The fertility impact of mass return migration

Velichka Dimitrova*

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Abstract

Return migration is common, yet identifying its impact is difficult because of selection and confounding factors in destination and source countries. A unique natural experiment—the Portuguese Revolution of 1974—ended the Colonial War and triggered a mass exodus of colonists from the former overseas territories. Drawing on a new municipal panel dataset from several archival sources for Portugal between 1940 and 1990, I examine the fertility impact of return migration using event study and instrumental variable methodologies. A percentage point increase in the number of returnees per capita resulted in 1.3 to 1.7 additional births per thousand women, driven primarily by nonmigrant fertility. The main explanation is the returning men of prime reproductive age who alleviated demographic imbalances caused by male-biased migration and war deployment, and contributing to family formation within existing marriages. The age-specific labor market analysis reveals that younger women were disproportionately affected, with many leaving the labor force, leading to an average decline of 5-8 percentage points in labor force participation among young native women.

Keywords: return migration, forced migration, fertility, labor markets, soldiers, decolonization

JEL Classification: J10, J13, J61, N34, O15

*Velichka Dimitrova, University of Warwick; UCL Social Research Institute; email: v.dimitrova@ucl.ac.uk. website: https://vndimitrova.net/.

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1 Introduction

Return migration is common, with at least a quarter of all migration events consisting in returns to the individual's country of birth (Azose and Raftery, 2019; Abramitzky et al., 2019). Despite its substantial empirical relevance (Hagan and Wassink, 2020; Dustmann, 1996), identifying the impact of return migration is often challenging. This difficulty arises due to selection on individual-specific factors and anticipation, where confounding factors influence the timing of return (Dustmann, 2001; Dustmann and Kirchkamp, 2002; Dustmann and Weiss, 2007; Amanzadeh et al., 2024).

From an identification perspective, most instances of forced migration are regarded as exogenous for both host populations and migrants, and their impacts on various outcomes are typically understood as causal effects (Becker and Ferrara, 2019; Becker, 2022; Ruiz and Vargas-Silva, 2015). However, forced migration is distinct from voluntary migration, where push factors include violence and imminent threats to personal security, as well as burdens such as wealth confiscation and bureaucratic hurdles, all of which impose significant financial and social costs (Becker et al., 2020; Buggle et al., 2023; Chiovelli et al., 2021; Cortes, 2004; Ruiz and Vargas-Silva, 2018).

Research frequently focuses on migration's labor market impacts, but its combined effects on fertility and labor markets remain less understood. Fertility may act as a constraint on women's ability to participate fully in the labor market (Bailey, 2006; Bloom et al., 2009; Rosenzweig and Wolpin, 1980) and plays a critical role in economic development by influencing population dynamics, labor markets, and social structures. A demographic dividend, characterized by a low dependency ratio, leads to higher labor force participation, increased productivity, and greater savings, all of which support economic growth (Bloom et al., 2024; Kotschy et al., 2020). Migrants, being relatively young and with high fertility, often contribute more to demographic groups than their numbers alone would suggest (Livi-Bacci,

2018).

This paper investigates the demographic and age-specific labor market impacts of return migration. It exploits a natural experiment that provided a largely unanticipated and time-concentrated return migration displacement event, addressing the identification issues of selection and anticipation. The Portuguese Revolution in 1974, which began with a military coup initiated by junior officers, overthrew the colonialist regime and triggered a mass exodus from former Portuguese colonies (Garcia, 2012; Kalter, 2022; Fernandes, 2024). Half a million settlers returned to Portugal as refugees, representing the majority of the Portuguese who had settled in Africa—an indiscriminate repatriation that increased Portugal's population by 5% (Newitt, 2015; Pires et al., 1987). These individuals, many of whom had lived their entire lives in the colonies, were displaced in the aftermath of the rapid decolonization process that unfolded after the Revolution (Dacosta, 2013; Kalter, 2022).

1.1 Results Preview

This project draws on extensive archival research to compile a detailed municipality-level panel from 1940 to 1990, covering demographic, migration, and economic variables from various sources. The focus is on the impact of returnees per capita on fertility. An event study approach helps rule out differential fertility trends between municipalities. The results show that a 1 percentage point (p.p.) increase in returnees per capita led to 1.3 to 1.7 additional births per thousand women, compared to a mean of 81 births. Thus, municipalities receiving 4 percent returnees had 5-7 more births per thousand women. By analyzing the age of children in migrant and native families and constructing a migrant-to-native fertility measure, I decompose the aggregate effect into a native-only proxy, showing that the increase is primarily driven by nonmigrant fertility.

During Portugal's prolonged Colonial War (1961-1974), an average of 107,000 soldiers were deployed annually during the conflict (De Melo, 1988), many of whom returned home

following the 1974 Carnation Revolution, which ended the dictatorship. These returnees, particularly men aged 25-34, significantly impacted fertility patterns, as many were at an optimal age for family formation upon their return. A triple difference-in-differences approach finds that municipalities with higher concentrations of young returnee men experienced a substantial rise in fertility rates. This suggests that returning soldiers, particularly men aged 25-34, could have played a crucial role in driving fertility increases, likely by alleviating demographic imbalances caused by male-biased migration and war, and contributing to family formation within existing marriages. While there was no corresponding spike in marriage rates, the increase in fertility appears to have occurred within the framework of established family structures.

Migration can lead to the transfer of fertility norms from the destination country to the origin country, as migrants spread values and practices, including those related to fertility, from host to home countries through cultural remittances (Rapoport et al., 2021). Migrants who are exposed to lower or higher fertility rates abroad may adjust their own fertility preferences, and these changes can influence their home communities through communication, media, or other forms of transfer (Beine et al., 2013; Bertoli and Marchetta, 2015). Additionally, economic factors such as income gains from migration may either increase or decrease fertility, depending on whether children are viewed as a source of security or as a costlier investment due to improved opportunities for education and employment. Using two measures of migrant fertility — absolute family size and the ratio of migrant to native fertility — I find that larger migrant families did not have an additional impact on local fertility.

