules out a series of competing mechanisms. Section 6 discusses our results in the more general framework of authoritarian family policies outside Germany. Section 7 concludes.

2 Historical context

In order to understand the consequences of the Nazi regime on fertility outcomes, we use the Weimar Republic as a point of comparison. More precisely, we restrict our analysis to marriages that were celebrated during or after the Weimar Republic. This temporal restriction does not mean, however, that the bride and groom were not born and socialised in the German Empire. Before the First World War, the German Empire was characterised by fairly strict class divisions and limited social mobility (Kaelble, 1978). There was a paternalistic male breadwinner model that left little freedom for women. Emperor Wilhelm II, who ruled the German Empire between 1888 and 1918, is regarded as the father of the *Kinder, Küche, Kirche* philosophy, that we describe later in this section (Cecil, 2000). Despite this traditional orientation, the Empire never implemented pro-natalist policies such as a unified system of child allowances (Mason, 1976).

The mass destruction of the First World War and the ratification of Article 231 of the Treaty of Versailles left the Weimar Republic in a severely deteriorated economic situation. Productivity was reduced by the loss of territory, the destruction of industry, and the loss of men killed in the war. Public debt combined with rapid inflation led to systemic malnutrition (Boemeke et al., 1998). After this first difficult period, the Republic entered the Weimar Golden Age, during which the economy stabilised before the onset of the Great Depression with mass unemployment and systemic impoverishment (Balderston, 2002).

On the demographic side, the shortage of men led to a decline in the number of marriages and a persistently high rate of widowhood. Figure 1a illustrates how the number of marriages was initially depressed by the First World War, but eventually recovered to pre-war levels. In addition, fertility has been on a downward trend since 1890 due to the ongoing fertility transition (Figure 1c). Despite this situation, the Weimar Republic, as explained by Mason (1976), refrained from implementing pro-natalist policies. However, in 1920, it introduced the first unified tax system, which included a progressive tax deduction based on the number of children. In terms of gender roles, the Weimar Republic is known for laying the foundations for equal civil rights, granting women the right to vote as early as November 1918, when the Republic was proclaimed. During this period, women’s participation in the labour force increased at an unprecedented rate, although it was concentrated in the less advanced sectors of the economy. Despite these notable improvements, institutions remained strongly biased in favour of men, resulting in limited power for women.

In January 1933, the National Socialist German Workers’ Party (NSDAP) won the elections and took power. The NSDAP tried to stimulate growth by investing in housing, the Reichsbahn, the postal system, and other

infrastructure. It also invested heavily in armaments. The large-scale unemployment they inherited from January 1933 had disappeared by 1937 (Overy, 1994). This improvement was achieved by a sharp reduction in female labour force participation, a key aspect of the Law for the Encouragement of Marriage, which we will discuss in a few lines. Mass consumption did not increase accordingly and was even discouraged, as the one-pot Sundays show.⁶ The success of this programme highlights the ambivalence of the German people in supporting the new regime. This ambiguity can be retrieved in more direct outcomes such as the number of deportations by locality and political results in parliamentary elections between 1928 and 1933, as done by Adena et al. (2015). Resistance acts and movements are also documented by Adena et al. (2020) and Peukert (1987).

In contrast to previous regimes, the Nazis implemented an exceptionally proactive family policy, inspired from the concept of *Kinder, Küche, Kirche* fathered by Emperor Wilhelm II. According to the 3Ks, women should only participate in the economic life of the country only by ensuring the growth of their family (Pine, 1996). More specifically, they were expected to devote their time to bringing up children (*'Kinder'*), feeding the family (*'Küche'*), and investing in their spiritual life (*'Kirche'*). The Nazi regime was convinced that the abandonment of traditional gender roles and family life, which had begun with the Weimar Republic, was a major threat to the German Reich. In his book "We create the Third Reich", Wilhelm Frick, one of the founders of the Nazi regime and Reich Minister of the Interior, documented a radio speech on the occasion of Mother's Day in May 1934. He emphasised that:⁷

The salvation of Germany depends not only on the enthusiasm of our male youth for the resurgence of our fatherland, but it depends just as much on the devotion with which our women and girls turn back to the family and to the idea of motherhood! Women and mothers are the guardians of tradition and customs, but also the guardians of culture and morality! (Frick, 1934)

The main idea of the regime was to bring German women back home to reduce the massive unemployment caused by the economic crisis of the 1930s and to promote the growth of the 'Aryan' population within a paternalistic breadwinner model. Apart from the massive propaganda around the 3K's (Pine, 1996), the main family policy instrument of the NSDAP was the "*Law for the Encouragement of Marriage*" (LEM). It was part of the larger "*Law for the Reduction of Unemployment*" (LRU) of June 1, 1933.

The '*Law for the Encouragement of Marriage*' developed around three pillars: marriage, fertility, and labor force participation. Each element of the law was designed to change the incentives for women to marry, to have children, and to leave the labour market. The LEM offered newly married couples a loan (*'Ehestandsdarlehen'*) of up to 1000 Reichsmark⁸ with which they could buy furniture. The loan was distributed in the form of coupons.⁹ It was interest-free, and couples had to repay 1% of the total amount each month. This policy was designed to increase the number of marriages of a certain type of population deemed valuable to the *Volk* by imposing further restrictions. We will use the term eligible population here. To be

⁶Instead of enjoying Sunday lunch with expensive meat, families were encouraged to eat a cheaper one-pot meal and donate the difference once a month. Already in 1933/34, more than 25 million RM, or about 13.6% of all donations, were given in this way to the *Winterhilfswerke des Deutschen Volkes* (WDV). A figure which rose steadily to almost 332 million RM or 20% of all donations to the WDV in 1942/43 (Stadelmann, 1942).

⁷Original book title: 'Wir bauen das Dritte Reich'. Original text: 'Die Rettung Deutschlands hängt nicht nur von der Begeisterung unserer männlichen Jugend für die Wiedererstarkung unseres Vaterlandes, sondern sie hängt ebenso sehr von der Hingabe ab, mit der unsere Frauen und Mädchen sich wieder der Familie und dem Muttergedanken zuwenden! Die Frauen und Mütter sind die Hüterinnen der Überlieferung, der Gebräuche, aber auch der Hort der Kultur und der Sitte! (p. 55)'

⁸1000 RM in 1933 is about 5,100 Euro (PPP) in 2023. It corresponds to 63% of the average annual income of a fully employed person (Annex 1 Sozialgesetzbuch VI).

⁹A scanned version of such a coupon is shown in Figure 11 in the Appendix B.

eligible for the loan, the marriage should not involve persons who are (i) Jewish, (ii) without civil rights (*bürgerliche Ehrenrechte*), (iii) suspected of having dubious political attitudes (persons without a guarantee of uncompromising support for the nation-state), (iv) suffering from a physical or mental hereditary disease that would lead to a marriage not in the interest of the ethnic community, or (v) susceptible to not repaying the marriage loan ('asocial'). Finally, the loan was limited to marriages celebrated after the implementation of the policy on 3 June 1933.

In addition to the positive incentives to marry, the Nazis introduced negative incentives to remain unmarried. Officially, the "marriage assistance" (*Ehestandshilfe*) was introduced to refinance the marriage loan. It was mainly a progressive tax system that applied only to single people without children. All unmarried persons under the age of 55 who earned more than 75 RM per month had to pay up to 5% of their income, depending on their income level. The tax was levied on both labour and property values.¹⁰ Widowed and divorced persons were included in the single group unless they were over 55 years of age (no longer of fertile age), spent more than $\frac{1}{6}$ of their monthly income to support their parents or ex-wife, or had children from a previous marriage. In January 1935, marriage assistance was incorporated into the income tax. In addition to this economic penalty, unmarried or childless people suffered a strong social stigma (Pine, 1996). As reported by Proctor (1988), in July 1942, Reich Health Führer Leonardo Conti ordered that "every means at the disposal of the doctor should be used to help childless couples to bear children"; to this end, Conti ordered each German district (Gau) in the Reich to establish workshops (attached to local health offices) to help childless couples find ways to bear children.

To encourage fertility within a marriage, the total amount of the loan to be repaid was reduced by 25% for each birth ('*Abkindern*'). If divorce was made almost impossible under Nazi rule, childlessness or the possibility of conceiving children with a younger childless woman were valid reasons for unilateral divorce. In fact, it was even encouraged if the couple remained childless after a certain period of time.

Finally, in order to encourage women to leave the labour market and embrace the ideology of the 3K, the receipt of the loan was made conditional on women giving up their participation in the labour market as long as the couple repaid the loan. In reality, only women who had been employed for at least six months in the two years prior to the introduction of the loan (June 1, 1931 to May 31, 1933) were entitled to receive it (Clause V §1 (1) a.). This practical detail made the LEM a key element of the 'Law for the Reduction of Unemployment'. Women whose husbands earned less than 125 RM were not obliged to stop working.

During the period of this study, the legislation was adapted to the economic situation. In January 1935 the rules were tightened up by the 'Second Law to Amend the Law for the Encouragement of Marriage'. Now women had to work for at least 9 months in the last two years before marriage (§1 (1) a.). In 1937 the German labour market moved towards full employment and local labour shortages. This led, after a series of minor revisions, to a major modification of the LEM to allow some German women to re-enter the labour market. This modification is known as the *Third Law for the Adjustment of the Law for the Encouragement of Marriage*, which was implemented on November 3, 1937. From that date on, newly married women who received the marriage loan had to choose between repaying 1% per month without working or 3% while working.

The LEM was not the only policy that directly affected reproduction and marriage. Mason (1976) gives a very detailed description of the additional welfare policies implemented by the Nazi administration from

¹⁰The tax system is detailed in Table 8 of Appendix B.

1934 to 1938. From the doubling of the income tax allowance for each dependent child to the introduction of a one-off child allowance of 100 RM per child for large families in need, the cost of childbearing was gradually and significantly reduced in the early years of the Third Reich. As Mason points out, this unprecedented policy did not achieve the goal of making large families more prosperous than small ones, an ultimate goal of Nazi family policy, but it did potentially have a positive effect on fertility decisions.

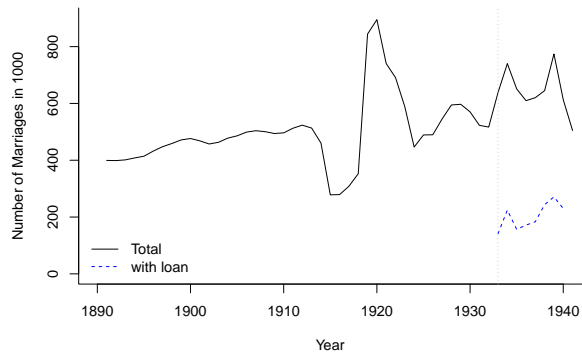
Another facet of the Nazi family policies that we don't explore in this paper concerns the eugenic persecution of minorities. On 14 July 1933, the '*Law for the Prevention of Hereditarily Diseased Offspring*' imposed sterilization on persons suffering from certain hereditary diseases (congenital feeble-mindedness, schizophrenia, severe depression...). If sterilisation was unsuccessful, the woman who became pregnant had to abort the pregnancy. Between 1934 and 1939, 320,000 persons were sterilised, representing 0.5% of the German population, mostly single women (Pine, 1996). The '*Law for the Protection of German Blood and Honour*' of September 1935 prohibited sexual relations between Germans and members of minorities. Finally, on 18 October 1935, the '*Law for the Protection of the Hereditary Health of the German People*' excluded the 'inferior' and 'alien' from the '*Volksgemeinschaft*', with consequences for marriage and fertility. This policy was part of the massive persecution of minorities such as the Jewish and Gypsy populations.

To put the German historical context into a quantitative perspective, we rely on two main types of data sources. The first consists of historical data collected before the Second World War. Most of the data comes from two censuses conducted in 1933 and 1939, when the Nazis were in power. To the best of our knowledge, the original microdata have not survived along time, but tables with data aggregated to the level of provinces have survived in Statistisches Reichsamt (1937, 1943). One of their key features is their aggregation by year of marriage. We supplement these data with additional contextual variables from Statistical Yearbooks, such as the proportions of couples who married in 1937 and 1938 using the loan by age and by province. Our second main source of data is more recent and consists of individual (non-nominative) census data collected in West Germany in 1970. We describe the latter in Section 3 while Appendix A presents all our data sources and ways of accessing them in detail.

Figure 1a and b present the historical dynamics of marriage in Germany from the Empire to the Third Reich.¹¹ Following the introduction of the marriage loan in 1933, there was a rapid surge in the total number of marriages. After an initial peak in 1934, the number of marriages declined slightly and remained relatively stable. The loan was readjusted in 1937, resulting in a new increase in the number of marriages. Subsequently, with the outbreak of the war, the number of marriages fell significantly. By 1933 the loan had been paid out to about 22% of all marriages. This percentage increased to about one third of all marriages, peaking in 1938 after the reform (see Figure 1a, dashed line).

Figure 1c shows the trend in the number of children per 1000 inhabitants. Apart from the period of the First World War, fertility rates have been falling steadily since the beginning of the twentieth century. However, this downward trend stopped when the Nazis came to power. The number of births per 1000 inhabitants rose from less than 15 in 1933 to over 20 in 1939, as noted earlier by Kirk (1942). Using an alternative measure, we find that by the end of the Great Depression, the total fertility rate among married women was comparable to levels observed at the end of the twentieth century, namely below 1.4. By the outbreak of the Second World War, fertility rates were back above replacement level, suggesting that the Nazis may have succeeded in halting the decline in fertility. However, it is important to note that the increase in the number

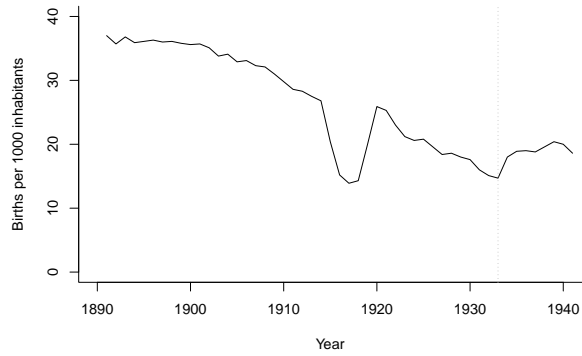
¹¹Note that the totals in Figures 1a and b differ because Figure 1a shows the totals from the official statistics in the territory of the Third Reich, while Figure 1b is restricted to the 10% sample of the 1970 census for West Germany.



(a) Number of Marriages 1890–1940, All population



(b) Number of Marriages 1920–1969, 10% Census West



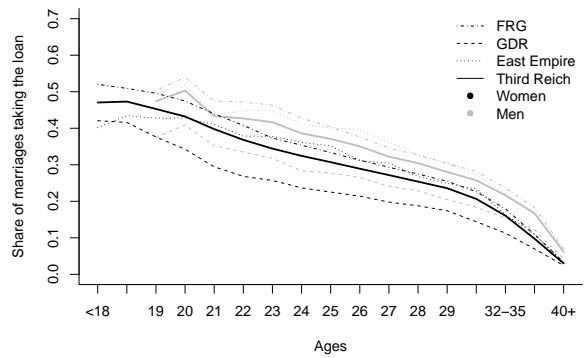
(c) Fertility per 1000 Inhabitants 1890–1940



(d) Total Fertility Rate from 1925–1969



(e) Marriage and Labour Market Participation from 1920–1940



(f) Share of Marriages with Loan in 1937

Fig. 1. Marriages, fertility and prevalence of the loan in the German Empire, Weimar Republic and Third Reich along time. Source: Fig a, c, e, Statistisches Reichsamt (1938b, 1940, 1942); Fig. b and d Census 1970; Fig. f Statistisches Reichsamt (1938a).

of births may have been due to a concurrent increase in the number of marriages, which may have masked a decline in marital fertility. In Figure 13 of Appendix B, we show that marital fertility increased only modestly compared to total fertility under the Nazi regime, suggesting that marriages played a significant role in the fertility rebound during the Nazi period.

Figures 1e and 1f highlight two crucial observations. First, a significant proportion of couples (40%) benefited from the loan when they married in 1937 at the age of 20, gradually falling to 30% by the age of 26. As illustrated in Figure 1e, this extensive use of the loan led to in an unprecedented peak in the proportion of women leaving the labour market permanently upon marriage. In other words, our descriptive statistics suggest that the loan policy had a substantial impact on the German labour market, consistent with the aims of the Nazi administration.

Our reading of the literature and of Figure 1 points to a fertility rebound associated with the National Socialist period. To advance this interpretation and to capture the potential association between Nazism and marital fertility, we use the aggregated results of the 1933 and 1939 censuses. To the best of our knowledge, we are the first to use these data to study fertility changes in Germany. For both censuses, we know for each territory j the number of children born to couples married since x years. From this we can calculate our outcome variable Y_{jxc} , which is the average number of children born to couples married since x years in territory j of census c . We then run the following regression model:

$$Y_{jxc} = \beta_0 + \beta_1 c^{1939} + \beta_2 M_j + \beta_3 M_j * c^{1939} + \beta_4 v_x + u_j + \varepsilon_{jxc}, \quad (1)$$

where c^{1939} is a dummy variable that takes the value 1 if the observation is from the 1939 census and 0 if it is from the 1933 census. M_j is a dummy variable that takes the value 1 if $x \leq 6$ and 0 otherwise. u_j denotes a territory fixed effect and v_x a set of dummies that capture the number of years couples have been married.

Table 1: Presence of Nazism depending on years of marriage

census	1933	1939
≤ 6 years of marriage	Never treated	Treated by Nazism and LEM
> 6 years of marriage	Never treated	<i>Treated by Nazism but not by LEM</i>

As illustrated in Table 1, our estimation can be understood in a kind of difference-in-difference framework. The 1933 census data measure aggregate behaviour before any treatment by the Nazi regime (a kind of control group). In the 1939 census, couples who had been married for less than or equal to 6 years were married under the Nazi regime and were therefore exposed to the full set of incentives regarding marriage and fertility, be it social and institutional pressure, propaganda, or the LEM. On the contrary, couples who had been married for more than 6 years did not benefit from the Nazi family policies aimed at newly married couples. But they did face social and institutional pressure to have more children when they were already quite advanced in their marital life.