I implement a novel instrumental variable (IV) strategy, in which I instrument for returnees per capita with the historical outward emigration to the overseas territories, while also controlling for total emigration. This approach isolates the variation in migrant concentration that is due to the repatriation of colonists by holding constant the level of historical emigration from a particular district. Current IV approaches in the literature, *de facto* compare areas with high vs. low emigration in the past (Borusyak et al., 2022; Adao et al., 2019;

Jaeger et al., 2018). The innovation in this paper, which is made possible in the Portuguese case, is to distinguish the impact of the shock between migrant-sending districts. Those that sent more emigrants to the overseas provinces experienced a disproportionate population shock at the time of the return, relative to districts that had sent migrants to other destinations like Europe and South America, which did not trigger a return.

The mobilization of men for the war effort led to a surge in female labor force participation, as women filled roles left vacant by men serving overseas. This shift, as documented by Goldin (1991); Acemoglu et al. (2004); Doepke et al. (2015), persisted after the war for many women, particularly those in white-collar jobs. However, the consequences of increased female labor supply were not uniform. In states with higher mobilization rates, women remained in the workforce in larger numbers, which suppressed wages for both men and women due to the expanded labor supply. Additionally, Doepke et al. (2015) argue that increased competition in the postwar labor market, particularly for younger women, pushed many out of the workforce, contributing to a rise in early marriages and higher fertility rates during the baby boom.

Digitizing age-specific labor market variables from census archives enabled the analysis of the return migration's impact on younger cohorts and specific demographic groups. This focus is important for two reasons. First, an age-aggregate analysis would obscure the heterogeneous effects across different age groups. Younger workers may be disproportionately affected by labor market shocks, especially if return migrants are younger or competing for similar jobs. Second, fertility decisions are more relevant to the younger segments of the labor force.

The analysis reveals a significant impact on younger workers aged 15 to 24. Municipalities, on average, experienced a 5-8 p.p. decline in labor force participation among young native women, whose participation rate averaged 37% during this period. Excluding returnee women from the 1981 census figures shows that native-only labor market impacts are similar

to the original estimates, indicating that the effects are not solely due to changes in the composition of the population and labor force.

Cardoso and Morin (2023) explore how unbalanced sex ratios due to male-biased emigration and the Colonial War influenced female labor force participation in Portugal. They find that as the sex ratio declined, female participation increased, particularly in male-dominated industries. Return migration reversed the trend of increasing female labor force participation, which had been driven by male-biased emigration in earlier decades and increased fertility.

1.2 Related Literature

This research relates to the literature on migration and fertility (Baudin, 2010; Beine et al., 2013; Bertoli and Marchetta, 2015; Daudin et al., 2019; Fargues, 2006, 2011). Beine et al. (2013) identify that migration affects home country fertility through the transfer of destination fertility norms via communication, media, economic incentives, and the return of migrants, altering fertility behaviors in origin countries. A prominent example from Bertoli and Marchetta (2015) shows how Egyptian return migrants from high-fertility Gulf countries influence fertility choices upon returning home, finding that returnees tend to have significantly more children than non-migrants, driven by their exposure to Gulf fertility norms and the economic benefits of migration. The unique setting of the 1974 repatriation offers new insights into how forced mass migration can impact fertility in the origin country, particularly through demographic shifts, rather than through the adoption of external fertility norms.

This paper also speaks to the literature on forced migration (Becker and Ferrara, 2019; Becker et al., 2020; Becker, 2022; Buggle et al., 2023; Chiovelli et al., 2021; Cortes, 2004; Ruiz and Vargas-Silva, 2015, 2018) which in general find mixed effects on the receiving countries' wages and employment, depending on the period, context, composition and the degree of substitutability between the displaced refugees and locals (Becker and Ferrara, 2019). Forced

displacement can lead to increased educational attainment and long-term human capital development (Becker, 2022; Chiovelli et al., 2021). This work adds to the literature on how forced migration can shift local population structures and economic behaviors, especially regarding fertility and gender-specific labor market effects.

This paper fits within the broader literature on the intersections between fertility and labor force participation (Angrist and Evans, 1998; Bailey, 2006; Bloom et al., 2009; Cain and Dooley, 1976; Cruces and Galiani, 2007; Grogger and Bronars, 2001; Jensen, 2012; Oliveira, 2016; Rosenzweig and Wolpin, 1980), where numerous studies illustrate how exogenous factors or policies that influence fertility rates have been shown to significantly affect women's labor force participation. For instance, exogenous factors like twin births or parental preference for mixed-gender children can lead to increased fertility, which in turn reduces women's labor force participation (Angrist and Evans, 1998; Cruces and Galiani, 2007; Rosenzweig and Wolpin, 1980). The introduction of contraceptive methods, such as the birth control pill in the 1960s, gave women greater control over family planning, allowing them to delay childbearing and thereby increasing their labor force participation (Bailey, 2006). Moreover, the presence of young children and the costs associated with larger families often hinder women's capacity to engage in the workforce, particularly in developing economies (Oliveira, 2016). This work highlights how the return migration event not only influenced fertility but also significantly affected labor force participation, especially among young women.

The paper relates to the empirical literature on return migration using the decolonization experience of France and Portugal (Hunt, 1992; Edo, 2020; Mäkelä, 2017; Carrington and De Lima, 1996; Bohnet et al., 2022; Fonseca et al., 2022; Remigereau, 2022), to which it contributes through studying fertility and age-specific labor market outcomes, as well as a different instrument. Previous work focuses on aggregate labor market outcomes and political economy. Hunt (1992) found that the 1962 repatriation from Algeria modestly increased unemployment and reduced wages in France, while Edo (2020) argued that although wages recovered by 1976, the influx led to persistent reductions in wage inequality by lowering the

relative wages of higher-educated workers. On the political economy side (Remigereau, 2022) shows that areas receiving more Algerian repatriates experienced a pronounced increase in far-right voting.

For Portugal, Carrington and De Lima (1996) suggest modest adverse effects, overshadowed by a broader European economic downturn, while Mäkelä (2017) found more substantial negative impacts on wages and labor productivity, especially in low-skilled sectors using synthetic controls. In a related paper, Bohnet et al. (2022) revisits the labor market question, using municipal-level census data and instrumenting returnees' location with their birth municipality. The study focuses on labor markets, finding adverse effects for native workers, including higher unemployment and a disproportionate impact on women's labor force participation.