First, it is important to recognise that it would be inaccurate to claim observational equivalence between the couples in each group represented in Table 1. They married in different time periods, from 1916 to 1932 in the 1933 census and from 1922 to 1938 in the 1939 census, and are therefore likely to be very different in terms of average education, labour force participation, fertility, and gender norms, among other things. Second, although couples were not affected by Nazism in the 1933 census, they were affected differently by

Table 2: Effect of Nazism on immediate fertility - OLS

	German Territory		West Germany	
	Pre-war censuses	1970 census	Pre-war censuses	1970 census
$M^{\leq 6}$	-2.1270*** (0.0348)	-2.3126*** (0.0669)	-2.2180*** (0.0410)	-2.2967*** (0.0133)
c^{1939}	-0.1067*** (0.0065)	-0.1097*** (0.0042)	-0.1053*** (0.0080)	-0.1105*** (0.0048)
$M^{\leq 6} * c^{1939}$	0.1253*** (0.0167)	0.1455*** (0.0052)	0.1201*** (0.0199)	0.1434*** (0.0057)
Years Married FE (v_x)	x	x	x	x
Province FE (u_j)	x		x	
Zone FE		x		
Adj. R-squared	0.953	0.182	0.959	0.177
Observations	1,960	908,209	1,240	752,692

Note: The 1,960 observations in the pre-war censuses for the German territory correspond to 49 territories \times 20 marriage cohorts \times 2 censuses. The number of territories reduces to 31 in the exercise on West Germany. For details on the territories, see Table 7 in Appendix A. The 752,692 observations in the 1970 census estimation correspond to all women who married in the 20 years before 1933 (309,276 women) and in the 20 years before 1939 (443,416 women) in the Federal Republic of Germany. The number increases to 373,207 women and 535,002 women who married before 1933 and 1939 respectively if we include all three zones: the Federal republic of Germany, the German Democratic Republic and the East German territories. *** p-value<0.01, ** p-value<0.05, * p-value<0.1.

the Great Depression of the 1930s. While it hits the recently married cohorts in the 1933 census ($M_j = 1$), the opposite is true for the 1939 census ($M_j = 0$). In other words, while the older couples in our sample suffered the economic crisis at a more advanced stage of their fertile lives, the couples who married under the Nazi regime didn't suffer the crisis during their marital lives. Finally, c^{1939} implicitly captures the ongoing fertility transition later in time.

Despite these specific narratives for each group (which would undoubtedly lead to the rejection of any parallel trend analysis), it remains important to examine the value of β_3 . A positive sign would indicate that the fertility difference between long-married and newly-married couples is smaller under the Nazi regime than before. A positive sign for $\beta_1 + \beta_3$ would indicate that the declining trend in fertility resulting from the demographic transition was at least temporarily reversed for newly married couples.

The results of our benchmark estimation appear in the first column of Table 2. Not surprisingly, fertility is lower for couples married for less than 6 years than for couples married for more than 6 years, with an average of 2.127 children. The negative coefficient of the census dummy c^{1939} suggests a negative trend in fertility, possibly due to the impact of the economic crisis of the 1930s and the pre-existing, ongoing fertility transition (see Knodel (2002) and Figure 1c) that dominates a possible general increase due to Nazism. However, this negative trend seems to be reversed for recently married couples ($\beta_1 + \beta_3 = 0.02 > 0$)¹² by Nazi policies and propaganda glorifying motherhood. Compared to long-married couples, marriage under the Nazi regime is associated with an increase in fertility of 0.125 children among recently married couples, confirming a positive association between the Nazi period and fertility.

Although far from perfect, this exercise has the merit of using data covering the entire population of the

¹²Testing for the joint significance of this reversal on pre-war census data, we find that it is not different from zero whereas in the case of the 1970 census, $\beta_1 + \beta_3 = 0.036$ is significantly greater than 0.

German Reich. It helps to document a positive association between the Nazi administration and fertility in the short term, understood as the current number of children. Another important aspect is the use of data collected before the Second World War. Compared to data collected later, they are immune to selection into mortality, out-migration due to the war, and the consequences of the division of the country into two entities. We assess the potential severity of this bias by repeating our exercise using individual data from the 1970 census. We compute for each woman her fertility in 1932 and 1938 as a function of her cohort of marriage and regress Equation 1. Territory fixed effects are of a different nature, as here we control for the place of residence of the individual on 1 September 1939.¹³ Remarkably, as shown in column 2 of Table 2, the average treatment effect obtained from this regression is very close to that obtained using the 1933 and 1939 censuses. This suggests that the selection biases we expected are not quantitatively important.

In columns 3 and 4, we replicate our regression using only the areas corresponding to West Germany in 1970. Remarkably, our results remain stable in sign and magnitude, suggesting that the positive association between fertility and the Nazi period was not driven by the eastern or western part of the country.

3 Identification strategy

We use the 10% sample of the 1970 census in the Federal Republic of Germany (FRG).¹⁴ The sample includes about 1 million women born before 1921 (age 16 or older in 1937) and more than 522,000 marriages between 1920 and 1937.¹⁵ The relatively long period between the 1933 reform and the 1970 census allows us to examine the impact of Nazism on fertility beyond its temporary effects, and also to explore the mechanisms by which the Nazi regime altered completed fertility.¹⁶

Our analysis is based on a stepwise difference-in-difference approach, comparing women living in the Third Reich in September 1939 with women living outside the Reich at the same time, as presented in Table 3. The latter form our control group. Most of them are of German origin and all women in our sample, whatever their place of residence in 1939, are German in 1970.¹⁷ This ensures that the difference we capture between our control and treatment groups is not due to differences in the origins or past culture. The women in our control group were not confronted with Nazi policies until 1938, nor were they fully exposed to Nazi propaganda about the family. However, it would be inaccurate to say that they were completely immune to Nazi propaganda about the family; after all, there was a Nazi party in the Sudetenland, for example. However, because the Nazi Party was not in power outside the Third Reich, its propaganda could not reach women outside the Reich with the same intensity as inside. This suggests that if we find an effect of Nazism on fertility using our difference-in-difference approach, it would be a lower bound estimate of the true effect. Importantly, even if some of the women in our control group were integrated into the Reich between 1939 and 1945, they made their marriage decision before then, as we restrict our analysis to marriages celebrated

¹³We have three territories within the German Empire: Federal Republic of Germany, German Democratic Republic, East German Territories (territories east of the Oder river).

¹⁴Data have been provided by the Research Data Centre of the Federal Statistical Office (Forschungsdatenzentrum). See <https://forschungsdatenzentrum.de/en>.

¹⁵If Jewish women were included in the calculations of section 2, they are excluded from the present investigation for two main reasons: (i) the size of their group is very small, and (ii) the nature of the policies they faced was in complete contrast to the one we are examining.

¹⁶Although a census exists for East Germany in 1971, it provides much fewer variables, which prevents us from using it for our main investigations.

¹⁷One might fear that in reality a significant proportion of women were not German in 1939 but became naturalised later. However, the 1939 census data indicate that this type of woman represented 0.4% of the female population only.

before 1938. This is a crucial feature, as we will show later that marriage selection was a key driver of the Nazi regime’s impact on German fertility. Finally, and importantly, most of our exercises will use the respondents’ fertility as measured in 1938 as the outcome variable; we cannot suspect that the annexation of the Sudetenland and the Anschluss contaminate these results.

Table 3: Observations according to place of residence in 1939

Area	Year of Marriage		
	1928–32	1933–37	All
FRG	112,828	140,142	252,970
GDR	6,744	9,597	16,341
East German territories	16,083	19,895	35,978
Czechoslovakia	6,560	6,218	12,778
Eastern neighbouring countries	2,452	2,505	4,957
Remaining areas	686	774	1,460
Total	145,353	179,131	324,484

Note: The map in Figure 9 in Appendix A displays the Third Reich in 1937.

We restrict our analyses to marriages celebrated before 1938 for two main reasons. First, the reform of the ‘*Law for the Encouragement of Marriage*’, passed in late 1937, was important enough to change the nature of our treatment variables. Second, the annexation of Austria and the Sudetenland by the Third Reich in 1938 introduces a confounding factor that complicates the distinction between our treatment and control groups.

Table 3 shows the distribution of women who married between 1928 and 1937 in our control and treatment groups according to their place of residence in 1939. The treatment group consists of 305,289 women, 82.9% of whom lived in the FRG, while the remainder migrated from other zones of the former Reich to the 1970 borders. Our control group consists of 19,195 women, mainly from former Czechoslovakia, including the Sudetenland, and neighbouring eastern and south-eastern countries such as Poland.

In a series of four consecutive exercises, we explore the complex effect of the Nazi regime on the marital fertility of Germans by manipulating the way we define our treatment and the date/year at which we measure our dependent variable. These estimations will progressively point to a key result: the Nazi regime is associated with a temporary increase in fertility among German women, but the family policies specifically implemented for newly married couples and the associated social and economic pressure to marry had a detrimental effect on births. If we illustrate our approach in Figure 2, we can see that all our estimations have the same structure, where we want to predict n_{ijt} , the number of children at time t of a woman i who married in area j . We rely on an ordinary least square model as our main specification:¹⁸

$$n_{ijt} = \alpha_0 + \alpha_1 G_i + \alpha_2 T_i + \alpha_3 G_i * T_i + \beta X_i + b_j + \varepsilon_{ijt}. \quad (2)$$

G_i equals 1 if woman i lived in German territory, otherwise it equals 0.¹⁹ T_i is a dummy variable indicating our treatment. X_i , the vector of basic controls in all estimations, includes education, religion, learned occupation

¹⁸While the place of residence appears as a natural candidate to cluster standard errors, with only 6 clusters (see Table 3) we have to stick to robust standard errors, see Cameron and Miller (2015).

¹⁹More precisely, the women was either living in FRG, GDR or the Eastern German territories, see Table 3.

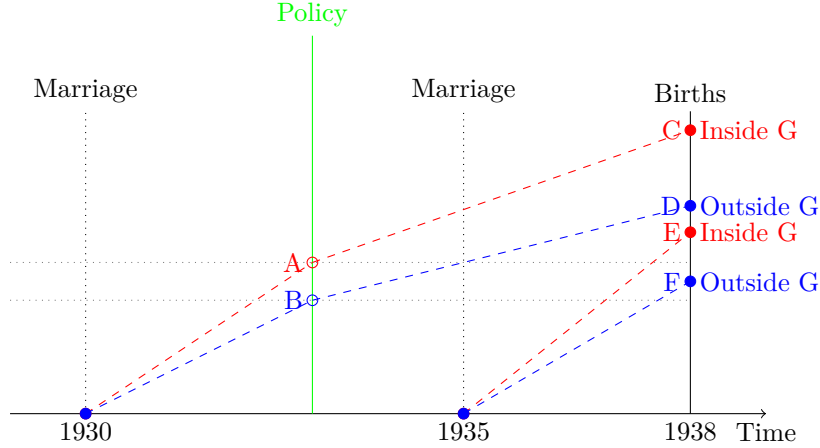


Fig. 2. Estimation strategy on the impact of Nazism on fertility

and Vertriebenenausweis.²⁰ b_i denotes the year of birth of person i . Since j captures the place of residence in 1939, b_{ij} controls for area-specific fertility trends. If we don't include the husband's characteristics in our main specification, we do so in the robustness checks. The partner controls then include his religion and education. These estimations are done with robust standard errors.

In our first exercise, we focus on women who married before 1933 and measure their fertility both in 1933 ($T_i = 0$), before any treatment by the Nazi administration, and in 1938 ($T_i = 1$). We use on random effects regression models in order to control for invariant covariates. In the wording of Figure 2, we compare $|AB|$ with $|CD|$, and a positive value of α_3 would indicate that $|CD| > |AB|$. This would imply that women who married inside the Reich before the Nazis arrived, but were exposed to their propaganda and some of their family policies, tended to increase their fertility relatively more than their counterparts outside the Reich over the course of their fertile lives. Such a difference would suggest a positive association between National Socialism and fertility for women not treated by the LEM.

One might fear that such a difference, measured in the middle of women's reproductive lives, might not be associated with exposure to Nazism, but might reveal some (possibly pre-existing) differences in birth calendars. For this reason, our second exercise takes a complementary approach by comparing $|AB|$ with $|EF|$. In doing so, we compare the fertility of women inside the Reich to their statistically equivalent counterparts outside the Reich after a given number of years of marriage. For example, in our illustrative figure, we compare the fertility differential between women within and outside German territory in 1933, which includes women who married in 1930, with the fertility differential in 1938, which includes women who married in 1935. The women of the 1930 marriage cohort are all unaffected by the Nazi regime ($T_i = 0$), while the women living in the Reich from the 1935 marriage cohort were fully exposed to the Nazi regime through its propaganda, social punishment of singles and childless, and family-based welfare policies ($T_i = 1$). Again, a positive sign on our interaction coefficient α_3 would indicate a positive association between exposure to Nazism and marital fertility.

Our third exercise compares $|CD|$ with $|EF|$, so that we measure the fertility difference between women who married before the Nazi regime ($T_i = 0$) and during the Nazi regime ($T_i = 1$). A positive sign on

²⁰The Vertriebenenausweis is an identity card that documents whether the person was either displaced from her home country or was a refugee from the Soviet occupation zone.

our interaction term would imply a positive impact of the Nazi family policies reserved for newly married couples, of which the LEM is the core element. Conversely, a negative sign would argue for unexpected negative effects of the policy. Comparing $|CD|$ with $|EF|$ again implies comparing women with different years of marriage and thus different exposure to the risk of pregnancy. That’s why we extend our approach to a fourth and final exercise. We repeat the exercise comparing $|CD|$ with $|EF|$, but this time, we measure the fertility of the respondents in 1970 so that all women in our regression have completed their fertility cycle. This fourth and final exercise also allows us to check whether the effect we capture is a temporary effect of the Nazi family policy on fertility or a more permanent one.

Our identification strategy is subject to some risks. First, the year of marriage of the respondents is endogenous. However, the Nazi Party’s rise to power in the early 1930s was hardly predictable, and the exact nature of its family policies was even more unpredictable. It is therefore difficult to argue that German women adjusted their marital behaviour in anticipation of the NSDAP coming to power. Second, by pooling the marriage cohorts for the comparison between 1928-1932 and 1933-1937, we run the risk that our results are driven by a specific event in a specific year, an event that would not necessarily be associated with Nazi rule. We sharpen our analysis in exercises 3 and 4 by restricting our comparison to the 1932 and 1934 marriage cohorts (Table 11).²¹

Third, the fertility patterns of our control and treatment groups may not have followed a parallel trend prior to the possible Nazi treatment. We examine this possibility in two ways. First, we calculate the (uncontrolled) annual fertility of both groups for each marriage cohort to check whether they followed a common dynamic before 1933, which is the case. Therefore, we do not violate the parallel trend assumption, at least not by much, while we can clearly identify breaks associated with the arrival of the Nazi regime (see Figure 14 in Appendix C.2). Second, in Figure 3, we repeat our main specification but this time as an event history study. By interacting a set of dummy variables for year of marriage with G_i , we can check for any pre-existing trend between our control and treatment groups on a yearly basis. As can be seen from Figure 3, no such pre-existing trend can be documented.

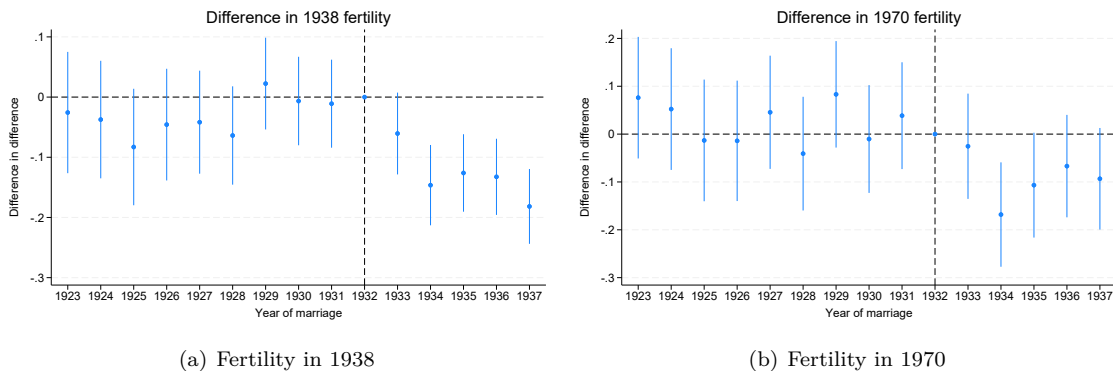


Fig. 3. Pre-trends in differential fertility

Note: Bars indicate the 95% confidence intervals of the event history model (main specification with controls and area births trends) with 1932 as reference year.

A fourth threat to our identification strategy comes from the non-random selection of individuals between

²¹In addition, in Tables 12-15 in Appendix C.3, we propose a series of similar regressions comparing specific years of marriage for each of our four exercises.

the control and treatment groups. Since our control group consists of migrants to West Germany, we cannot exclude the existence of unobserved selection factors into migration that are themselves correlated with the fertility of the respondents. Table 4 documents some key characteristics of both groups. We perform balance tests using t-tests for the year of birth and age at marriage as well as proportion tests for the fractions across educational attainment, occupation, and religion.²² On average, women who married in the Third Reich were older and less educated than those who married outside the German territory. They were more likely to have attended only primary school and less likely to have attended higher education, with the exception of technical schools. Outside the Third Reich, most women were Catholics, while inside the Third Reich, Evangelical religion dominated. We also document some differences with regard to learned occupation.