Structure The paper has the following structure: First, Section 2 sets out the historical context, describes the data sources and archival work and provides a summary of the key variables. Then, Section 3 begins with the event study and differences-in-differences analysis of fertility. Further 3.3 examines composition of the impact, decomposing the effects in native-only fertility, cultural norms related to family size, soldiers' return and marriage markets. Section 3.4 discusses robustness and Section 3.5 proceeds with the instrumental variable analysis. Section 4 looks at the district-level changes in remittances. Then, Section 5 examines the labor markets with age-specific outcomes. Finally, Section 6 concludes.

2 Empirical Context and Data

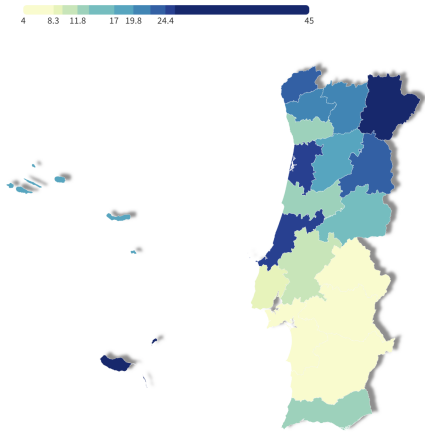
2.1 Historical Background and Natural Experiment

Portuguese Emigration Portugal provides an ideal setting for a natural experiment due to its historic emigration patterns and subsequent return migration. Between the 1950s and

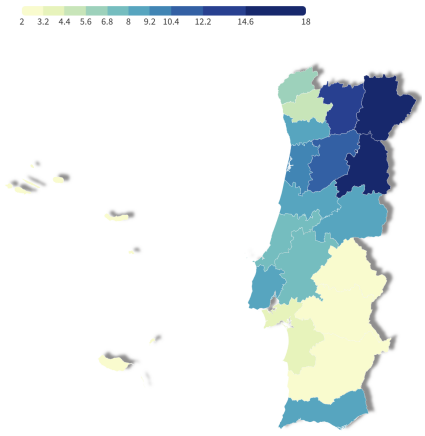
early 1970s, approximately 1.5 million people left the country (Antunes, 1970; Baganha and Góis, 1999; Newitt, 2015), migrating to South America, various European countries, and the "overseas provinces" of Portugal in that period.[1] These colonies were Angola, Mozambique, Guinea-Bissau, Cape Verde, São Tomé and Príncipe in Africa, as well as Timor, Macao, and Goa in Asia.

The maps 1a and 1b of Figure 1 show the regional distribution of emigration source districts for total emigration and also migration to the colonies, with the most substantial emigration originating from the Northern districts. Further, Figures A1a and A1b plot the volume of migrants by destination. The most substantial migration of Portuguese settlers happened after World War II: Angola and Mozambique had a combined white Portuguese population of about 70,000 in 1940, which by the end of the colonial period increased to more than half a million (Castelo, 2013).

Figure 1: Maps of emigration source districts in Portugal. Data source: Chapter *'Migratory Movements'*, digitized from the *Demographic Annals* (1945–1975) and the 1940 census from the INE Portugal Archives.



(a) Emigration to foreign countries in 1945–1975 as percent of population in 1940.



(b) Emigration to colonies / 'overseas provinces' in 1945–1975 as percent of population in 1940.

[1]The Portuguese dictatorial regime of the *Estado Novo* carried out a rebranding using Lusotropicalism as ideological support, in which 'colonies' were renamed "overseas territories" (*Ultramar*) (Fernandes, 2024).

The Colonial War and the Carnation Revolution As Portugal was one of the last European countries to decolonize, it engaged in a prolonged Colonial War between 1961 and 1974, with a series of conflicts between Portuguese forces and nationalist movements in its African colonies. The Colonial War placed a heavy burden on Portugal, both economically and socially. African independence movements formally emerged in the 1950s and early 1960s. The start of the Portuguese Colonial War is generally marked by the outbreak of the Angolan War of Independence in 1961 and this conflict soon expanded to other Portuguese colonies, including Guinea-Bissau and Mozambique in the early 1960s (Ciment, 1997; Rabaçal, 2017). The prolonged conflict contributed to dissatisfaction within the Portuguese military, leading to the formation of the Armed Forces Movement — *Movimento das Forças Armadas* (MFA) — a group of junior officers who planned and carried out a military coup in April 1974, overthrowing the authoritarian and colonialist regime in Portugal (Fernandes, 2024; Matos and Oliveira, 2024a,b).

A popular movement, famously known as the Carnation Revolution,[2] supported the military revolt and led to radical social and economic changes throughout the country, as well as rapid decolonization. The issues in Africa were central to the nation's challenges and played a key role in sparking the rebellion within the armed forces (Ferreira, 2024). The MFA's well-known "three Ds" program—focused on democratization, decolonization, and development—highlighted the main objectives of the leaders of the April revolution.

The decolonization struggle during the Carnation Revolution era was marked by deep divisions within the diverse and unstable coalition of forces with differing visions for Portugal's future: on the one hand, the conservative approach of General Spínola,[3] and, on the

[2]Celeste Caeiro, a restaurant worker who had been given leftover carnations, decided to distribute them to the soldiers, who placed the flowers in the barrels of their rifles. The carnation became a powerful emblem of peaceful resistance, unity, and the non-violent overthrow of the dictatorship (Matos and Oliveira, 2024a; Fernandes, 2024).

[3]António de Spínola was a Portuguese military officer and a key figure in the Carnation Revolution of 1974. He briefly served as President of Portugal after the revolution, helping transition the country from dictatorship to democracy. Spínola was also known for his opposition to prolonged colonial wars and for advocating a political solution to end Portugal's colonial rule in Africa, promoting a federalist model for the overseas territories. Ultimately, Spínola's reluctance to swiftly decolonize contributed to his fall from power

other hand, the MFA's desire for swift independence for Portugal's African colonies. The MFA ultimately prevailed in pushing for rapid decolonization and restructuring the political system, while President Spínola's more conservative approach failed to gain traction (Fernandes, 2024; Ferreira, 2024). In theory, the military expressed their willingness to find a slow and balanced way out of the territories, but in practice, the urgency to put an end to the colonial era, along with the tremendous personal and financial burden it represented for the country, led to a faster withdrawal than desired (Garcia, 2012).

Return Migration There had been no consideration of decolonization by the former regime, and there were no plans to transfer power to the local population. The domination and tight supervision by Lisbon over the African provinces (Castelo, 2013) meant that the Portuguese expatriate community had no control over the security forces, local institutions, or leadership. The settlers could not establish local autonomous control or remain safely in Africa amid the growing insecurity, social chaos, worsening economic conditions, and loss of status. Nor were they willing to live under Black majority rule (Kalter, 2022). The military organization had taken control of the security situation and then unilaterally decided to cease military operations, leaving settlers with few alternatives but to return to Portugal (Newitt, 2009).

When the colonies achieved independence,[4] there was a mass exodus of Portuguese settlers, the majority of whom returned to mainland Portugal. The 1981 census shows that around half a million settlers had returned to Portugal by 1975, representing 95% of the Portuguese who had migrated to Africa (Kalter, 2022; Pires et al., 1987). Portugal's population increased by 5%, and since the returnees were mostly younger and economically active, they boosted the labor force by 10% (Carrington and De Lima, 1996).

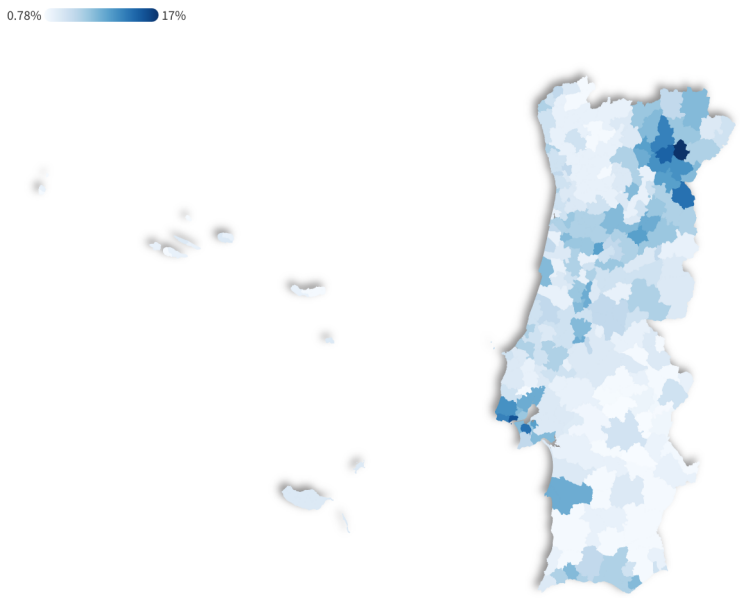
Figure 2 shows the regional distribution of return migrants per capita, with an average of 4% of the total population, though there is substantial geographical variation. Areas in

(Fernandes, 2024; Ferreira, 2024; Matos and Oliveira, 2024b)

[4]Both Angola and Mozambique gained independence in 1975: Mozambique on June 25 and Angola on November 11.

Lisbon, the vicinity of Setúbal (a district across the river from Lisbon), and Bragança in the North received the most returnees per capita, exceeding 7%. The lowest return shares were in the islands of Portugal and the Southeast, which were regions that had sent fewer migrants overseas in the past. The similarity between the distribution of source districts for emigration to the overseas provinces in Figure 1b and returnees per capita in Figure 2 indicates that districts that sent migrants in the past were also more likely to have return migrants residing there in 1981. This similarity forms the basis of the instrumental variable strategy, which also controls for total emigration (Figure 1a).

Figure 2: Regional distribution of returnees per capita in 1981: number of returnees relative to overall population. Data source: micro census on all repatriates (Pires et al., 1987) and the 1981 census.



The return of the repatriates, often referred to as *retornados* in Portuguese, is an episode of forced migration[5]. Stripped of their previous status and economic privileges, the *retornados* found themselves stigmatized upon returning to Portugal, where they were perceived by many as colonial exploiters (Dacosta, 2013; Garcia, 2012; Kalter, 2022).

[5]Meets the criteria of the International Association for the Study of Forced Migration (IASFM), as "*movements of refugees and internally displaced people (those displaced by conflicts)...*" *(Becker and Ferrara, 2019).*

The term *retornados* carried an unfavorable implication, as it was associated with loss, displacement, and a forced return to a homeland many did not fully recognize as their own. Despite this, they were reluctant to adopt the label of "refugees" (*refugiados*), as they believed it failed to capture their involuntary return and the deep ties they had developed with the former colonies. Instead, terms such as *desalojados* (the displaced) and *espoliados* (the dispossessed) were used to reflect the material losses they endured and their precarious social standing in postcolonial Portugal. The transition was further complicated by government efforts to integrate the *retornados* into the Portuguese labor market and society, often with inadequate support and resources, leading to their continued marginalization (Kalter, 2022, pp. 64-69).

2.2 Data Sources and Archival Work

Two principal sources form the basis of the municipal panel, which I digitize from archival materials to conduct the analysis: the demographic annals and the population censuses from the National Statistical Institute (INE) of Portugal.[6] The dataset covers 303 municipalities,[7] 29 districts according to the old classification, and 39 districts according to the new classification, corresponding to the modern NUTS3 regions.[8] Since no micro-level census data is available before 1981, I also digitize resident population data by age group, along with age group-specific labor market variables from the census archives.

Some individual-level data is available in digital format. The first is the micro-census of all repatriates aged 7 years and older in 1981, containing 471,427 observations with municipality identifiers, kindly shared by Rui Pena Pires and João Pereira dos Santos. This micro-census is

[6] *Anuários demográficos / Estatísticas Demográficas* (1940-1990) and *Recenseamento Geral da População* (1940, 1950, 1960, 1970, 1981, and 1991).