In order to investigate whether these observed imbalances may confound our estimates, we re-estimate all key results using pre-processing procedures to balance our sample. First, we use entropy balancing (Hainmueller, 2012) to reweight our sample and ensure that the distributions of covariates in the reweighted data are balanced between our treatment and control groups with respect to religion, occupation, education, and year of birth. In this way, we ensure that any unobserved differences between women living inside and outside the Third Reich in 1939, which are correlated with observable differences, do not drive our conclusions. We also test the non-parametric Coarsened Exact Matching method (Iacus et al., 2008) and propensity score matching using Mahalanobis distance with two nearest neighbours. Table 17 in Appendix C.4 reports the results of our main regression exercises based on the three alternative balanced samples described above. Our main results are preserved. To complement our balanced estimates, we propose a final exercise in which we change our treatment group by selecting only migrants to the FRG who came from the GDR and East German territories. In this way, we compare treated and untreated migrants, thus eliminating part of the effect of selection into migration. As can be seen in Figure 4b, our results are still valid in this setting.

Table 4: Summary on balancing tests for women marrying between 1928 and 1937 in- and outside the Third Reich.

Variable	Outside	Inside	Difference	Variable	Outside	Inside	Difference
Birth cohort	1915.0	1914.8	0.2177	Learned Occupation			
Marriage age	24.7954	25.5180	-0.7226***	Farming	0.0017	0.0028	-0.0011***
Education				Manufacturing	0.0759	0.0639	0.0120***
Elementary	0.8434	0.8785	-0.0350***	Merchants	0.0191	0.0520	-0.0328***
Secondary	0.0957	0.0696	0.0261***	Medical doctors	0.0006	0.0004	0.0002
University	0.0133	0.0078	0.0055***	Nurses & o. medical	0.0101	0.0115	-0.0014*
Religion				Pedagogues	0.0058	0.0059	-0.0002
Evangelic	0.1942	0.5389	-0.3447***	None	0.8552	0.8029	0.0502***
Catholic	0.7662	0.3908	0.3754***				

Note: *** p-value<0.01, ** p-value<0.05, * p-value<0.1; The Evangelic religion includes Free Church.

Finally, since fertility is a count variable, a natural specification consists of a Poisson regression model that attempts to determine the probability that a woman i who married at time t in area j has \mathcal{N} children. We present our preferred specification (Areas trend) using the Poisson regression model in the Poisson column of Table 10 in Appendix C.1. Our main results hold.²³

²²For a complete overview of the distribution of married women across education, religion, and occupation, see Table 16 in Appendix C.4.

²³In Table 18 of Appendix C.5, we also present all our robustness checks in the Poisson setting. All our results hold.

4 Results

Moving from an OLS estimation without controls to a specification with a full set of controls and robust standard errors yields a series of very consistent results as can be seen in Figure 4a, which reports point estimates for our coefficient of interest α_3 . Our first exercise in Panel A compares $|AB|$ with $|CD|$ from Figure 2. Our coefficient of interest indicates that the exposure of women who married in Germany before 1933 to the Nazi administration is associated with a 0.146 increase in their number of children relative to their counterparts living outside the Reich. Among the couples we study, this increase corresponds to 11.1% of the standard deviation of fertility measured in 1938 and 21.6% of the empirical increase in average fertility between 1933 and 1938. Comparing couples with the same number of years of marriage in Panel B ($|AB|$ versus $|EF|$ in Figure 2), we find that marrying inside the Reich after 1932 is associated with an increase in fertility of 0.051 children relative to marrying outside the Reich. This corresponds to 5.7% of the standard deviation of fertility measured in 1933.

Our first two exercises demonstrate a substantial increase in marital fertility among the treated women in Germany after the Nazis came to power. However, the nature of the treatment in the first and the second exercises is not entirely equivalent: unlike women who married under the Nazi administration, the women who married before 1933 were exposed to the Nazi propaganda to have more children and benefited from some welfare policies *but* they did not suffer from the pressure to marry quickly and they were not eligible for the policies reserved for newly married couples, such as the LEM. In our third exercise (Panel C), we compare the differential fertility of these two groups with their untreated counterparts outside the Reich in 1938. Our coefficient of interest (α_3) then identifies the distance between $|CD|$ and $|EF|$. Remarkably, this coefficient is negative and highly significant in all our specifications shown in Figure 4. In our preferred specification (Area birth trends), the results indicate that women who married under the Nazi regime (1933 to 1937) had fewer children than their counterparts who married earlier (1928-1932) as $\alpha_1 < 0$ (see Table 10 in Appendix C.1). This difference is even more pronounced, with a margin of 0.097 children, *for women who married under the Nazi rule*. To put this in context, this corresponds to 8.4% of the standard deviation of fertility in our 1938 sample.

In Panel D, we repeat our last exercise, but measure the completed fertility of women in 1970. In 1970, the fertility difference between women who married in Germany under the Nazi regime and women who married in Germany before is -0.093 children relative to their counterparts outside Germany. This result is highly significant regardless of the specification chosen and suggests that those women who were treated by the Nazi policy reserved for newly married couples reduced their fertility relative to their untreated counterparts. In other words, the full set of incentives introduced by the Nazis ended up reducing rather than increasing the fertility of newly married couples.

This last result is important because it points to a long-lasting counterproductive effect of the main family policy implemented by the Nazi government. In relative terms, the effect we document corresponds to 5.5% of the standard deviation of completed fertility measured in 1970. Although this result may seem modest at first sight, it is far from negligible. In a simple simulation exercise, by eliminating the interaction term in our predictions, we compute the average fertility that a woman who married in Germany would have had if she had not been subject to the special treatment of Nazi family policy. We then find that the fertility differential between women living in the Third Reich in 1939 and women living outside the Third Reich in 1939 would have been reduced to 0.01 children in 1970 compared to 0.063 in reality. In other words,

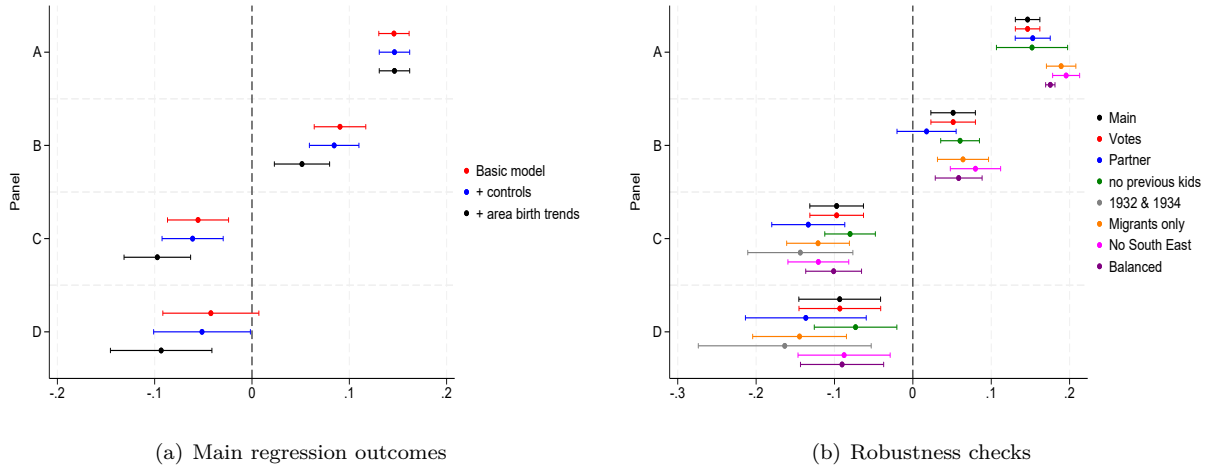


Fig. 4. Summary of coefficient of interest in the DiD estimates with 95% confidence intervals

controlling for individual characteristics, the fertility gap between migrant and non-migrant women would have been reduced by 84.8%.

Back-of-the-envelope calculations also allow us to better understand the intensity of the effect we are measuring, although these calculations must be treated with caution. Given that 1,696,340 marriages were celebrated in the territory of West Germany between 1933 and 1937, we can estimate that the full exposure to the Nazi regime led to 144,745 missing births. Even more cautiously, given the 3,221,986 marriages celebrated throughout the Reich during the same period, the corresponding number of missing births is 274,925.²⁴ This last figure is equivalent to 7.3% of the military deaths suffered by the Nazi regime during the Second World War (Statistisches Bundesamt, 1961), or to 67% of the deaths caused by strategic Allied bombing in Germany (Overy, 2014).

In Figure 4b, we highlight some important robustness checks.²⁵ We test several OLS specifications. First, we add the percentage of votes for the NSDAP in the 1933 election at the territorial level as a control to check whether a stronger adhesion to the Nazi party might be responsible for our results. If we find that more votes for the Nazi party are associated with lower fertility rates, this does not change the sign and the magnitude of our main effect. Then, we control for the husband’s characteristics for those couples who were still married in 1970. Our results are preserved with the exception that our coefficient of interest (α_3) is no longer significant in Panel B. Although it remains positive, the latter is less precisely estimated. However, this does not prevent our main result from holding, since the persistent negative effect of family policies on newly married couples remains significant and of the same order of magnitude as in our benchmark estimation (Panel D). When we rebalance our observations to control for potential confounding omitted variables, the negative effect of the full treatment by Nazism on fertility is preserved (Panels C and D) in the short and long run. This is true in the case of the entropy balancing sample in Figure 4b, but also in the case of coarsened exact matching and k-nearest neighbours, see Table 17 Appendix C.4.²⁶

²⁴ Assuming a constant number of marriages is simple but not realistic. A more complete analysis could be achieved by using a structural approach which, in a general equilibrium setting, allows for adjustments in marriage and divorce rates based on the individual characteristics of our treated population. While this approach is attractive, it is beyond the scope of this paper.

²⁵ See the last two columns of Table 10 and Table 11 in Appendix C.1 for more details.

²⁶ Note that rebalancing cancels the positive effect of our interaction term in Panel B. We discuss this result in more detail in Appendix C.4.

When we sharpen our results by comparing women who married in 1932 with women who married in 1934, our results are more pronounced in magnitude compared to our benchmark estimate. This implies that even if our main result in Figure 4a with pooled marriage cohorts inevitably includes a composition effect, our main result is not driven by the latter.²⁷ In the same spirit, when we restrict our sample to migrants and compare women from the former East Germany and the eastern territories who benefited from Nazi policies with the migrants in our control group to avoid selection into migration confounding our results. We see that our coefficient of interest is remarkably similar to our benchmark estimate in all four panels (*Migrants only* in Figure 4b).

In our sample, we have 24,260 women who had births before their marriage, which could indicate either out-of-wedlock births or births from a previous marriage. To ensure that our results are not driven by this minor margin of fertility, we tested our preferred specification excluding these women. Our main results in Figure 4 remain significant, with a magnitude comparable to our primary analysis (*no previous kids*).

5 Mechanisms

We develop a stylised model to rationalise our main result. This model suggests a number of mechanisms that we explore in the following subsections. In particular, we show that the introduction of a regime that encourages fertility within marriage for all, but at the same time penalises singleness and modestly rewards newly married couples, can lead to an increase in fertility that is stronger for couples who married before the policy was introduced than for those who benefited from the full set of incentives. This result is due to two important mechanisms: (i) if the penalty for not marrying is strong, women will tend to accept low quality marriage offers, resulting in unions that are comparatively less fertile than those celebrated without pressure to marry; (ii) the tendency to accept marriage more easily should translate into earlier marriages and more fragile marriages that end in divorce more often.

5.1 Model

Basic model

The installation of the Nazi regime and its disappearance are shocks that are difficult to predict on a lifetime horizon, so for simplicity we model individual decisions that abstract from any anticipation of regime change. We start with a model in which the Nazi regime is not installed, corresponding to the period of the German Empire and the Weimar Republic. Most importantly, divorce was rarely granted in these regimes, so it is not an option in our simplified model. The utility of an adult agent of gender $g = \{m, f\}$ is written as follows:

$$u^g(c^g, n) = \ln c^g + \beta \ln n,$$

where $\{c^g, n\} \in \mathbb{R}^{2+}$ represent the consumption and fertility of individuals of gender g , respectively. For simplicity, and given the structure of the data we are trying to understand, we assume that it is impossible to have children outside of marriage and that single individuals have access to a given reservation utility \bar{u}^s .

²⁷We expand on this point in detail in Appendix C.3.

When people decide to marry, they collectively decide how much each partner will consume and how many children they will have.

We assume a framework *à la* Chiappori (1988) in which the decision-making process is collectively cooperative. We denote θ^f the bargaining power of the female partner and $1 - \theta^f$ that of the male partner. These powers may be determined by the relative income of the partners or by other factors, which would not change our main results, see Baudin et al. (2015) and Pollak (2005) for illustrations and discussion. Since there are no gender differences in preferences, we obtain that the weighted sum of utility flows over a couple's lifetime is written:

$$U(c^f, c^m, n) = \theta^f \ln c^f + (1 - \theta^f) \ln c^m + \beta \ln n,$$

where n is the number of children born to the couple. Couples pool their income and expenditure. In addition, women invest part of their time $l^f \in [0, 1]$ in raising children, and it is at this stage that the quality of the match matters. We assume that:

$$n = (n_M l^f)^\alpha$$

$n_M > 1$ is a scalar representing the reproduction technology of the couple. We assume that children cannot be raised without a minimal time investment by the mother, while the father's time is not required.²⁸ The quality of the marital match is captured by $\alpha \in [0, 1]$; the better the quality of the marriage offer, the less time the mother needs to raise a given number of children.²⁹

Each adult person is endowed with a unit of time during which he or she can receive at most two marriage offers: one at the beginning of adulthood and, if he or she rejects it, a second one after a fraction of the time ϕ . Let's denote the quality of the first marriage offer as α_1 and the quality of the second marriage offer as α_2 . Then the household's budget constraint is as follows:

$$c^f + c^m = (1 - \mathbb{1}_\phi \phi - l^f)w^f + (1 - \mathbb{1}_\phi \phi)w^m + \Omega, \quad (3)$$

where $\{w^f, w^m\} \in \mathbb{R}^{2+}$ is the wage per unit of labour and $\Omega > 0$ is a non-labour income produced at the household level. $\mathbb{1}_\phi$ is an indicator variable that takes the value zero if the woman married early (she accepted her first marriage offer) and one if she married late (she accepted her second marriage offer after some time ϕ).

Proposition 1 *For a given set $\{w^m, w^f\}$, there exists a unique set of critical values $\{\hat{\alpha}_1, \hat{\alpha}_2, w^*, \tilde{w}$ such that:*

- $\forall \alpha_1 < \hat{\alpha}_1$, the woman refuses her first marriage offer. In this case, if $\alpha_2 < \hat{\alpha}_2$, she remains single for the rest of her life. Conversely, if $\alpha_2 \geq \hat{\alpha}_2$, she accepts her second marriage offer; within the couple she forms with her partner:

²⁸This assumption does not affect our main results qualitatively, but it prevents us from predicting the emergence of the male breadwinner model among couples.

²⁹We could also have chosen an alternative specification in which the quality of the match, instead of affecting the ability to have children, would affect the couple's ability to produce non-market income. This would not have qualitatively changed our results. The idea that better match quality induces more fertility would still hold through a positive income effect on fertility.

- If $w^f \leq \tilde{w} \equiv \frac{\beta\alpha_2(w^m + \Omega)}{1 - \phi}$, she specializes in child-rearing activities ($l^f = 1 - \phi$), household fertility equals: $\tilde{n} = ((1 - \phi)n_M)^{\alpha_2}$, while consumption levels are $c^f = \theta(1 - \phi)(w^m + \Omega)$ and $c^m = (1 - \theta)(1 - \phi)(w^m + \Omega)$
- If $w^f > \tilde{w}$, she allocates her time between rearing children and working in the labor market ($l^f < 1 - \phi$). Fertility is then given by:

$$\tilde{n} = \left[n_M \frac{\beta\alpha_2}{1 + \beta\alpha_2} \frac{w^m + (1 - \phi)w^f + \Omega}{w^f} \right]^{\alpha_2},$$

while consumption levels are $c^f = \frac{\theta(1 - \phi)(w^m + w^f + \Omega)}{1 + \beta\alpha_2}$ and $c^m = \frac{(1 - \theta)(1 - \phi)(w^m + w^f + \Omega)}{1 + \beta\alpha_2}$.

- $\forall \alpha_1 \geq \hat{\alpha}_1$, the woman accepts her first marriage offer. Within the couple she forms with her partner:
 - If $w^f \leq w^* \equiv \beta\alpha_1(w^m + \Omega)$, she specializes in child-rearing activities ($l^f = 1$), household fertility is maximal: $n^* = (n_M)^{\alpha_1}$; while consumption levels are $c^f = \theta(w^m + \Omega)$ and $c^m = (1 - \theta)(w^m + \Omega)$
 - If $w^f > \bar{w}$, the female partner allocates her time between child-rearing and labor market activities ($l^f < 1$). Then fertility equals:

$$n^* = \left[n_M \frac{\beta\alpha_1}{1 + \beta\alpha_1} \frac{w^m + w^f + \Omega}{w^f} \right]^{\alpha_1},$$

while consumption levels are $c^f = \frac{\theta(w^m + w^f + \Omega)}{1 + \beta\alpha_1}$ and $c^m = \frac{(1 - \theta)(w^m + w^f + \Omega)}{1 + \beta\alpha_1}$.

Fertility follows directly from the marriage decision and the maximisation of the couple's objective function under the budget constraint and $l^f \leq 1$. High fertility affects low-income women, while an increase in the relative wage of the latter reduces their fertility in the interior regime. When men have very low wages, their wives tend to reduce their fertility in order to participate in the labour force. A key insight from Proposition 1 is that higher marital quality α leads to more fertile marriages: because they are more efficient at raising children, high-quality marriages are more likely to have large families. A simple proof of this claim is obtained by showing that $\frac{dn^*}{d\alpha_1} > 0$ and $\frac{d\tilde{n}}{d\alpha_1} > 0$ for any value of w^f .

Another important feature of Proposition 1 is the effect of ϕ : the later the marriage, the lower fertility, and thus the smaller the surplus to be shared within marriage. Intuitively, this implies that the second marriage offer must be of higher quality than the first marriage offer in order to lead to a marriage.

We denote the value of accepting an early marriage offer (first offer) for the woman as $V_e^f = u^f(c^f(n^*), n^*)$ and for the man as $V_e^m = u^m(c^m(n^*), n^*)$. We denote V_l^g as the value of accepting a late marriage offer, estimated at the moment she or he receives the offer. It corresponds to $V_l^f = (1 - \phi)u^f(c^f(\tilde{n}), \tilde{n})$ for a woman and $V_l^m = (1 - \phi)u^m(c^m(\tilde{n}), \tilde{n})$ for a man. We can now write the arbitrage conditions that determine whether a woman would accept or reject a marriage offer for a set $\{\alpha_1, \alpha_2\}$. A woman will accept her first marriage offer if:

$$\begin{aligned} V_e^f &\geq \max\{\bar{u}^f; \phi\bar{u}^f + V_l^f\} \\ \Leftrightarrow &\phi(u^f(c^f(n^*), n^*) - \bar{u}^f) > (1 - \phi)(u^m(c^m(\tilde{n}), \tilde{n}) - u^f(c^f(n^*), n^*)) \end{aligned}$$

If this condition is not fulfilled but $\alpha_2 > \alpha_1$, she may accept her second marriage offer if:

$$V_l^f \geq (1 - \phi)\bar{u}^f \Leftrightarrow U^f(c^f(\tilde{n}), \tilde{n}) > \bar{u}^f.$$

An important property of these decisions is that for a given α_2 , there exists a unique critical value $\hat{\alpha}_1$ such that for $\alpha_1 > \hat{\alpha}_1$ a woman will prefer to marry early and accept her first marriage offer. Note that $\hat{\alpha}_1$ is an increasing function of α_2 , since the higher the latter, the more valuable it is to wait for the second offer. The nature of the marriage decision problem and the results of Proposition 1 imply that if a woman has rejected her first marriage offer ($\alpha_1 < \hat{\alpha}_1$), she will reject any second marriage offer of lower quality than the first. There exists a unique $\hat{\alpha}_2 > \hat{\alpha}_1$ such that for any $\alpha_2 > \hat{\alpha}_2$, a woman will accept her second marriage offer.

Impact of the Nazi regime

The next step is to enrich the model with the main features of the regime's policy. To do this, we introduce a marriage premium in the form of a non-labour income supplement $\omega * n$ with $\omega > 0$; the receipt of this income supplement is conditional on the woman not working ($\mathbb{1}_l = 1$). This corresponds to the marriage loan. We then write the new budget constraints:

$$c^f + c^m = (1 - \mathbb{1}_\phi\phi - \mathbb{1}_l l^f)w^f + (1 - \mathbb{1}_\phi\phi)w^m + \Omega + (1 - \mathbb{1}_l)\omega n.$$

We also introduce a utility penalty $p > 0$ for remaining single, so that the value of being single becomes $\bar{u}^s - p$. This corresponds to the tax that single people without children had to pay to finance the LEM and also to the social stigma they suffered. Finally, in line with the social pressure to have large families, we assume that fertility is socially rewarded by a utility flow $\varepsilon > 0$ for each birth, so that the objective function of couples becomes:

$$U(c^f, c^m, n) = \theta^f \ln c^f + (1 - \theta^f) \ln c^m + (\beta + \varepsilon) \ln n,$$

The behavior of the representative woman entering adulthood under the Nazi regime is described in the following proposition:

Proposition 2 *There exists a unique set of critical values $\{\alpha_1^N, \alpha_2^N, w^{*N}, \tilde{w}^N\}$ such that for a given set $\{w^m, w^f\}$:*

- $\forall \alpha_1 < \alpha_1^N$, the woman refuses her first marriage offer. In this case, if $\alpha_2 < \alpha_2^N$, she will remain single for the rest of her life. Conversely, if $\alpha_2 \geq \alpha_2^N$, she accepts her second marriage offer. Within the couple she forms with her partner:
 - If $w^f \leq \tilde{w}^N$, she specializes in child-rearing activities ($l^f = 1 - \phi$) and accepts the loan offer, household fertility equals: $\tilde{n} = ((1 - \phi)n_M)^{\alpha_2}$, while the consumption levels are $c^f = \theta(1 - \phi)(w^m + \omega(n^M)^{\alpha_2} + \Omega)$ and $c^m = (1 - \theta)(1 - \phi)(w^m + \omega(n^M)^{\alpha_2} + \Omega)$.
 - If $w^f > \tilde{w}^N$, she allocates her time between child-rearing and labor market activities ($l^f < 1 - \phi$), but she is no longer eligible for the loan. Fertility is then equal:

$$\tilde{n} = \left[n_M \frac{(\beta + \varepsilon)\alpha_2}{1 + (\beta + \varepsilon)\alpha_2} \frac{w^m + (1 - \phi)w^f + \Omega}{w^f} \right]^{\alpha_2},$$

$$\text{while consumption levels are } c^f = \frac{\theta(1 - \phi)(w^m + w^f + \Omega)}{1 + (\beta + \varepsilon)\alpha_2} \text{ and } c^m = \frac{(1 - \theta)(1 - \phi)(w^m + w^f + \Omega)}{1 + (\beta + \varepsilon)\alpha_2}.$$

- $\forall \alpha_1 \geq \alpha_1^N$, the woman accepts her first marriage offer and within the couple she forms with her partner:

- If $w^f \leq w^{*N} \equiv (\beta + \varepsilon)\alpha_1(w^m + \Omega)$, she specializes in childrearing activities ($l^f = 1$) and benefits from the loan. Household fertility is maximal: $n^* = (n_M)^{\alpha_1}$; while the consumption levels are $c^f = \theta(w^m + \omega(n^M)^{\alpha_1} + \Omega)$ and $c^m = (1 - \theta)(w^m + \omega(n^M)^{\alpha_1} + \Omega)$.
- If $w^f > w^{*N}$, the female partner allocates her time between childrearing and labor market activities ($l^f < 1$), but is no longer eligible for the loan. The fertility is then equivalent to:

$$n^* = \left[n_M \frac{(\beta + \varepsilon)\alpha_1}{1 + (\beta + \varepsilon)\alpha_1} \frac{w^m + w^f + \Omega}{w^f} \right]^{\alpha_1},$$

$$\text{while the consumption levels are } c^f = \frac{\theta(w^m + w^f + \Omega)}{1 + (\beta + \varepsilon)\alpha_1} \text{ and } c^m = \frac{(1 - \theta)(w^m + w^f + \Omega)}{1 + (\beta + \varepsilon)\alpha_1}.$$

The net effect of the installation of the Nazi regime on fertility results from the opposition of three effects. First, the regime has created a **fertility pressure effect** that pushes up the fertility of all treated women in the interior regime: ε exerts a positive effect on both \tilde{n} and n^* . Secondly, for a given set $\{w^f, w^m, \alpha_1, \alpha_2\}$, there is a **maximal fertility margin effect**: $\varepsilon > 0$ and $\omega > 0$ imply $\tilde{w}^N > \tilde{w}$ and $w^{*N} > w^*$. In other words, due to the higher valuation of children in the utility function and the lower price of having the maximum number of them without working, the length of the female wage set for which maximum fertility behaviour prevails is greater. This effect corresponds to the result of the increased willingness of women to leave the labour market in the Third Reich.

These first two effects have a clear positive impact on the fertility of treated women. As in our regression exercises in the previous section, we need to distinguish between two types of treatment, depending on whether a woman married before or after the regime was installed. For those who married just before, the policy of the Nazi regime would have a positive effect only through ε . For those who married after, the loan policy is accessible and, in addition to the effect of ε , the adoption of the male breadwinner model with maximum fertility becomes even more frequent due to $\omega > 0$: women who would have worked without the new regime now decide to stay at home.

These first two effects explain why treated women have a higher number of children than women who were not treated by the Nazi regime. It also suggests that women who benefited from the full set of incentives should have had more children than women who married just before the Nazi regime, while this is not the case in reality. This is explained by the existence of a third crucial effect, the **marriage quality effect**: the existence of a severe penalty p against single persons induces men and women to accept low quality matches more easily, especially for first marriage offers. Formally, we can prove that $\alpha_1^N < \hat{\alpha}_1$. Therefore, when p is large, fully treated women tend to marry earlier on average than their partially treated counterparts, while having fewer children because they are in lower quality unions.³⁰

When it comes to the average quality of late marriages, the **marriage quality effect** is more contrasted because of two opposing forces. First, because people are more inclined to accept their first marriage, the minimum α_2 above which people prefer to wait is raised. In other words, the pool of candidates for late marriage is narrower and skewed to the right of the distribution of α_2 . However, this effect is somewhat

³⁰Note that this marriage quality effect could theoretically lead to lower fertility of fully treated women compared to untreated women, but the positive effect of ε may more than compensate for this; this is the case when we compare $|EF|$ to $|AB|$.

mitigated by the presence of the penalty p , which makes people more likely to accept the second marriage offer conditional on having rejected the first.

Formally, denoting $n \equiv N(\omega, \varepsilon, \alpha_j)$ with $j = \{1, 2\}$, the results of our main regression exercises can be understood by examining the following differential equation:

$$dn = \frac{\partial N}{\partial \omega} d\omega + \frac{\partial N}{\partial \varepsilon} d\varepsilon + \frac{\partial N}{\partial \alpha_j} d\alpha_j \quad (4)$$

If, according to our estimates and our model, the first two effects are positive, the reduction in the average quality of early unions ($j = 1$) is negative. The fertility of a fully treated woman is modified because $d\omega$, $d\varepsilon$ and $d\alpha_1$ are all different from zero. In contrast, the fertility of a partially treated woman is modified because $d\varepsilon \neq 0$ while $d\omega = d\alpha_j = 0$. It follows that, empirically, comparing partially and fully treated women in Germany leads to a differential negative effect, because for them $|\frac{\partial N^*}{\partial \alpha_1} d\alpha_1| > |\frac{\partial N^*}{\partial \omega} d\omega|$. As noted by Pine (1996), the loan is not large enough to have significantly increased the fertility of German women, while the severe penalty for childlessness outside marriage severely reduced the quality of unions among young people. Comparing treated and untreated women, the cumulative positive effects of social pressure ($\varepsilon > 0$) and the loan ($\omega > 0$) are strong enough to outweigh the negative marriage selection-quality effect. Finally, the reduction in marriage quality among treated women relative to their untreated counterparts should lead to more fragile marriages. The liberalisation of divorce that followed the Nazi regime in Germany should have been accompanied by more divorces among treated women than among their untreated counterparts, especially among women who married young.

Our theoretical model offers an explanation of our main results based on a number of key mechanisms: (i) women treated by the full Nazi family policies may end up having fewer children than their partially treated counterparts due to negative selection into lower quality unions, (ii) German women who married under the Nazi regime tended to marry earlier, and (iii) they accepted lower quality unions and thus should have a higher propensity to divorce later. In the next subsections, we test these three mechanisms. Finally, let's note that our model ignores infant mortality, which could be an important trigger of fertility change, especially if the Nazi regime implemented sanitary policies that broke the dynamics of infant and child mortality. Nevertheless, as shown in Figure 12 of Appendix B, we do not find a break in either stillbirths or infant or child mortality that we could link to the Nazi rise to power in 1933.

5.2 Loan Policy

We extend our analysis to a triple-difference approach to examine the role of eligibility to the LEM. As in panels C and D of Figure 4 and Table 10 in Appendix C.1, we still compare women who married before 1933 ($T_i = 0$) with women who married after 1933 ($T_i = 1$), inside ($G_i = 1$) and outside ($G_i = 0$) the Reich. In addition, we define a new binary variable, E_i , which takes the value one if the woman stopped working definitively within two years before her marriage. It equals zero if the woman stopped working earlier or never worked. This variable captures individual characteristics that theoretically make women eligible for the marriage loan.³¹ We cannot guarantee that women with $E_i = 1$ actually benefited from the loan, so the effect we measure is an intent-to-treat effect rather than a treatment effect. Nevertheless, it should be

³¹In practice, there could be very few exceptions, for example if the woman had a hereditary disease.

remembered, as shown in Figure 1a of Section 2, that a significant proportion (27.3%) of German women who married between 1933 and 1937 benefited from the loan.

We do not include women who definitively stopped working after marriage because we cannot track their labour force participation in the years before they married. Indeed, the 1970 census asked women which year they definitively stopped working, not their entire labour supply history. Despite these limitations, we test the following regression model:

$$n_{ijt} = \alpha_0 + \alpha_1 T_i + \alpha_2 E_i + \alpha_3 G_i + \alpha_4 T_i E_i + \alpha_5 T_i G_i + \alpha_6 G_i E_i + \alpha_7 T_i G_i E_i + \beta X_i + b_{ij} + \varepsilon_i, \quad (5)$$

where n_{ijt} is defined as in the previous sections. A negative sign for α_7 would indicate that the negative effect we capture in our main estimations is driven at least partially by the group of women targeted by the Nazi regime’s policy. Indeed, we find such a negative coefficient in Table 5 (column All), while the coefficient attached to $T_i * G_i$ becomes insignificant. The main conclusion from Table 5 is that the negative association between marrying under the Nazi administration and fertility is driven by the population of women theoretically eligible to receive the loan (column All). In essence, the incentives introduced by the Nazi regime to encourage women to stay at home and adhere to the “3Ks” lifestyle seem to have led to a decline in fertility rather than the intended increase. Encouragingly, this trend holds true for both 1938 (Panel C) and 1970 (Panel D), suggesting that the long-term effect we observe was established during the Nazi regime. Interestingly, we find that our effect is more pronounced and significant for the groups of women who married younger. These young women were the main targets of the Nazi administration. They were also the ones who were under the most pressure to marry in order to participate in the national effort to ensure the perpetuation of the ‘Aryan’ race.

Our theoretical model would support this result if women who were most targeted by Nazi policies ($E_i = 1$) experienced negative selection into marriage, leading to earlier marriages of lower quality. We will test this prediction in the next two subsections.

5.3 Marriage behavior

We use Kaplan-Meier curves to illustrate the shift in the number and distribution of marriages associated with the establishment of the Nazi regime. This non-parametric approach estimates the survival curve $S(t)$, or the probability of not being married until t years after the age of 15:

$$\hat{S}(t) = \prod_{t_{(i)} \leq t} \frac{s_i - m_i}{s_i} \quad (6)$$

with s_i as unmarried and m_i as married women at $t_{(i)}$ years after age 15.

In Figure 5a we split the sample of women according to their place of residence. In blue (respectively red) we observe the age-specific probability of being unmarried in the Reich in the years 1928 to 1932 (respectively 1933 to 1937), while in green (respectively yellow) we observe the same statistic outside the Reich. Overall, the larger downward shift of the survival curve in the Reich indicates that the number of marriages increased more inside the Reich than outside.

Table 5: Effect of eligibility to the marriage loan on fertility outcomes

Age at marriage	17–24	25–29	30–39	All
Panel C: Fertility in 1938 of marriages in 1928–32 and marriages in 1933–37				
Treatment (T_i)	-0.4480*** (0.0470)	-0.4248*** (0.0721)	-0.2483** (0.1199)	-0.6959*** (0.0299)
German Territory (G_i)	-50.1749*** (13.7690)	41.8791** (21.3492)	-47.8375* (25.7534)	-12.8945** (5.2300)
Eligible (E_i)	0.0344 (0.0553)	-0.0364 (0.0764)	-0.2088 (0.1301)	-0.0396 (0.0424)
Treat*Germ. ($T_i * G_i$)	-0.0745 (0.0491)	0.0983 (0.0741)	-0.2470** (0.1230)	-0.0134 (0.0311)
Treat*Eligible ($T_i * E_i$)	0.0603 (0.0707)	0.1230 (0.0912)	0.0433 (0.1519)	0.0785 (0.0522)
Germ.*Eligible ($G_i * E_i$)	0.1507*** (0.0568)	0.1087 (0.0779)	0.0193 (0.1329)	0.1224*** (0.0434)
Treat*Germ*Elig ($T_i * G_i * E_i$)	-0.1545** (0.0725)	-0.1266 (0.0930)	0.0259 (0.1553)	-0.1357** (0.0534)
Observations	77846	61433	25558	167858
Adj. R-Squared	0.121	0.116	0.053	0.105
Panel D: Fertility in 1970 of marriages in 1928–32 and marriages in 1933–37				
Treatment (T_i)	-0.2380*** (0.0840)	-0.4513*** (0.1102)	-0.1064 (0.1395)	-0.4842*** (0.0465)
German Territory (G_i)	-81.7777*** (23.6766)	75.8644** (31.7950)	-62.9413** (29.4325)	-1.6705 (6.8829)
Eligible (E_i)	0.1312 (0.0864)	-0.0057 (0.1066)	-0.2375 (0.1448)	0.0142 (0.0607)
Treat*Germ. ($T_i * G_i$)	-0.1728** (0.0872)	0.2317** (0.1131)	-0.3265** (0.1432)	0.0174 (0.0481)
Treat*Eligible ($T_i * E_i$)	0.1384 (0.1231)	0.4093*** (0.1398)	0.1755 (0.1832)	0.2307*** (0.0815)
Germ.*Eligible ($G_i * E_i$)	0.1863** (0.0885)	0.1302 (0.1085)	0.0673 (0.1480)	0.1510** (0.0620)
Treat*Germ*Elig ($T_i * G_i * E_i$)	-0.2144* (0.1258)	-0.3616** (0.1423)	-0.0693 (0.1874)	-0.2579*** (0.0832)
Observations	77846	61433	25558	167858
Adj. R-Squared	0.031	0.032	0.051	0.079

Note: All models rely of an OLS specification and are done with robust standard errors. The vector of basic controls in all estimations include Education, Religion, Learned Occupation, and Vertriebenenausweis. *** p-value<0.01, ** p-value<0.05, * p-value<0.1.