[7] In cases where a parish split from a municipality to become an independent municipality, I use the aggregate definition prior to the split for consistency. This applies to Amadora splitting from Oeiras in 1979 and Vendas Novas separating from Montemor-o-Novo in 1962.

[8] Some archives do not provide separate statistics for the districts of the Azores and Madeira, in which case the total number of districts, according to the old classification, is 20.

essential for constructing the treatment variable—returnees per capita—as well as measures of migrant fertility, the concentration of specific demographic groups (for instance, men in their 20s and 30s who were likely returning soldiers), and labor market participation variables. The other source is the micro-census provided by INE, which includes district identifiers (NUTS3) and is a 5% representative sample of the Portuguese population. I also use municipality-level labor force and education variables from INE and PORDATA for 1960 and 1981, aggregated across all age groups.

There are several specific data challenges and limitations worth noting. In addition to the lack of micro-data for earlier census years, which imposes a substantial data-gathering requirement, there are limitations related to the level of aggregation and the time periods. First, some series are only available at the district level, including migratory movements, age-specific labor force participation, age of mothers, and remittances. Second, in some census years there are some aggregations in reporting, specifically for the islands of Portugal. For instance, the municipalities of "Angra do Heroísmo" and "Praia da Vitória" are sometimes recorded as a single figure for the island of Terceira, etc. Third, while fertility data is available annually, the resident population and labor market variables are only recorded in each decennial census, observed at 10-year intervals.

2.3 Variable Definitions and Summary Statistics

Fertility Outcomes and Population Imputation Fertility is measured using the General Fertility Rate (GFR), calculated as the ratio of live births to the number of women aged 15 to 44 in a municipality, with this age group accounting for 99% of births. Since population numbers are only available from censuses conducted every 10-11 years, imputation is necessary between census years. This assumes stable population growth, except in 1975, when the return of migrants led to a sudden population increase. The 1981 census provides detailed data on migrant age structure, allowing for accurate adjustments, such as recognizing that

women aged 15-44 in 1975 would be aged 21-49 in 1981. On average, there are 81 births per 1,000 women aged 15-44 years (see Table A1).

Migrant and Native-only Fertility The approach to calculating native-only fertility involves separating births by native and migrant women using available census micro data in 1981. Using the observed fertility rates from the age of children and constructing a ratio of migrant to native births, the method approximates native births by adjusting the general fertility rate, leveraging microcensus data and assumptions about district-level fertility patterns (see more detail in Section 3.3.1). The average migrant to native fertility was 1.32 before 1974 and 0.99 after 1974. Migrant women had on average fewer children aged 7 and younger than native women. Table A2 shows an average of 0.56 vs 0.72 children younger than 7, in migrant vs. native families, respectively. Through the variable "Number of children" in the repatriates micro-census, I construct the migrant family size, which is on average 1.8 children.

Treatment The treatment variable, returnees per capita, is defined as the number of return migrants from the former overseas provinces per resident population, as observed in 1981. The status of being a returnee from overseas provinces is based on a question in the 1981 census, which asks: "Where were you resident in 1973?" and offers the options "Angola," "Mozambique," "Guinea-Bissau," "Cabo Verde," "São Tomé and Príncipe," or "Macau." Returnees from Angola and Mozambique represent 4.8% of all census respondents, and all returnees from any overseas province represent 5.19% (see Table A2).[9]. The regional distribution of returnees per capita reflects a long-term equilibrium of settlement patterns, and it is possible that migrants resided in other municipalities between 1975 and 1981 before settling where they were observed in 1981, introducing some measurement error.[10]

[9]European and other returnees make up 1.44% of the Portuguese population in 1981 – respondents who listed "France", "Germany", "Other countries in Europe", "U.S. or Canada" as their residence in 1973.

[10]The IPUMS 1981 census data indicate that 90% of respondents who were living abroad (not necessarily only repatriates) in 1973 had been living in the same district the previous year (1980). Unfortunately, migration status from five years prior is not available.

resided in the same minor administrative unit as 1 year ago and 86.5% as 5 years ago, though these cannot be disaggregated by migration status.

Marriage Markets The digitized municipal panel also includes marriages and nonmarital births, and also the age distribution of mothers by district and year. Of all births 8.3% are non-marital or "*out of wedlock*". There are an average of 41 marriages per 1,000 women of reproductive age (see Table A1). There is a substantial difference in the sex ratio in reproductive ages between the 1970 and the 1981 census, which could have provided better opportunities for women to find a partner and have children.

Following years of male-biased migration, the mean ratio of women to men aged 15-44 is 1.11 in the 1970 census, declining to 1.01 in the 1981 census. This reflects how the return changed the demographic structure of the population and recovers a sex balance in reproduction, which also overlaps substantially with years of being economically active. Figure A3 shows how the mass of the female ratio changed between the two census years in (a) and (b), respectively. If we consider the stable age gap in couples and instead calculate the female ratio of women aged 15-44 to men aged 20-49, we observe a similar pattern of 0.09 decline (from 1.19 in 1970 to 1.10 in 1981).

About 2/3 of women were 24 years old or younger when they married (see Figure A4a). And more specifically, about 30% of women married aged 15-19 in the late 1970s, increasing from just over 20% in the early 1970s. This relates also to a substantial decline in the age of new mothers. In the late 1970s, about half of all births were to women aged 15-24, compared to only a third of all births before 1974 (see Figure A4b).

Controls From the 1940 and 1950 censuses, I collect a series of municipality-level demographic characteristics (see Table A3 for the summary statistics). Families per capita are closely related to households per capita and are available in both censuses. The absent ratio denotes the proportion of residents who are reported as temporarily absent *'Temporariamente ausente'*. The single, separated and widowed ratios are derived from the population with a civil status. Literacy is defined as being able to read. There is a substantial variation in the level of literacy, where the mean is 36%: just over a third of Portuguese residents could read and write in 1940. The analysis tests for correlations with the treatment variables and includes these variable as initial conditions of the municipalities before the period of mass emigration. I also code the the latitude and longitude of the municipal centres, which I use to calculate the Conley standard errors (Conley, 1999).

Instrument To create the instrument for historical outward migration, I digitize the migratory movements chapter from the demographic annals, which provides the source district and destination. Figures A1a and A1b present the timeline of these series by destination. The annals chapter also contains information on migrant characteristics: sex, literacy, and marital status of emigrants who left Portugal between 1945 and 1975 for overseas provinces or other countries. Some of the most comprehensive descriptive studies of migration are important sources for understanding migration patterns and the characteristics of Portuguese emigrants (Antunes, 1970; Castelo, 2004, 2017; Baganha, 2003) and the returnees (Pires et al., 1987).

Figures A2a, A2b, and A2c show the distribution of migrant characteristics over the 1950-1970 period, based on the percentage of male, single, and literate individuals. This data represents the average values from all districts in Portugal, as detailed in the "*Migratory Movements*" chapter of the *Demographic Annals*. It reveals some disparities between different migrant groups. Among overseas migrants, the literacy rate was higher (81%) compared to emigrants leaving Portugal (74%). Additionally, overseas migrants were more inclined to

emigrate as family units: 42% of overseas migrants were single, compared to 45% of those emigrating from Portugal. Regarding gender distribution, overseas migrants comprised 54% males, slightly lower than the 59% male composition among emigrants leaving Portugal. Table A4 summaries the average values for the two groups of migrants.

Labor Market Outcomes To examine potential mechanisms, I also obtain other demographic and economic variables. From the census, I digitise age-specific labor force participation variables from the census archives. These variables are labor force participation including employed and unemployed, and out-of-the-labor-force with its sub-categories (students, 'home-makers',[11] and disabled). Figure A5 plots the age-specific labor force participation of males and females, respectively. There is a visible trend of increasing female labor force participation across the age distribution. In particular, young women aged 15-19 and 20-24 increase their participation rates from just above 20% in 1960 to 40% in 1970. This trend had slowed down for younger women in 1981.

Remittances From Chaney (1986), I also digitize a district-level panel on remittances received in Portugal during the period 1973-1980, which contains transfer data from the two main financial intermediaries, Pinto and Sotto Mayor (PSM) and Borges and Irmão (BI), who facilitated connections between migrant communities and their families. The variable I use is remittances per capita in thousands of escudos, based on transfers cashed at the banks' branches across Portugal. The control variables include GDP per capita, the percentage of the population active in agriculture, and population density.

[11]The category *domestica*, whose closest equivalent is 'home-maker', as a woman out of the labor force, but engaged in home production.

3 Identification: Fertility

3.1 Event Study

Tables A5 and A6 examine the correlations between returnees per capita in 1981 and a range of municipality-level demographic characteristics from the 1940 and 1950 censuses. Municipalities with higher literacy rates in the 1940s and 1950s received more returnees, consistent with the self-selection narrative of overseas settlers (Dacosta, 2013; Kalter, 2022) and their high literacy rates in the migration period of the 1950s and 1960s as described in Figure A2c. These municipalities also had a higher proportion of "temporarily absent" residents, a greater share of the population that was separated or widowed, and larger average populations. These descriptive results help inform the selection of control variables in the event study and DiD models. The bin scatters in Figure A6 show that births per capita in the 1940s do not exhibit a clear relationship with returnees per capita in 1981.

The event study would assess whether parallel trends in fertility for the DiD is a plausible assumption:

$$\text{Fertility}_{mt} = \sum_{\substack{e=1960 \\ e\neq 1974}}^{1989} \beta_t \cdot I(e=t) \cdot ReturnShare_m + \mu_m + \delta_{dt} + X'_{m,1940}\gamma + \epsilon_{mt} \tag{1}$$

The outcome variable is fertility within municipality m, observed in year t, defined as the number of live births per resident population of women of reproductive age (15-44), with this age group accounting for 99% of all births. The denominator is interpolated between census years based on stable population growth assumptions and accounting for the migrant arrival. The treatment variable, $ReturnShare_m$, represents returnees per capita, as measured in the 1981 census. These return shares are interacted with time indicators $I(e = t)$, excluding

1974 as the final pre-treatment year. Although the revolution occurred in 1974, most of the returnees arrived in 1975 (Kalter, 2022).

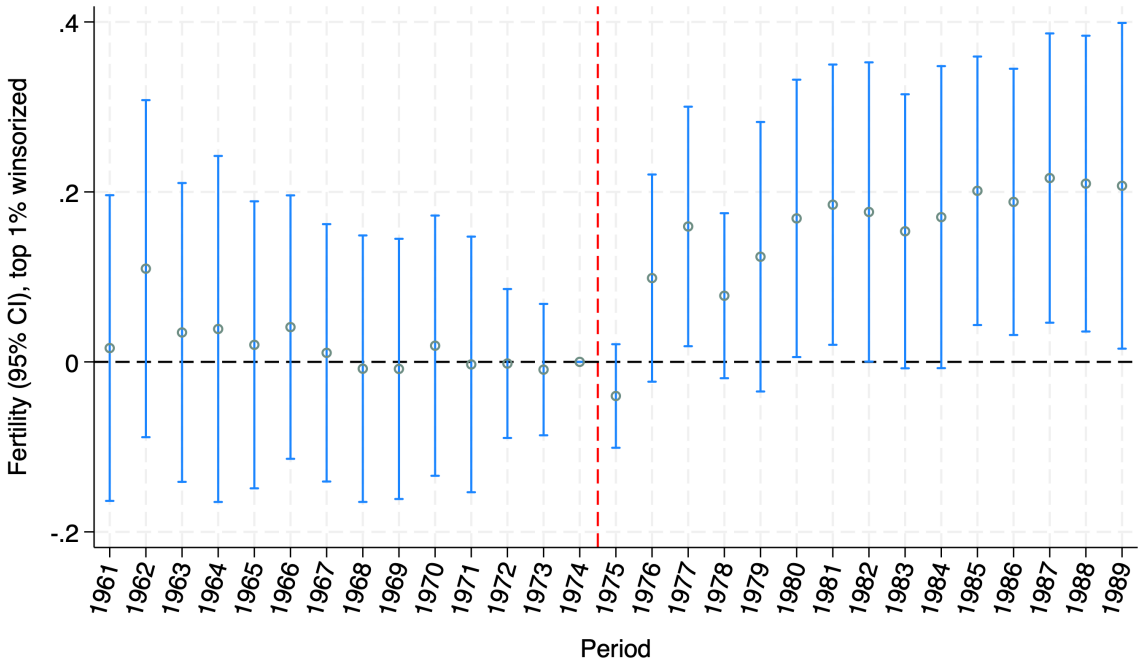
μ_m are represent municipality fixed effects, capturing time-invariant unobservables specific to each municipality. α_{dt} denote district-by-year fixed effects, allowing for districts to follow different trends over time. The standard errors are clustered at the municipality level. Additional controls are included in X'_{mc}: literacy rates, sex ratios, absent population ratio, and population size in 1940, which are interacted with time indicators. These variables account for initial conditions specific to municipalities that sent out migrants in the past, which may also influence how fertility evolves over time. Contemporaneous demographic and migration variables are excluded, as they could themselves be outcomes and thus act as colliders (Deuchert and Huber, 2017; De Chaisemartin and d'Haultfoeuille, 2020).