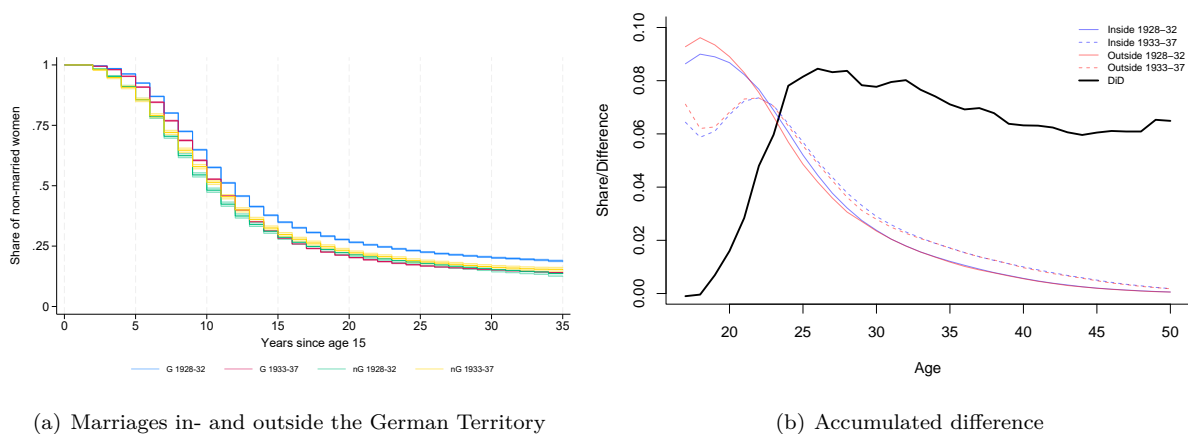


Fig. 5. Evolution of marriage probabilities between 1932 and 1937 inside and outside the German territory

Note: Figure 5a shows the probability to remain single for women in the Third Reich (G) and outside the Third Reich (nG). Figure 5b indicates the fraction of single women inside (blue) and outside (red) the Third Reich before (solid) and after (dashed) 1933. The black line indicates the accumulated effect of the arrival of the Nazis on the share of married women. Data source: Census 1970.

The black line in Figure 5b corresponds to the difference between the distance between the blue and red lines and the distance between the green and yellow lines in Figure 5a. It then measures the cumulative average treatment effect of the Nazi regime on marriages for women inside the German territory relative to women outside German territory. Looking at the last point on this line, we find a cumulative positive differential effect of about 6%-points, but this overall effect masks an important composition effect: up to the age of 32, the cumulative difference in the proportion of persons married during the Nazi regime compared to the pre-Nazi period was more than 8%-points higher in the Third Reich than outside the Third Reich with a maximum of 8.5%-points at the age of 26. At higher ages, this difference tended to decrease, suggesting a strong redistribution of marriages towards younger ages inside the Reich relative to outside the Reich.

We can then see that the increase in the probability of getting married is strongly age-dependent and concentrated in the 17-29 age group. Importantly, the solid (and dashed) blue and red lines indicate the proportion of our sample population in the corresponding age group for the German Territory (and outside the German Territory, respectively). The positive effect affects a very large proportion of our population at risk of marriage.

Overall, we document a strong positive association between the Nazi regime and the probability of marrying at a younger age. Any model of endogenous marriage decisions such as ours would predict that such a push into marriage, driven by repressive policies punishing unmarried childless persons, would lead to a reduction in the average quality of marriages. Consistent with the results in Panel C and Panel D of Table 10, this potential reduction in the quality of marriages led to a decline in the fertility of newly married women under the Nazi regime.

In a second exercise, we turn our attention to the differences between women who were eligible for the loan policy and women who were not eligible within the Reich. Figure 6a depicts the probability of not being married at each age among women who were eligible and eventually married at some point in time. The blue (resp. green) line represents eligible (resp. non-eligible) women who married between 1928 and 1932,

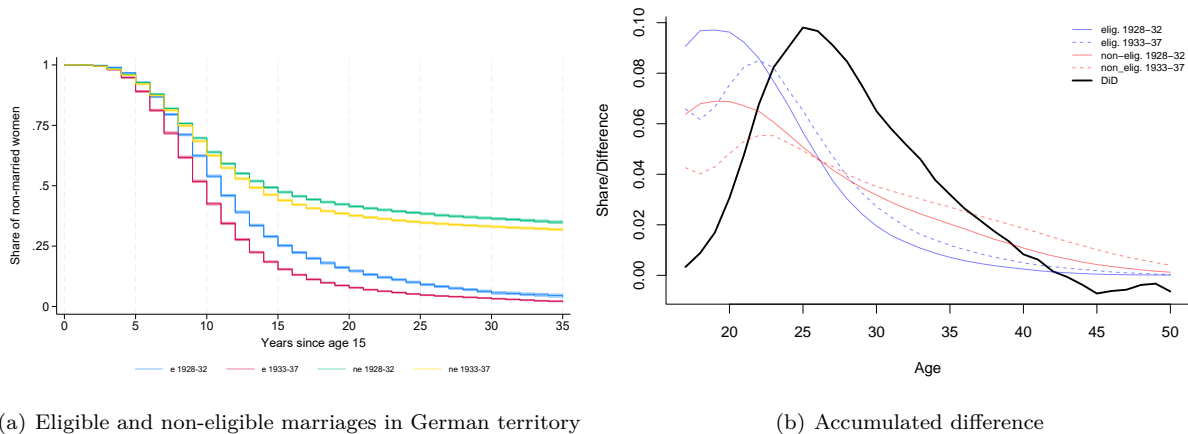


Fig. 6. Differential evolution of marriage probabilities within the German territory

Note: Figure 6a shows the probability to remain single for eligible (e) and non-eligible women (ne). Figure 6b indicates the fraction of single eligible (blue) and non-eligible (red) women before (solid) and after (dashed) 1933. The black line indicates the accumulated effect of being eligible on the share of married women. Data source: Census 1970.

while the red (resp. yellow) line represents eligible (resp. non eligible) women who married under the Nazi administration.

The black line in Figure 6b is similar to that in Figure 5b, but it documents a cumulative overall effect very close to zero (at least not significantly different from zero), suggesting that the LEM policy itself had no specific effect on the cumulative probability of marriage. However, it does again indicate a strong redistribution of ages at marriage, as eligible women tended to marry much earlier than ineligible women. We can therefore see that the LEM appears to have been effective in pushing young women out of the labour force and into marriage.

In summary, we provide evidence here that the implementation of the LEM, its financing scheme, and the accompanying propaganda based on the severe punishment of living outside marriage were effective in increasing marriage rates among the young targeted population. These marriages would have been of lower quality compared to a hypothetical situation without punishment for living outside marriage. It resulted in less fertile marriages, as can be seen from the previous section.

5.4 Divorce

In our collective cooperative household model, a decline in the quality of marriages is a key mechanism in explaining the decline in the average fertility of married couples after the introduction of the LEM. In our previous sections, we have shown how young eligible women, who are the main target of the regime’s policies, drive this outcome. In this section, we demonstrate the negative selection of younger women into marriage using divorce as an indicator of low quality marriages. As our outcome variable, divorce takes the value of one if the respondent was divorced and never remarried, and zero if she is still married. As in the rest of the paper, data limitations prevent us from following women who married before or during the Nazi regime, divorced and remarried after 1938.

Table 6: Divorce: Age at marriage and the quality of matches

Model	German Territory		Eligible	
	Inside	Outside	Yes	No
Treatment (T_i)	0.3724*** (0.1432)	-0.1061 (0.4917)	1.3360*** (0.5055)	0.1685 (0.3819)
Age at marriage (A_i)	0.0219*** (0.0044)	0.0374*** (0.0139)	0.0919*** (0.0135)	0.0709*** (0.0107)
Treat*Age at marriage ($T_i * A_i$)	-0.0120** (0.0055)	0.0004 (0.0186)	-0.0440** (0.0180)	-0.0056 (0.0139)
Observations	185,892	11,285	51,567	50,315
Pseudo R^2	0.020	0.032	0.022	0.022

Note: The vector of basic controls in all estimations include Education, Religion, Learned Occupation, and Vertriebenenausweis. All estimations are done with robust standard errors. *** p-value<0.01, ** p-value<0.05, * p-value<0.1.

In a logistic regression setting, we use the same set of basic controls as in our main specification and focus our attention on two main variables. T_i takes value one if the person married between 1933 and 1937, and zero if she married earlier. In other words, it captures the effect of marrying under the Nazi regime compared to marrying before. A_i is the age at marriage of woman i . Finally, we interact these two variables to capture how the effect of marrying under the Nazi administration on the probability of divorce is modulated by age at marriage.

In Table 6 we present the results of four logistic regression models using sample splits. Our first regression model focuses on all women who married within the German Territory. We see an overall positive effect of T_i , but this effect becomes smaller and smaller as the age at marriage increases. We estimate that marrying under the Nazi regime is associated with an increase in the probability of divorce for women who married before the age of 31, which is close to the point of return in Figure 5b. Thus, the relative increase in the prevalence of young marriages under the Nazi regime was associated with an increased likelihood of divorce. This confirms our interpretation that Nazi family policies relatively depressed the fertility of newly married couples by pushing too many women in the Third Reich to marry early in order to form families and feed the demographic growth of the population. Interestingly, outside the German territory, the interaction between marrying in the Nazi era and age at marriage has an opposite sign. Overall, marriages celebrated during the Nazi era are less likely to end in divorce outside Germany, regardless of age at marriage.³²

In a next step, we focus on the German Territory and split our sample into eligible and non-eligible marriages. We also find a higher probability of divorce among the younger women who were eligible for the loan. Again, the turning point is around the age of 31.

These findings, together with subsection 5.3, provide a comprehensive picture of the impact of Nazism on fertility in Germany. In response to social, economic and political pressures, German women within the Reich were pushed into marriage at an earlier age and to accept lower quality marriages. This reduction in marriage quality explains why these women reduced their relative fertility compared to their counterparts who married before the Nazis came to power. In itself, this negative selection into marriage more than offset the positive effects of the welfare programs introduced by the Nazi regime on (long-term) marital fertility.

³²Note that the lack of significance of this result may be due to the reduction in sample size.

To the best of our knowledge, we are the first to provide quantitative evidence of negative selection effects on the marriage market that are strong enough to counteract the expected positive effects of authoritarian family policies on fertility. It is then appropriate to consider whether other data sources or contributions from various fields of human and social sciences might support our findings in the specific case of Germany. It is true that, apart from the 1970 census, reliable sources of data on family dynamics during the Nazi period are scarce. The aggregated results of the 1952 Statistical Yearbook are a potential, albeit limited, source of data. Using Table 18 from Statistisches Bundesamt (1952), we find that 4.09 out of every 1,000 marriages celebrated between 1933 and 1937 ended in a divorce in 1949, compared to only 2.75 per 1,000 marriages celebrated in the pre-Nazi era.

In her seminal work, Heineman (1999) provides a detailed case study of the city of Darmstadt. Local data from a random sample of the registration cards in the Stadtarchiv Darmstadt allow the author to compute the divorce rate among Germans by five-year birth cohorts (see Table 9 in Appendix B). We use the age composition of our two marriage cohorts (pre-1933 versus 1933+) to infer a rough approximation of the divorce rate for our fully treated versus partially treated groups in Darmstadt. By 1960, we find that 12.4% of marriages celebrated under the Nazi regime ended in divorce without subsequent remarriage, while this percentage is only 9.6% for marriages celebrated before the Nazi era. Interestingly, Heineman (1999)'s data also document the proportion of marriages that ended in divorce followed by remarriage, a situation we cannot study with our current approach. We find that including remarried individuals, the divorce rate for pre-Nazi era marriages is 16.7%, compared to 23.5% for marriages during the Nazi period, suggesting that our estimate of the divorce channel may be at its lower bound.³³

On an even more granular level, Mailänder (2018) analyses letters sent between 1949 and 1951 by readers of *Liebe und Ehe*, a magazine dealing with couples' sexuality, and a collection of letters from an Austrian policeman to his lover, a nurse living in Klosterneuburg. According to Mailänder (2018), this material reveals the difficult readjustment of German men returning from the battlefield to traditional gender roles in post-war West Germany. Our approach focuses on marriages celebrated until the end of 1937 in a Nazi Germany that strongly promoted traditional values and placed marriage and family at the centre of its social agenda. With the onset of war, however, the Nazi regime also glorified hypersexualised soldiers and a masculinist vision of gender relations. The *Lebensborn* program after 1935 and the wider acceptance of out-of-wedlock births to produce more 'Aryan' children primarily reinforced this male-dominated status. Mailänder (2018) documents how the abrupt return to the male-breadwinner monogamous model, with a conventional approach to sexuality and gender relations, placed returning soldiers, imbued with Nazi ideology, in a difficult situation. We argue that marriages under the Nazi regime, heavily influenced by social pressure and propaganda, were on average of lower quality and also more in line with the Nazi vision of hypersexualised masculinity. These marriages were thus more susceptible to the strains of returning to a traditional marital organisation than earlier marriages formed in a more conventional environment. Through this lens, Mailänder (2018) partially illuminates the broader mechanism we document in this study.

Finally, the increased probability of divorce we document can be put in parallel with shotgun marriages. These marriages are precipitated by an out-of-wedlock birth and the associated fear of social stigma and dishonour. As Bennett (1995) explains, there is considerable evidence that shotgun marriages lead to a higher probability of divorce. This is supported, for example, by Menken et al. (1981) for the US in the

³³To allow a direct comparison with our divorce exercise, we calculated the fraction including only still-married women and never remarried divorced women. 12.2% of women who married before the Nazi era are divorced by 1960, compared to 16.3% for women who married during the Nazi era.

1970s, and by Gibson-Davis et al. (2016) for white American women in Carolina between 1990 and 2012.

5.5 Alternative Mechanisms

The shift toward more and younger marriages, their reduced stability, and the transmission of fertility decline through eligible women are well in line with the mechanisms predicted by our cooperative household model. However, these observations do not rule out a number of plausible alternative mechanisms. In this section we focus on what we consider to be the three most important competing narratives.

Early life shocks – The early twentieth century was a turbulent period, with the First World War and the Spanish flu disrupting all aspects of life in Europe. In addition to the deaths of soldiers, the war reduced the number of births (see Figure 1) and thus affected the marriage market by changing the relative size of birth cohorts. Given the significant age difference between men and women at first marriage, the missing children from the First World War caused age imbalances and mismatches in the marriage market starting 16 years later. According to our theory, a lower quality of matching in the marriage market could ultimately reduce the fertility of married couples. If the First World War affected the treatment and control groups differently in terms of missing children, our results could be affected by this discrepancy. However, in Figure 7 we document a symmetric shock: boys and girls were missing inside and outside the Empire in similar proportions, allowing us to rule out a large differential effect on fertility.

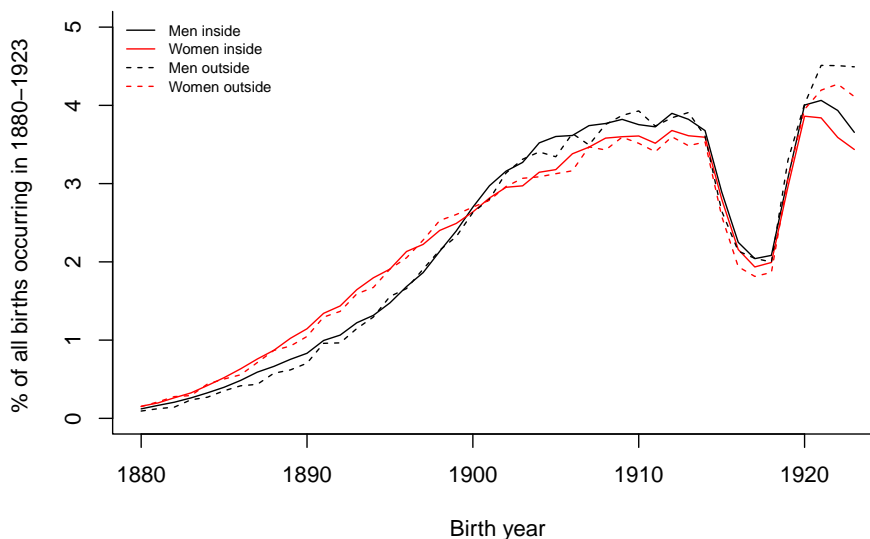


Fig. 7. Impact of World War I on birth cohorts.

Note: Distribution of birth cohorts between 1880 and 1923 by sex and place of residence in 1939. Data source: Census 1970.

Second, people who married before the Nazi era were on average older in 1938 than those who married during the Nazi era. As a result, they experienced the First World War and the Spanish Flu at different but crucial stages of their early lives. Given that the long-term effects of these shocks on fertility may vary with age, there is some concern that our results may be biased by these early life events (van Dijk et al., 2024).

However, there are two important arguments against this alternative mechanism: (i) the area-specific birth cohort trends in our preferred specification capture exposure to early life events; (ii) by minimising the age difference between fully and partially treated groups by restricting the marriage cohorts of interest to 1932 and 1934 (Table 11 in Appendix C.1 and Figure 4b), we effectively reduce the potential impact of these early life events on our main results.

The Great Depression and its economic recovery – While the Spanish flu and World War I may have affected spouses early in life, the Great Depression and its recovery may have directly affected the timing of first and subsequent births among our marriage cohorts. Couples who married during the economic crisis may have decided to postpone having children due to poor economic conditions or uncertainty, only to catch up during the economic recovery. Consequently, a greater magnitude of the crisis and a more rapid recovery inside the German Reich than outside may account for the apparent positive effect of Nazism on fertility observed in Panels A and B. It may also be responsible for the larger coefficient estimate in Panel A than in Panel B, which in turn is responsible for the negative effect we observe in Panel C.

Again, there are at least two main arguments against this alternative explanation: (i) if the effects of the Great Depression and economic recovery were primarily a matter of timing of births, we should not observe the negative effect on completed fertility in 1970 (Panel D); (ii) more importantly, the negative effect we measure should disappear when we restrict the analysis to the 1932 and 1934 marriage cohorts, since these cohorts experienced the Great Depression at almost exactly the same stage in their marital lives. Nevertheless, the negative effects persist in both the short and long run. In addition, it is important to consider that a better economic recovery in the German Empire would ultimately be associated with the pro-natalist policies we are examining. Reducing unemployment by decreasing female labour force participation and increasing demand through household formation vouchers are integral aspects of the policy experiment we study.

Family policies in neighbouring countries – The use of marriages celebrated in neighbouring countries naturally raises the question of whether family policies abroad may have increased fertility in our control group and ultimately driven our results. If this were the case, it would be difficult to argue that the effects we capture are solely due to the strict pro-natalist and pro-marriage orientation of the Nazi regime. While Rákosník and Šustrová (2018) argues that pro-natalist family policies were introduced in Czechoslovakia only after the Second World War, Klich-Kluczevska (2012) explains that it is almost impossible to find any trace of such policies in pre-war Poland.³⁴ Austria was a major exception. The Fatherland Front regime under Engelbert Dollfuss has been criticised for imitating German and Italian fascism, which is at least partly true of the family policies it developed. Similar to the German ‘*Hilfswerk Mutter und Kind*’, Austria established the ‘*Mütterschutzwerk*’ on 1 March 1934 to promote motherhood as a patriotic duty (Thorpe, 2010). This initiative promoted a traditional view of motherhood and provided extensive support for mothers, including courses on childbirth and child-rearing, summer retreats and financial assistance for mothers with more than three children. To ensure that our main results are not driven by a strong positive response of women in Austria to the Mother Defence Action policies, we tested our preferred specification without them. The negative effect on fertility persists, as shown in Table 11 in Appendix C.1.

³⁴Klich-Kluczevska (2012) notes one exception: Poland ratified the International Labour Organization Convention in 1933, granting maternity leave and providing cash or milk transfers to nursing mothers. However, these policies were very limited in scope compared to those of the Nazi regime.

6 Pronatalist and loan policies in other regimes

Throughout recent European history, the Nazi approach to natalism was not an isolated phenomenon but part of a wider movement promoting and subsidising new families. This movement often used loan systems coupled with extra child allowances and tax cuts for large families, propaganda and social pressure to encourage childbearing. It is remarkable how many similar examples have emerged over time across the continent.

Several years after the Nazis came to power, Francoist Spain adopted a comparable loan policy. Beginning in 1941, married couples were offered preferential loans that became progressively easier to repay with the birth of each child. This policy further incentivised women to leave the workforce by doubling the loan amount if the bride agreed to become a full-time housewife. However, this increase in the value of the loan was conditional on the husband's continued employment and the absence of disability (Valiente, 1996). The resemblance to the Nazi approach is striking, especially given that Francoist Spain, like Nazi Germany, introduced a wide range of additional child allowances. This approach was motivated both by the declining fertility rates the country had experienced in previous decades and by a desire to reverse the empowerment of women promoted by the previous regime, the Second Republic in Spain and the Weimar Republic in Germany.

As discussed in our robustness checks, although the Fatherland Front in Austria did not implement a loan policy similar to Germany's (Thorpe, 2010), the concept was introduced in the country with the Anschluss in 1938. Directly inspired by Nazi policy, marriage loans were introduced in Fascist Italy in August 1937. In an environment that promoted traditional gender roles and encouraged women to leave jobs outside the home, newly married couples were entitled to loans of between 1,000 and 3,000 lira. As Caporali and Golini (2010) explain, these marriage loans targeted young couples more explicitly than in Germany, as they were only granted if both spouses were under 26 and had an annual income of less than 12,000 lira.

Interestingly, from 1972 onwards, the socialist regime that ruled the German Democratic Republic (GDR) after the Second World War implemented a loan policy similar to that of fascist regimes. Kreyenfeld (2004) describes this policy in detail: couples marrying under the age of 26 were eligible for an interest-free loan of 5,000 marks to purchase furniture and household appliances. They could also benefit from the *Abkindern* system, where the first child reduced the amount to be repaid by 1,000 marks, the second by 1,500 marks and the third by 2,500 marks. The *Abkindern* system was ultimately more generous than the Nazi one, as only three children were needed to wipe out the loan entirely. This policy was accompanied by other measures, such as child allowances for large families. However, there was a fundamental difference between the Nazi family policy and that of the Sozialistische Einheitspartei Deutschlands (SED). The SED did not promote traditional gender roles; instead, its pro-natalist policies aimed to compensate for the decline in fertility associated with the empowerment of women and their deep integration into the labour market. Without adopting a causal approach, Kreyenfeld (2004) concludes that the policies implemented by the SED were associated with a significant increase in the fertility differential between East and West Germany. This finding sheds important light on our results, as an equivalent policy implemented in a paternalistic environment that promoted traditional gender roles and exerted enormous pressure to marry had negative effects in Nazi Germany.

Since the family as an institution is a central element of authoritarian regimes and extremist political manifestos, it is not surprising to see a resurgence of proposals for loan policies and, more generally, pro-

natalist policies in contemporary Europe. These new loan policies are accompanied by strong anti-migrant sentiments and aim to promote national families. This is evident in the policy developed by Viktor Orban in Hungary, where the regime has made native Hungarians in heterosexual relationships the main beneficiaries of very generous measures (Fodor, 2022). Similar to past fascist regimes, large families are given substantial allowances and benefits, and an interest-free loan system has been set up for newly married couples. Working couples can apply for a loan of 10 million HUF, roughly equivalent to three years of an average worker's income. If the couple has three children, the loan does not have to be repaid. In addition to this main loan, several smaller loans are available for the purchase of items such as large family cars. Although Orban's government is targeting working couples, which may seem to be in line with the East German empowerment programme, Fodor (2022) points out that childcare responsibilities in the regime's propaganda are directed exclusively at women, placing social pressure on them to give birth and manage family care in addition to pursuing a career. By promoting the family as a means of ensuring the survival of the 'true' Hungarian population, the propaganda and social pressure on women could potentially lead to a backlash against family policies, similar to what happened in Germany in the 1930s.

Finally, Hungary is not an isolated case in today's Europe. During the 2022 presidential elections, Marine Le Pen, leader of the Rassemblement National—the new name of the Front National, a party founded by her father and French members of the Waffen-SS, Pierre Bousquet and Léon Gaultier—proposed an interest-free loan for young couples that would convert into a subsidy if the couple had three children.³⁵ Similarly, in Germany, the Alternative für Deutschland (AfD), an extreme right party and former partner of Rassemblement National and Fratelli d'Italia within the ID group at the European Parliament before its recent exclusion, proposed a policy very similar to that advocated by Orban and Le Pen.³⁶

7 Conclusion

Fascist regimes and extreme right parties place significant emphasis on the family as an institution and on high fertility of native nationals as a means of perpetuating a certain population and traditional values. We argue that placing excessive social and economic pressure on single individuals to marry can lead to a backlash that renders family policies ineffective, if not counterproductive. This backlash results from negative selection in the marriage market. We use Nazi Germany as a case study to provide causal evidence for our claim.

Across different periods and European regions, systems of interest-free loans, with the birth of children reducing the amount to be repaid, were central to the family policies of these regimes. This system was systematically integrated with other pronatalist measures, such as child allowances and tax cuts, particularly targeted at large families. In Nazi Germany, this policy, known as the LEM, was the flagship measure to promote German families. While disentangling the effects of each component of the family policy package offered by extremist regimes is challenging, we propose an identification strategy to determine that the populations targeted by these policies in general, and the loan offer in particular, are responsible for the backlash. In the case of Germany, we show that although the Nazi family policy package temporarily increased the fertility of German women, it ultimately depressed the fertility of fully treated women relative to partially treated women.

³⁵See this document in French: <https://rassemblementnational.fr/documents/projet/projet-la-famille.pdf>

³⁶See this link in German: <https://www.afd.de/familie-bevoelkerung/>

Our results challenge the vision of family policies defended by extreme regimes: the pressure they exert on their population to marry in order to form ‘pure nationalistic’ families worsens the matching process in the marriage market and jeopardises the quality of marriages. Even if the pressure is not as extreme as in the Third Reich, it can still undermine the effectiveness of pronatalist policies. For this reason, the approach to organising society around traditional families proposed by Viktor Orbán and his collaborators in the new ‘Patriots for Europe’ group in the European Parliament is unlikely to guarantee a significant increase in the size of future European generations.

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Supplementary Material

A Data description and access

We rely on two main types of data sources: statistical yearbooks and census data. German statistical yearbooks have been produced almost every year since 1880. For this study, we use the editions of 1938, 1939/40, 1941/42, and 1952 (for West Germany). These yearbooks contain detailed statistics about the German population, aggregated at various levels, such as the entire country, Länders, provinces, and sometimes large cities. All of them are freely available at this address: <https://www.digizeitschriften.de>. From these books, we have extracted necessary information to build Figures 1a, 1c, 1e, 1f. For Figure 10, we rely on another type of statistical books issued by the Nazi regime, titled *Statistik des Deutschen Reichs, Band 517(2)* and *587(2)*. We digitised the scanned tables as needed; all data are available on the authors' OSF repository: *supplementary material*.

The census data we use are of two types. For the 1933 and 1939 editions, individual data did not survive the tumult of German history, but aggregated tables did. As with the statistical yearbooks, the level of aggregation varies from large municipalities to the whole country. As explained in the main text, an unusual feature of these data is their aggregation by the year of marriage. Fertility data consist of the number of births within a marriage, organised by marriage cohort, province, and parity. Figure 8 shows an example from Berlin, one of the 49 provinces considered in Table 7. Note that Saarland has been excluded as it was not part of Germany in 1933.

Eheschließungsjahr — Gemeindegrößenklassen	Zahl der verheirateten Frauen											
	ins- gesamt	davon mit ... in der jetzigen Ehe geborenen Kindern										10 und mehr
		0	1	2	3	4	5	6	7	8	9	
Stadt Berlin												
1939	17 013	14 942	1 787	222	57	5	—	—	—	—	—	—
1938	49 125	35 529	12 237	1 140	165	51	3	—	—	—	—	—
1937	45 407	26 265	16 126	2 589	345	62	20	—	—	—	—	—
1936	41 847	20 712	15 917	4 472	617	96	24	8	1	—	—	—
1935	47 480	21 651	17 713	6 525	1 283	231	62	14	—	1	—	—
1934	54 208	22 353	19 954	9 064	2 143	537	116	35	6	—	—	—
1933	41 570	15 785	14 712	7 841	2 346	628	192	51	12	3	—	—
1932	31 575	11 711	10 694	6 114	2 019	709	238	62	24	4	—	—
1931	32 086	12 054	10 565	6 229	2 124	720	275	75	28	16	—	—
1930	38 140	15 046	12 154	7 044	2 463	867	353	134	52	26	1	—
1929	39 006	15 323	12 518	7 048	2 541	997	355	126	58	30	9	1
1928	37 688	14 843	11 906	6 616	2 567	1 009	410	176	93	38	14	16
1927	32 585	12 635	10 106	5 851	2 305	920	402	177	89	61	22	17
1926	28 431	10 734	8 996	5 194	1 983	850	328	176	64	56	25	25
1925	27 405	10 547	8 708	4 780	1 896	794	334	176	91	41	22	16
1924	23 529	9 144	7 468	4 159	1 632	608	249	146	57	36	21	9
1923	31 245	11 934	10 244	5 643	1 937	756	349	168	95	36	18	25
1922	34 942	12 719	11 984	6 306	2 271	855	406	182	88	56	42	33
1921	32 955	11 023	11 190	6 559	2 380	1 006	373	200	101	64	28	31
1920	39 712	12 013	14 319	8 212	3 038	1 145	461	247	129	60	37	51
1919	36 552	10 186	13 093	8 100	3 074	1 153	458	226	110	69	38	45
1918 bis 1914	79 397	19 660	25 920	19 671	8 053	3 271	1 325	677	344	184	111	181
1913 und früher	284 470	43 704	63 685	69 224	43 826	25 922	14 382	8 793	5 162	3 676	2 203	3 893
Summe	1 126 368	390 513	341 996	208 603	91 065	43 232	21 115	11 849	6 604	4 457	2 591	4 343
davon in Gemeinden mit weniger als 2 000 Einw.	—	—	—	—	—	—	—	—	—	—	—	—
2 000 h. unt. 100 000 Einw.	—	—	—	—	—	—	—	—	—	—	—	—
100 000 und mehr Einw.	1 126 368	390 513	341 996	208 603	91 065	43 232	21 115	11 849	6 604	4 457	2 591	4 343

Fig. 8. Data available from the census 1933 and 1939: The example of Berlin 1939.

Table 7: List of provinces from the census 1933 and 1939

West Germany (FRG)	East Germany (GDR)	East German Territories
Anhalt, Baden, Brunswick, Bremen, Hamburg, Hesse, Free State of Oldenburg, <i>Berlin</i> , Hesse-Nassau, Schleswig-Holstein, Württemberg, Aurich, Aachen / Aix-la-Chapelle, Arnsberg, Düsseldorf, Dresden-Bautzen, Hannover and Schaumburg-Lippe, Hildesheim, Koblenz, Cologne, Lüneburg, Minden and Free state of Lippe, Münster, Lower Bavaria and Upper Palatinate, Upper Bavaria, Osnabrück, Upper Franconia and Middle Franconia, Palatinate, Swabia (Bavaria), Stade, Sigmaringen, Trier, Lower Franconia, Potsdam	Mecklenburg, <i>Pomerania</i> , <i>Berlin</i> , Thuringia, Chemnitz, Erfurt, Frankfurt, Leipzig, Magdeburg, Merseburg, Zwickau	East Prussia, <i>Pomerania</i> , Breslau/Wroclaw, Posen-West Prussia, Legnica, Opole

For the 1970 census, the full individual census data did not survive, but a 10% anonymised sample did. This is the sample we use in this paper. Access to this sample is restricted, but is available to researchers through an application process described here: <https://rb.gy/se2342>. A smaller version, with only 5% of the population, is freely available through <https://rb.gy/ge82yl>. An important difference between these two versions is the measurement of fertility: in the 5% public use file, we only know the year of birth of the first five children, whereas in the 10% scientific use file, we know the year of birth of children born to a woman up to parity twelve. An important feature of these data is the possibility of locating people on 1 September 1939, when the war began. However, a limitation of this variable is its limited geographical granularity, as shown in Table 3 and Figure 9.

The list of available variables and potential controls is extensive. The first group of variables describes the demographic characteristics of the respondents, such as gender, month and year of birth, family status, nationality, refugee status, and fertility (including the year of birth of women’s children). With regard to marriage, we know the year of the last marriage and the existence of previous marriages. The second group of variables describes the socio-economic characteristics of individuals, including educational variables (attainment, diploma, learned occupation, etc.), income information (monthly income, main source of income, etc.), religion, housing details, etc. A complete list of variables and their descriptions can be found in this file: <https://rb.gy/95h6di>.