The main identifying assumption is that there are no omitted variables that correlate both with returnees per capita and fertility that vary over time within municipalities and vary differentially across municipalities within a given district in a given year.[12] One possible violation of this assumption would be differential municipality trends, that is, if municipalities that received more return migrants were already on a different trajectory of fertility prior to the return.

Figure 3 plots the event study coefficients and shows that municipalities with different return shares evolved similarly prior to the return event, providing evidence in favor of parallel trends. The gap in fertility only emerges after 1975, which supports the identifying assumption. It is plausible that the fertility impact is not immediate and can be observed only from 1976 onwards: in municipalities with more returnees per capita, fertility was higher, with 95% confidence intervals exceeding zero in the late 1970s. The point estimate is 1.3 births per thousand women in the post-1974 period.

[12]Recent papers in the continuous treatment literature point to the need for a strong parallel trends assumption, as causal responses in the middle of the treatment distribution can get substantially more weight than causal responses in the tails (Callaway et al., 2021; De Chaisemartin et al., 2022; De Chaisemartin and d'Haultfoeuille, 2020)

Figure 3: Event study of fertility



Notes: Main event study on the return shares – number of returnees relative to overall population. The return shares are interacted with year indicators. Fertility is measured as births within a municipality per number of women of reproductive age (15-44). Time frame 1961-1989, omitting 1974 as the baseline year. Fixed effects for municipality and district-by-year. Controls include literacy, population size, absent and female ratios in 1940, interacted with year fixed effects. Standard errors clustered at the municipality level.

3.2 Differences-in-Differences

To obtain a point estimate for the period after the return, Equation 2 introduces the variable $Post_t$, an indicator taking the value of one for all periods after 1974, interacted with $ReturnShare_m$. All other controls are equivalent to the event study specification in Equation 1 with all control variables now interacted with $Post_t$, instead of with the year dummies:

$$\text{Fertility}_{mt} = \beta_{OLS} \cdot (\text{Post}_t \times \text{ReturnShare}_m) + \mu_m + \delta_{dt} + X'_{m,1940}\lambda_{OLS} + \epsilon_{mt} \tag{2}$$

Table 1: OLS DiD results for outcome fertility

	(1)	(2)	(3)
Outcome:	Fertility	Fertility	Fertility
Time frame:	1960-1989	1960-1989	1960-1989
Return share × Post	0.140***	0.162***	0.134***
	(0.035)	(0.042)	(0.042)
Y mean	0.081	0.081	0.081
N	7,917	7,888	7,888
Municipality FE	Yes	Yes	Yes
District x Year FE	Yes	Yes	Yes
Controls:	None	Yes	Yes*

Notes: Municipality-level regression of fertility – on return shares × Post, an indicator for the timing of the return event. Time frame: 1960-1989. Fertility is defined as number of live births per resident population of women in reproductive age (15-44 years old). Column (1) uses only municipality and district-by-year fixed effects and column (2) introduces the controls in 1940: literacy, female and absent ratio and population size × Post. Column 3 uses the full set of municipality-level characteristics from Table A5. Standard errors clustered at the municipality level * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 1 presents the results from the OLS estimation with fixed effects, where columns (1)-(3), use either no controls, controls correlated with the returnees per capita or all available controls about the demographic characteristics of the municipalities. The mean of the dependent variable shows that there are about 81 births per thousand on average. An increase of 1 p.p. in the return share within a municipality is correlated with 1.3-1.6 additional births per thousand women, depending on which controls for initial conditions are used. The

average municipality, which received 4% returnees per capita, experienced an increase of 5 additional births per thousand, a substantial increase in fertility.

3.3 Composition and Mechanisms

3.3.1 Native-only Fertility

The DiD results include aggregate births for both the native population and migrants. Ideally, we aim to disentangle these effects and isolate the native-only impact, excluding any births to returnees. Consider the following mathematical identity, which separates both the numerator and denominator of the General Fertility Rate measure:

$$\frac{\text{Births}_{mt}}{\text{Women}_{15-44,mt}} = \frac{\text{Native Births}_{mt} + \text{Migrant Births}_{mt}}{\text{Women}_{15-44,mt}} \tag{3}$$

While the statistical records provide only the aggregate number of births, it is possible to approximate the proportion of births to migrant women. In the 1981 micro census, we observe the ages of children linked to migrant and native mothers. For instance, if a migrant mother has a child aged 9, this child would have been born in 1972, i.e., before the return. If the child is 4 years old, they were born after the woman had migrated back to Portugal in 1977. By counting the number of children of specific ages, we can construct a measure of migrant-to-native fertility, denoted as θ_{dt}. However, some limitations should be noted: the data is available only at the district level, not the municipality level, and represents the average family size for migrant and native families, constructed from the 5% representative census sample:

$$\frac{\text{Migrant Births}_{dt}}{\text{Native Births}_{dt}} = \theta_{dt} \qquad \text{Migrant Births}_{dt} = \theta_{dt} \times \text{Native Births}_{dt} \tag{4}$$