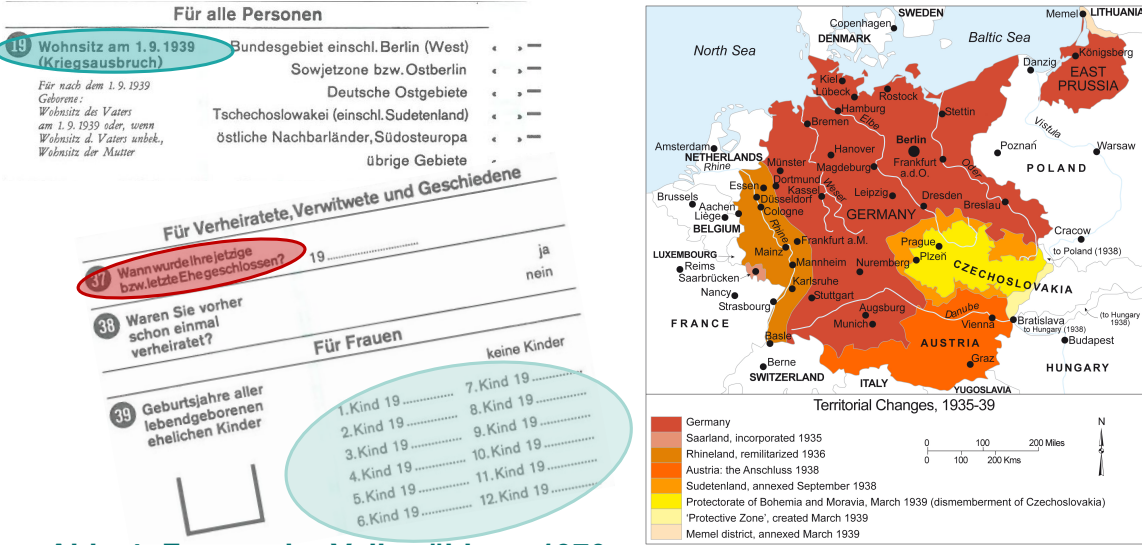


Fig. 9. Left panel: Snapshots from 1970 census questionnaire. Right panel: “Germany: Territorial Expansion (1935-1939)” extracted from **German History in Documents and Images**, https://ghdi.ghi-dc.org/map.cfm?map_id=2884

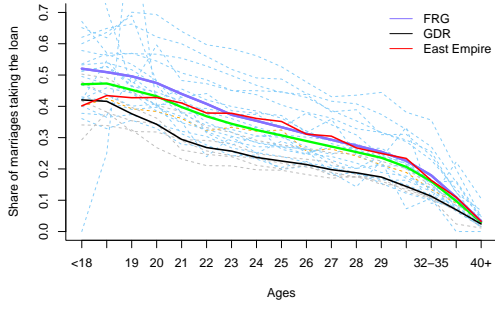
B Historical Context

Loan

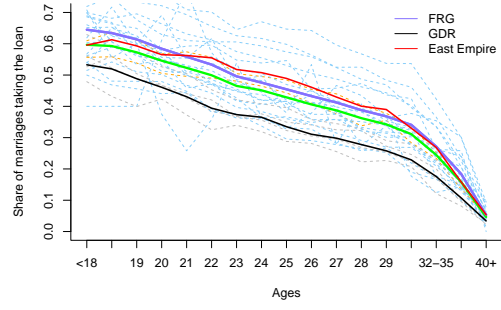
Table 8: Marriage assistance

Tax rate	0%	2%	3%	4%	5%
Labour income	< 75	75–149	150–299	300–499	> 500
“Veranlagten”	< 750	750–1,299	1,300–3,099	3,100–5,499	> 5,500

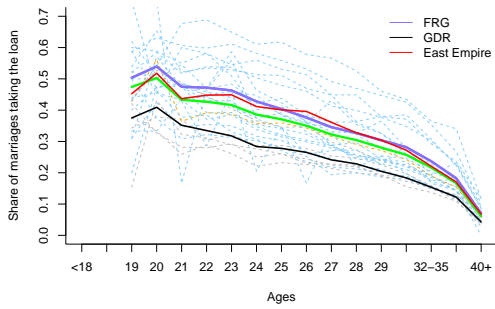
Note: Table 8 documents the income-dependent tax scheme on singles used to refinance the marriage loan, categorized by source of income. (Clause V §§8, 12, 13 *Law for the reduction of unemployment*)



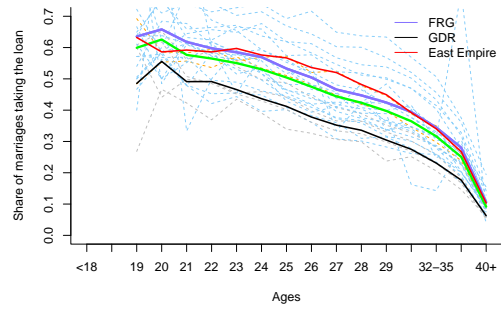
(a) Women 1937



(b) Women 1938



(c) Men 1937



(d) Men 1938

Fig. 10. Share of marriages with the loan across ages

Note: We display among the couples who married either in 1937 or in 1938, the proportion who benefited from the loan policy. Thin dashed lines indicate territory specific rates.



Fig. 11. 100 Reichsmark marriage loan voucher for furniture and household utensil

Complementary material



Fig. 12. Mortality across offspring in the German Territory 1922–40.

Note: Figure 12 reports percentages of stillbirths and percentages of live births who did not survive until age 1, 2 and 3. Data source: Statistisches Reichsamt (1938b, 1942).

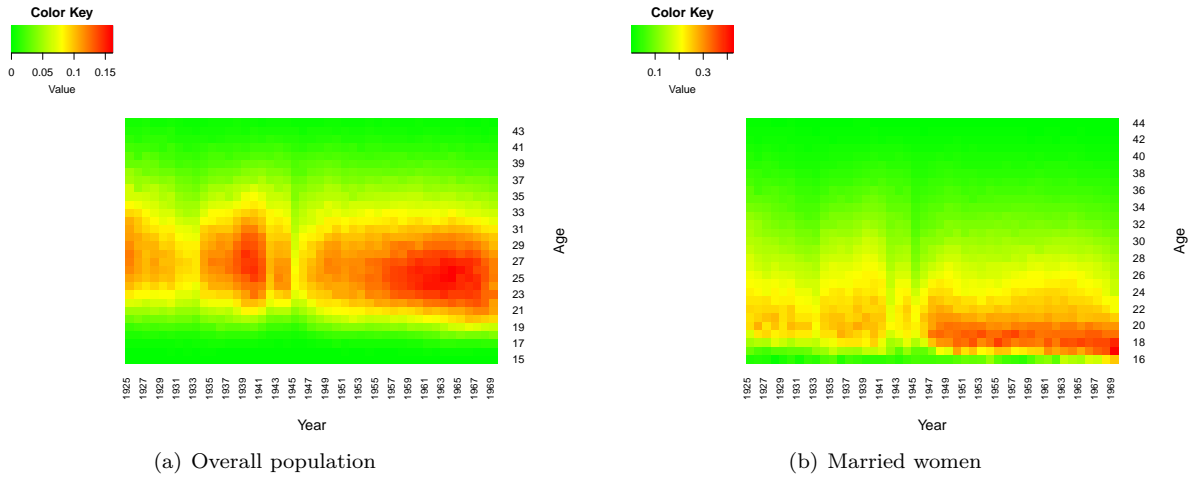


Fig. 13. Female fertility level by year and by age group.

Note: Each square measures the average number of births per woman per year. Data source: Census 1970.

Table 9: Distribution of family status in 1960 in Darmstadt in % (Heineman, 1999)

Birth cohort	Never Married	Married	Widowed or unknwn	Divorced and ... in 1960		
				not remarried	remarried	broken 2. Marriage
1900-04	17	57	11	11	2	2
1905-09	16	59	12	7	4	2
1910-14	16	50	10	11	12	1
1915-19	12	45	6	24	7	6
1920-24	22	50	4	15	7	2

C Detailed estimation results and additional robustness checks

C.1 Detailed estimation results

Table 10: Main results and first robustness checks - Effect of Nazism on marital fertility

Model	OLS				Poisson
	Baseline	Full	Area trends	Votes	Area trends
Panel A: Fertility of couples married in 1928–32 measured in 1933 and 1938					
Treatment (T_i)	0.5551*** (0.0076)	0.5558*** (0.0076)	0.5558*** (0.0076)	0.5558*** (0.0076)	0.4363*** (0.0057)
German Territory (G_i)	-0.0598*** (0.0096)	0.1719*** (0.0123)	-23.3814*** (5.4858)	4.0499 (29.5705)	-19.1351*** (4.4717)
Treat*Germ. ($T_i * G_i$)	0.1459*** (0.0079)	0.1464*** (0.0080)	0.1464*** (0.0080)	0.1464*** (0.0080)	0.1144*** (0.0059)
Observations	284192	281576	281576	281576	281576
Panel B: Fertility of 1928–32 marriages in 1933 and of 1933–37 marriages in 1938					
Treatment (T_i)	-0.0321** (0.0131)	-0.0068 (0.0126)	-0.0371*** (0.0141)	-0.0371*** (0.0141)	-0.0403*** (0.0144)
German Territory (G_i)	-0.0598*** (0.0096)	0.0861*** (0.0102)	-16.0270*** (3.3041)	11.0531 (15.1649)	-16.8427*** (3.5142)
Treat*Germ. ($T_i * G_i$)	0.0904*** (0.0135)	0.0844*** (0.0130)	0.0514*** (0.0145)	0.0514*** (0.0145)	0.0496*** (0.0148)
Observations	318898	315912	315912	315912	315912
Adjusted/Pseudo R^2	0.001	0.099	0.105	0.105	0.036
Panel C: Fertility in 1938 of marriages in 1928–32 and marriages in 1933–37					
Treatment (T_i)	-0.5872*** (0.0154)	-0.5651*** (0.0155)	-0.5991*** (0.0168)	-0.5990*** (0.0168)	-0.4770*** (0.0137)
German Territory (G_i)	0.0861*** (0.0129)	0.3036*** (0.0141)	-18.6896*** (3.6097)	7.3323 (17.3234)	-15.2703*** (2.9797)
Treat*Germ. ($T_i * G_i$)	-0.0554*** (0.0160)	-0.0610*** (0.0160)	-0.0973*** (0.0175)	-0.0972*** (0.0175)	-0.0568*** (0.0142)
Observations	318898	315912	315912	315912	315912
Adjusted/Pseudo R^2	0.076	0.099	0.105	0.105	0.037
Panel D: Fertility in 1970 of marriages in 1928–32 and marriages in 1933–37					
Treatment (T_i)	-0.0980*** (0.0244)	-0.0716*** (0.0246)	-0.3541*** (0.0257)	-0.3541*** (0.0257)	-0.1783*** (0.0123)
German Territory (G_i)	-0.0313* (0.0187)	0.3439*** (0.0206)	-17.0039*** (4.6855)	75.6248*** (22.4788)	-11.3038*** (2.6345)
Treat*Germ. ($T_i * G_i$)	-0.0423* (0.0252)	-0.0514** (0.0254)	-0.0933*** (0.0266)	-0.0932*** (0.0266)	-0.0524*** (0.0128)
Observations	318898	315912	315912	315912	315912
Adjusted/Pseudo R^2	0.002	0.025	0.074	0.074	0.029

Baseline estimation does not include any control variables while all other models include respondent's education, religion, learned occupation and Vertriebenenausweis. In addition, in column Votes, we control for the share of votes in favor of the Nazi party in 1933 at the area level. Note that, the coefficient G_i appears to be very high but its interpretation requires to also consider the coefficients for the area-specific birth cohort trend. All estimations are done with robust standard errors. *** p-value<0.01, ** p-value<0.05, * p-value<0.1.

Table 11: Main robustness checks

Model	Area trends	Migrants	Partner	Balanced	1932–34	No South East	No prev. Kids
Panel A: Fertility of couples married in 1928–32 measured in 1933 and 1938							
Treatment	0.5558***	0.5558***	0.6094***	0.5581***		0.5066***	0.5715***
(T_i)	(0.0076)	(0.0076)	(0.0109)	(0.0022)		(0.0085)	(0.0082)
German Territory	-23.3814***	-27.0721***	-26.4616***	-16.9298***		-14.8863**	-9.8765**
(G_i)	(5.4858)	(6.2975)	(8.5130)	(1.6711)		(6.4610)	(4.1327)
Treat*Germ.	0.1464***	0.1892***	0.1529***	0.1441***		0.1956***	0.1405***
($T_i * G_i$)	(0.0080)	(0.0096)	(0.0114)	(0.0031)		(0.0088)	(0.0085)
Observations	281576	62820	140208	281576		276996	258932
Panel B: Fertility of 1928–32 marriages in 1933 and of 1933–37 marriages in 1938							
Treatment	-0.0371***	-0.0399***	-0.0342*	0.0113		-0.0657***	-0.1157***
(T_i)	(0.0141)	(0.0141)	(0.0187)	(0.0207)		(0.0160)	(0.0122)
German Territory	-16.0270***	-19.5492***	-15.7759***	-21.4107***		-5.0212	-6.4234***
(G_i)	(3.3041)	(3.7299)	(4.5794)	(4.7880)		(3.7617)	(2.2398)
Treat*Germ.	0.0514***	0.0640***	0.0175	0.0069		0.0799***	0.0602***
($T_i * G_i$)	(0.0145)	(0.0166)	(0.0192)	(0.0209)		(0.0164)	(0.0126)
Observations	315912	69397	171688	315912		311253	291652
Adjusted R^2	0.105	0.109	0.127	0.100		0.105	0.145
Panel C: Fertility in 1938 of marriages in 1928–32 and marriages in 1933–37							
Treatment	-0.5991***	-0.6009***	-0.5653***	-0.5853***	-0.1880***	-0.5759***	-0.6815***
(T_i)	(0.0168)	(0.0168)	(0.0230)	(0.0250)	(0.0331)	(0.0193)	(0.0159)
German Territory	-18.6896***	-25.5376***	-18.6439***	-15.9394***	-21.3464**	-7.7059*	-8.9232***
(G_i)	(3.6097)	(4.0918)	(5.5858)	(5.3357)	(8.4248)	(4.0936)	(2.9429)
Treat*Germ.	-0.0973***	-0.1210***	-0.1335***	-0.1073***	-0.1436***	-0.1206***	-0.0801***
($T_i * G_i$)	(0.0175)	(0.0204)	(0.0238)	(0.0254)	(0.0342)	(0.0198)	(0.0165)
Observations	315912	69397	171688	315912	65374	311253	291652
Adjusted R^2	0.104	0.105	0.123	0.102	0.056	0.105	0.124
Panel D: Fertility in 1970 of marriages in 1928–32 and marriages in 1933–37							
Treatment	-0.3541***	-0.3600***	-0.2952***	-0.3349***	-0.0688	-0.3600***	-0.4309***
(T_i)	(0.0257)	(0.0256)	(0.0382)	(0.0370)	(0.0546)	(0.0292)	(0.0260)
German Territory	-17.0039***	-30.8292***	-19.0374**	-7.0371	-15.4715	2.6121	-7.5877*
(G_i)	(4.6855)	(5.3011)	(9.1171)	(6.7686)	(10.8605)	(5.3601)	(4.4442)
Treat*Germ.	-0.0933***	-0.1446***	-0.1366***	-0.1057***	-0.1635***	-0.0878***	-0.0731***
($T_i * G_i$)	(0.0266)	(0.0305)	(0.0393)	(0.0376)	(0.0563)	(0.0300)	(0.0269)
Observations	315912	69397	171688	315912	65374	311253	291652
Adjusted R^2	0.074	0.080	0.058	0.075	0.075	0.075	0.090

All models rely of an OLS specification identical to our preferred specification in column 'Area trends' of Table 10; with the exception of the Partner column which adds controls on the partner's education and religion. Note that, the coefficient G_i appears to be very high but its interpretation requires to also consider the coefficients for the area-specific birth cohort trend. All estimations are done with robust standard errors. *** p-value<0.01, ** p-value<0.05, * p-value<0.1.

C.2 Additional robustness checks

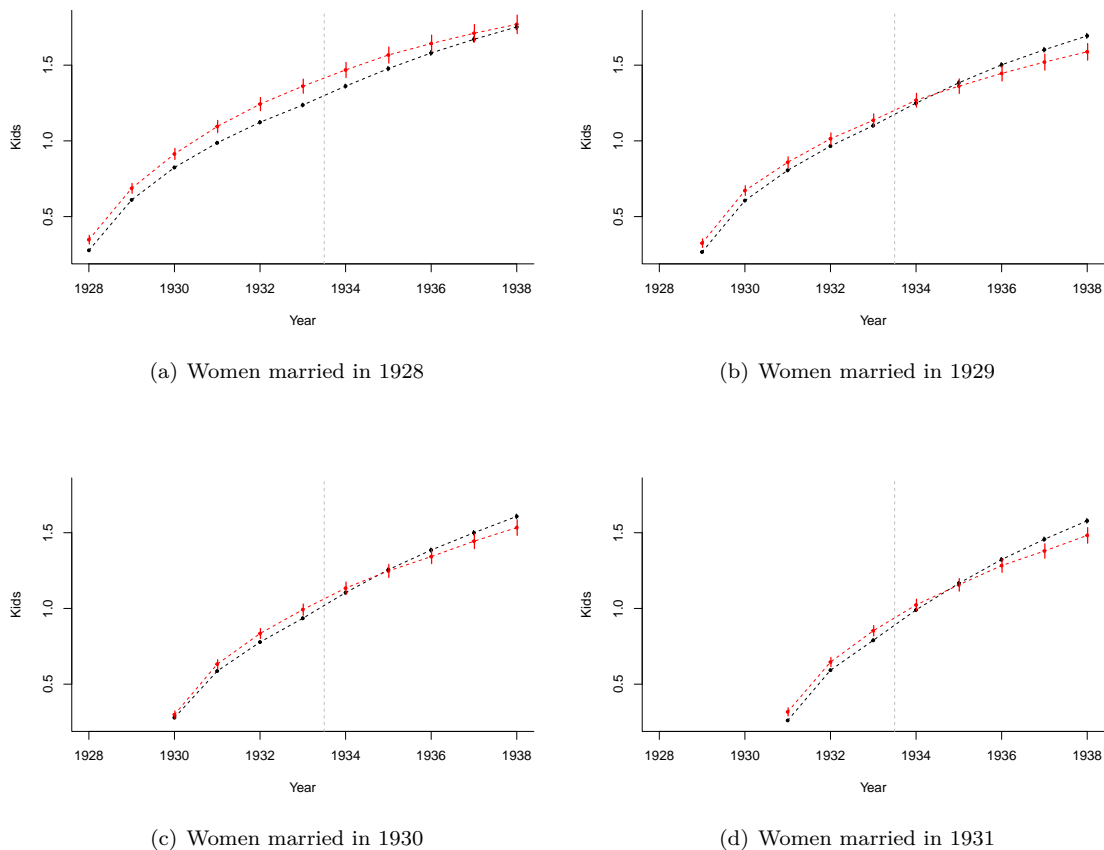


Fig. 14. Average fertility inside (black) and outside (red) Germany by marriage cohort

C.3 Decomposition of main results by specific years of marriage

Table 12: The effect of Nazism on immediate fertility of pre-married couples ($|AB|$ vs. $|CD|$)

Marital cohort	1928	1929	1930	1931	1932	1928-32
Treatment (T_i)	0.4149*** (0.0161)	0.4667*** (0.0158)	0.5472*** (0.0162)	0.6372*** (0.0180)	0.7084*** (0.0183)	0.5558*** (0.0076)
German Territory (G_i)	-31.2206** (14.8265)	-51.8272*** (15.9948)	4.6803 (10.2234)	-13.6521 (10.6643)	-33.9611*** (12.0953)	-23.3814*** (5.4858)
Treat*Germ. ($T_i * G_i$)	0.1142*** (0.0168)	0.1403*** (0.0165)	0.1421*** (0.0169)	0.1673*** (0.0189)	0.1926*** (0.0191)	0.1464*** (0.0080)
Observations	56674	57682	60628	52116	54476	281576

Table 13: Effect of Nazism on immediate fertility after x years of marriage ($|AB|$ vs. $|EF|$)

Dependent variable	Number of kids after ... years of marriage					
	5 years	4 years	3 years	2 years	1 year	Pooled
Marriage cohorts	1928 & 33	1929 & 34	1930 & 35	1931 & 36	1932 & 37	1928-37
Treatment (T_i)	-0.1375*** (0.0379)	0.0143 (0.0343)	-0.0334 (0.0300)	-0.0499* (0.0286)	0.0057 (0.0276)	-0.0371*** (0.0141)
German Territory (G_i)	-21.4487** (8.6737)	-25.4476*** (9.1336)	-3.7540 (6.5562)	-10.5880 (6.6065)	-21.8694*** (7.3560)	-16.0270*** (3.3041)
Treat*Germ. ($T_i * G_i$)	0.1224*** (0.0392)	-0.0240 (0.0354)	0.0618** (0.0310)	0.0672** (0.0295)	0.0202 (0.0284)	0.0514*** (0.0145)
Years married	x					
Observations	61562	66977	65520	60005	61848	315912
Adj. R-squared	0.047	0.037	0.030	0.027	0.019	0.105

Table 14: The effect of Nazism on marital fertility in 1938 ($|CD|$ vs. $|EF|$)

Model	1928 & 33	1929 & 34	1930 & 35	1931 & 36	1932 & 37	Pooled
Dependent variable	kids 1938	kids 1938	kids 1938	kids 1938	kids 1938	kids 1938
Treatment (T_i)	-0.5891*** (0.0439)	-0.4840*** (0.0390)	-0.6328*** (0.0358)	-0.7275*** (0.0352)	-0.7476*** (0.0339)	-0.5991*** (0.0168)
German Territory (G_i)	-28.1638*** (9.3888)	-30.8312*** (9.6164)	-2.7895 (7.2929)	-13.1406* (7.5739)	-21.3261*** (7.7657)	-18.6896*** (3.6097)
Treat*Germ. ($T_i * G_i$)	-0.0099 (0.0456)	-0.1821*** (0.0405)	-0.0800** (0.0372)	-0.1023*** (0.0365)	-0.1749*** (0.0350)	-0.0973*** (0.0175)
Observations	61562	66977	65520	60005	61848	315912
Adj. R-squared	0.079	0.091	0.107	0.156	0.205	0.105

Table 15: The effect of Nazism on completed marital fertility ($|CD|$ vs. $|EF|$)

Model	1928 & 33	1929 & 34	1930 & 35	1931 & 36	1932 & 37	1928-37
Dependent variable	kids 1970	kids 1970	kids 1970	kids 1970	kids 1970	kids 1970
Treatment (M_i)	-0.4270*** (0.0637)	-0.2056*** (0.0572)	-0.4001*** (0.0571)	-0.4264*** (0.0553)	-0.4242*** (0.0557)	-0.3541*** (0.0257)
German Territory (G_i)	-21.2958* (12.0900)	-29.7320*** (11.5375)	1.2875 (10.0669)	-19.7456** (9.9607)	-15.1709 (10.3626)	-17.0039*** (4.6855)
Treat*Germ. ($M_i * G_i$)	0.0131 (0.0658)	-0.2684*** (0.0591)	-0.0538 (0.0590)	-0.1047* (0.0572)	-0.0808 (0.0575)	-0.0933*** (0.0266)
Observations	61562	66977	65520	60005	61848	315912
Adj. R-squared	0.082	0.078	0.076	0.082	0.083	0.074

The vector of basic controls in all estimations include Education, Religion, Learned Occupation and Vertriebenenausweis. Note that, the coefficient G_i appears to be very high but its interpretation requires to also consider the coefficients for the area-specific birth cohort trend. All estimations are done with robust standard errors. *** p-value<0.01, ** p-value<0.05, * p-value<0.1.

C.4 Balancing tests and balanced estimations

Table 16: Overview on balancing tests for women living in- and outside the German territory marrying between 1928 and 1937.

	German Territory		Value	Difference	
	Outside	Inside		lower	upper
Birth cohort	1915.0	1914.8	0.2177	-0.1277	0.5631
Education					
Elementary school	0.8434	0.8785	-0.0350	-0.0404	-0.0297
Secondary school	0.0957	0.0696	0.0261	0.0217	0.0304
High school	0.0100	0.0060	0.0040	0.0025	0.0054
Technical school	0.0375	0.0380	-0.0005	-0.0033	0.0023
Engineering school	0.0001	0.0001	0.0000	-0.0002	0.0001
University	0.0133	0.0078	0.0055	0.0038	0.0072
Religion					
Evangelic (wo. free church)	0.1942	0.5389	-0.3447	-0.3507	-0.3387
Evan. Free church	0.0148	0.0227	-0.0078	-0.0097	-0.0060
Catholic	0.7662	0.3908	0.3754	0.3690	0.3817
other Christian	0.0085	0.0067	0.0018	0.0004	0.0031
not affiliated with any religion	0.0102	0.0348	-0.0246	-0.0262	-0.0230
other religion	0.0061	0.0061	0.0000	-0.0011	0.0012
Learned Occupation					
Framing	0.0017	0.0028	-0.0011	-0.0017	-0.0005
Mining	0.0001	0.0001	0.0000	-0.0001	0.0001
Manufacturing	0.0759	0.0639	0.0120	0.0081	0.0159
Engineers	0.0004	0.0009	-0.0004	-0.0007	-0.0001
Merchants	0.0191	0.0519	-0.0328	-0.0349	-0.0307
Post	0.0003	0.0007	-0.0004	-0.0007	-0.0001
Officials	0.0001	0.0001	0.0000	-0.0001	0.0001
Manager	0.0029	0.0039	-0.0010	-0.0018	-0.0002
Policy	0.0000	0.0001	-0.0001	-0.0001	-0.0001
Publicists	0.0002	0.0002	0.0000	-0.0002	0.0002
Artists	0.0017	0.0012	0.0005	-0.0001	0.0011
Medical doctors	0.0006	0.0004	0.0002	-0.0002	0.0005
Nurses and other medical	0.0101	0.0115	-0.0014	-0.0028	0.0001
Pedagogues	0.0058	0.0059	-0.0002	-0.0013	0.0009
Academics	0.0001	0.0001	0.0000	-0.0001	0.0001
Service man	0.0259	0.0534	-0.0275	-0.0299	-0.0251
Family	0.0002	0.0002	-0.0001	-0.0003	0.0001
None	0.8552	0.8029	0.0524	0.0471	0.0576

Table 17: Overview on balanced estimations.

Model	Entropy Balancing		k-nearest neighbors		Coars. Exact Matching		Main specification	
	Religion	No Rel.	Religion	No Rel.	Religion	No Rel.	Catholics	Protestants
Panel A: Fertility of couples married in 1928–32 measured in 1933 and 1938								
Treatment	0.5581***	0.5268***	1.2003***	1.1536***	1.2059***	1.1502***	0.5292***	0.6578***
(T_i)	(0.0022)	(0.0022)	(0.0094)	(0.0092)	(0.0129)	(0.0126)	(0.0084)	(0.0194)
German Territory	-16.9298***	-17.9493***	-12.8362***	-20.7731***	-25.1389***	-25.0562***	-2.5048	-34.9902***
(G_i)	(1.6711)	(1.6535)	(4.2433)	(4.2050)	(4.7866)	(4.6452)	(6.7128)	(11.0241)
Treat*Germ.	0.1441***	0.1754***	0.2219***	0.1941***	0.1398***	0.1705***	0.2676***	-0.0008
($T_i * G_i$)	(0.0031)	(0.0030)	(0.0082)	(0.0078)	(0.0089)	(0.0088)	(0.0093)	(0.0196)
Observations	281576	281576	263686	275654	263116	275444	115730	146172
Adj. R-squared	0.106	0.092	0.099	0.097	0.108	0.108		
Panel B: Fertility of 1928–32 marriages in 1933 and of 1933–37 marriages in 1938								
Treatment	0.0113	-0.0390***	0.0267	-0.0309**	0.0237	-0.0416***	-0.0743***	0.0713**
(T_i)	(0.0207)	(0.0149)	(0.0223)	(0.0157)	(0.0226)	(0.0155)	(0.0161)	(0.0322)
German Territory	-21.4107***	-15.1511***	-20.0532***	-14.0631***	-25.1237***	-15.2903***	-0.7854	-35.1488***
(G_i)	(4.7880)	(3.5017)	(5.0656)	(3.7185)	(4.9163)	(3.6740)	(3.9774)	(7.0138)
Treat*Germ.	0.0069	0.0584***	-0.0114	0.0592***	-0.0153	0.0553***	0.0755***	-0.0497
($T_i * G_i$)	(0.0209)	(0.0153)	(0.0224)	(0.0159)	(0.0229)	(0.0159)	(0.0171)	(0.0325)
Observations	315912	315912	300975	311848	300204	311698	130431	163863
Adj. R-squared	0.100	0.100	0.102	0.097	0.105	0.105	0.107	0.099
Panel C: Fertility in 1938 of marriages in 1928–32 and marriages in 1933–37								
Treatment	-0.5853***	-0.5901***	-0.5759***	-0.5860***	-0.5761***	-0.5934***	-0.6030***	-0.6065***
(T_i)	(0.0250)	(0.0176)	(0.0265)	(0.0182)	(0.0271)	(0.0181)	(0.0189)	(0.0404)
German Territory	-15.9394***	-14.8468***	-8.4218	-9.1007**	-19.3685***	-15.4404***	-1.3725	-32.0732***
(G_i)	(5.3357)	(3.7950)	(5.6841)	(4.0288)	(5.5529)	(3.9575)	(4.3155)	(7.9178)
Treat*Germ.	-0.1073***	-0.1011***	-0.1831***	-0.1066***	-0.1302***	-0.1046***	-0.1922***	-0.0420
($T_i * G_i$)	(0.0254)	(0.0182)	(0.0273)	(0.0189)	(0.0275)	(0.0187)	(0.0205)	(0.0408)
Observations	315912	315912	300975	311848	300204	311698	130431	163863
Adj. R-squared	0.102	0.101	0.101	0.100	0.103	0.104	0.112	0.093
Panel D: Fertility in 1970 of marriages in 1928–32 and marriages in 1933–37								
Treatment	-0.3349***	-0.3496***	-0.3321***	-0.3487***	-0.3251***	-0.3538***	-0.3759***	-0.3403***
(T_i)	(0.0370)	(0.0262)	(0.0382)	(0.0269)	(0.0418)	(0.0272)	(0.0287)	(0.0611)
German Territory	-7.0371	-10.5957**	-2.4737	-4.7784	-14.4280**	-11.9205**	-2.0135	-17.8742*
(G_i)	(6.7686)	(4.8393)	(7.1816)	(5.1254)	(7.3545)	(5.0791)	(5.5626)	(10.4383)
Treat*Germ.	-0.1057***	-0.0903***	-0.1288***	-0.0792***	-0.1355***	-0.0965***	-0.1146***	-0.0938
($T_i * G_i$)	(0.0376)	(0.0271)	(0.0395)	(0.0279)	(0.0424)	(0.0280)	(0.0310)	(0.0617)
Observation	315912	315912	300975	311848	300204	311698	130431	163863
Adj. R-squared	0.075	0.068	0.072	0.063	0.069	0.072	0.052	0.078

The vector of basic controls in all estimations include Education, Religion, Learned Occupation and Vertriebenenausweis. Note that, the coefficient G_i appears to be very high but its interpretation requires to also consider the coefficients for the area-specific birth cohort trend. All estimations are done with robust standard errors. *** p-value<0.01, ** p-value<0.05, * p-value<0.1.

As can be seen from Table 17, our main results are globally maintained, but the interaction term in Panel B loses its significance. The main reason for this situation relates to the imbalances in religious affiliation. When, contrary to our main balancing exercise, we rebalance the samples without religious affiliation, the interaction term in Panel B regains its significance. It suggests that there is unobserved heterogeneity correlated with being Catholic or Protestant, which could potentially confound our results. To better explore this possibility, we rerun our main estimation on the two sub-populations. The results in Table 17 show that our positive effect in Panel B is mostly driven by Catholics, while the latter is negative for Protestants. Given the strong imbalance in religion in our main sample, our effect disappears once we reweight our sample: the weight of Protestants in the control group is increased and so the positive and negative effects tend to cancel each other out. There are mainly two complementary reasons why this could happen. Second, they reacted nevertheless less to the positive incentives to have kids than Catholics.

C.5 Poisson regression models

Fertility being a count variable, the Poisson regression model constitutes a natural alternative to the OLS. We determine the probability that a woman i who married at time t in area j has \mathcal{N} children, such that:

$$Prob(n_{ijt} = \mathcal{N} | X_{i,j}) = \frac{e^{-\mathcal{L}_{ijt}} \mathcal{L}_{ijt}^{\mathcal{N}}}{\mathcal{N}!},$$

with

$$\mathcal{L}_{ijt} = \alpha_0 + \alpha_1 G_i + \alpha_2 T_i + \alpha_3 G_i * T_i + \beta X_i + b_i j + \varepsilon_i.$$

In Table 18, we present our main results and the most important robustness checks we have implemented along the paper. As becomes clear from the table, all our results are preserved in terms of signs and significance.

Table 18: Main specification and robustness checks in Poisson regression models

Model	Baseline	Area Trends	Migrants	Partner	Balanced	1932–34	No East
Panel A: Fertility of couples married in 1928–32 measured in 1933 versus 1938							
Treatment	0.4364***	0.4363***	0.4363***	0.4823***	0.4388***		0.4126***
(T_i)	(0.0057)	(0.0057)	(0.0057)	(0.0081)	(0.0004)		(0.0066)
German Territory	-0.0607***	-19.1351***	-20.1687***	-20.4583***	-13.7449***		-12.3634**
(G_i)	(0.0095)	(4.4717)	(5.1007)	(6.6463)	(1.1820)		(5.4996)
Treat*Germ.	0.1141***	0.1144***	0.1223***	0.1070***	0.1120***		0.1381***
($T_i * G_i$)	(0.0059)	(0.0059)	(0.0069)	(0.0085)	(0.0017)		(0.0068)
Observations	284192	281576	62820	140208	281576		276996
Panel B: Fertility of 1928–32 marriages in 1933 and of 1933–37 marriages in 1938							
Treatment	-0.0321**	-0.0403***	-0.0415***	-0.0410**	0.0111		-0.0723***
(T_i)	(0.0131)	(0.0144)	(0.0144)	(0.0194)	(0.0209)		(0.0169)
German Territory	-0.0607***	-16.8427***	-20.1250***	-15.5362***	-23.1808***		-4.9368
(G_i)	(0.0095)	(3.5142)	(3.9553)	(4.8545)	(4.8655)		(4.2139)
Treat*Germ.	0.0914***	0.0496***	0.0579***	0.0197	0.0031		0.0814***
($T_i * G_i$)	(0.0136)	(0.0148)	(0.0168)	(0.0199)	(0.0211)		(0.0173)
Observations	318898	315912	69397	171688	315912		311253
Pseudo R^2	0.000	0.036	0.038	0.041			0.037
Panel C: Fertility in 1938 of marriages in 1928–32 and marriages in 1933–37							
Treatment	-0.4685***	-0.4770***	-0.4788***	-0.4451***	-0.4574***	-0.1476***	-0.4789***
(T_i)	(0.0123)	(0.0137)	(0.0137)	(0.0183)	(0.0200)	(0.0258)	(0.0163)
German Territory	0.0534***	-15.2703***	-19.3354***	-15.1582***	-13.7023***	-17.1811**	-5.2349
(G_i)	(0.0082)	(2.9797)	(3.3619)	(4.5228)	(4.2869)	(7.2387)	(3.5804)
Treat*Germ.	-0.0227*	-0.0568***	-0.0467***	-0.0794***	-0.0733***	-0.1031***	-0.0550***
($T_i * G_i$)	(0.0126)	(0.0142)	(0.0161)	(0.0188)	(0.0203)	(0.0266)	(0.0167)
Observations	318898	315912	69397	171688	315912	65374	311253
Pseudo R^2	0.027	0.037	0.037	0.041	0.036	0.017	0.037
Panel D: Fertility in 1970 of marriages in 1928–32 and marriages in 1933–37							
Treatment	-0.0453***	-0.1783***	-0.1817***	-0.1299***	-0.1650***	-0.0376	-0.1935***
(T_i)	(0.0112)	(0.0123)	(0.0123)	(0.0167)	(0.0174)	(0.0250)	(0.0146)
German Territory	-0.0142*	-11.3038***	-14.8176***	-11.2152***	-7.4264**	-10.8115*	2.6804
(G_i)	(0.0085)	(2.6345)	(2.9708)	(4.0468)	(3.7665)	(6.2973)	(3.1589)
Treat*Germ.	-0.0212*	-0.0524***	-0.0670***	-0.0666***	-0.0620***	-0.0809***	-0.0373**
($T_i * G_i$)	(0.0116)	(0.0128)	(0.0145)	(0.0172)	(0.0177)	(0.0258)	(0.0150)
Observations	318898	315912	69397	171688	315912	65374	311253
Pseudo R^2	0.001	0.029	0.030	0.021	0.029	0.029	0.029

The vector of basic controls in all estimations include Education, Religion, Learned Occupation and Vertriebenenausweis. Note that, the coefficient G_i appears to be very high but its interpretation requires to also consider the coefficients for the area-specific birth cohort trend. All estimations are done with robust standard errors. *** p-value<0.01, ** p-value<0.05, * p-value<0.1.