As the θ_{dt} can be constructed at the district level only, we have to assume that municipalities have the same migrant-to-native fertility ratio as their district. Substituting back into 3, we can decompose the observed fertility measure into the following identity, from which we can back out an approximate measure for Native Births$_{mt}$:

$$\frac{\text{Native Births}_{mt} + \theta_{dt} \times \text{Native Births}_{mt}}{\text{Women}_{15-44,mt}} = \frac{(1+\theta_{dt})\text{Native Births}_{mt}}{\text{Women}_{15-44,mt}} \tag{5}$$

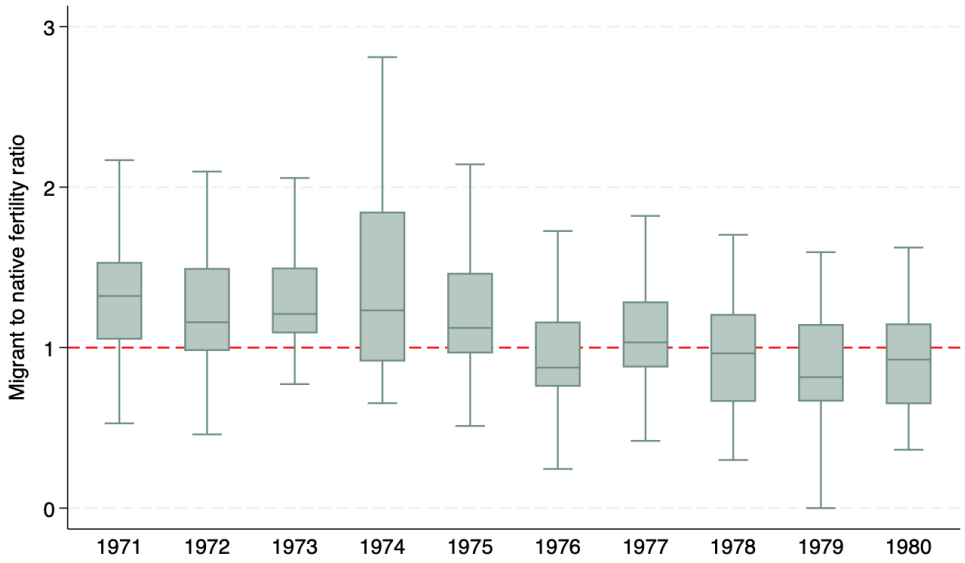
The graph in Figure 4 plots the θ_{dt} distribution by year for the 1970s. The average migrant-to-native fertility in the 1971-1974 period is 1.37, meaning that migrant women had 1.37 children for every child born to a native woman. After the return, however, the average fertility of migrant women was notably lower, with θ slightly below parity. For every child of a native woman, migrant women had only 0.99 children. This is consistent with migrant women having fewer children after the migration event, during a period of economic and social turmoil and insecurity following forced repatriation. The higher fertility of Portuguese women who resided in the overseas territories is also consistent with their higher incomes and economic means to support larger families.

For the denominator, we can obtain from the 1981 micro-census the exact number of Migrant Women$_{15-44,mt}$ for all migrants. Therefore, we can construct: Native Women$_{15-44,dt}$ = Women$_{15-44,dt}$ − Migrant Women$_{15-44,dt}$, and plausibly derive a native-only approximation of the fertility measure:

$$\text{Native-only Fertility}_{mt} = \frac{\text{Native Births}_{mt}}{\text{Native Women}_{15-44,mt}} \tag{6}$$

The relevant timeframe which allows the native-only approximation is the 1971-1981 as it is based on the observed children's ages in migrant and native families, which is why Table 2

Figure 4: Box plots of migrant to native fertility



Notes: Notes: Box plot of migrant-to-native fertility ratios, district-level observations (NUTS 3), based on the 1981 census. Children aged 1-10 (born from 1980 back to 1971) of migrant vs. native women of reproductive age.

Table 2: OLS DiD results for outcome fertility: native-only approximation

	(1)	(2)	(3)
Outcome:	Fertility	Fertility	Fertility
Timeframe:	1971-1981	1971-1981	1971-1981
Sample:	Native-only	Native-only	All
Return share × Post	0.155***	0.214***	0.114***
	(0.036)	(0.046)	(0.043)
Y mean	0.059	0.059	0.076
N	3,003	2,992	2,992
Municipality FE	Yes	Yes	Yes
District x Year FE	Yes	Yes	Yes
Controls	No	Yes	Yes

Notes: Municipality-level regression of fertility – on return shares × Post, an indicator for the timing of the return event. Time frame: 1970-1981. Fertility is defined as the number of native/non-migrant live births per resident population of native/non-migrant women of reproductive age (15-44 years old). Column (1) includes only municipality and district by year fixed effects, while Column (2) introduces controls for initial conditions in 1940, including literacy, female and absent ratios, and population at the municipality level, interacted with $Post_t$. Column (3) uses the same time frame but the outcome is the aggregate fertility measure as in Table 1 for comparison. Standard errors clustered at the municipality level * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

focuses on this time period. Comparing Columns (2) and (3), the native-only approximation shows a larger effect relative to the aggregate fertility outcome: 2.1 additional births rather than 1.2 additional births per thousand women. The native-only event study in Figure A7 suggests that fertility rates were following parallel trends before 1974. The absence of any significant divergence in fertility rates in the pre-treatment period supports the parallel trends assumption. In conclusion, the native-only approximation suggests that the increase is primarily driven by nonmigrant fertility.

3.3.2 Cultural Norms

One possible mechanism explaining the impact on fertility is the transmission of fertility norms to the native Portuguese population through exposure to return migrants. Other studies (Beine et al., 2013; Bertoli and Marchetta, 2015; Daudin et al., 2019; Fargues, 2006, 2011) support the notion that migrants, exposed to different fertility norms in a host country or low-fertility areas within the same country, often bring these norms back to their place of origin, influencing fertility behaviors in their home communities.

There are two relevant hypotheses regarding how migrants may update their fertility behavior. First, the *socialization hypothesis* suggests that migrants exhibit fertility levels similar to those of stayers at the place of origin. In contrast, the *adaptation hypothesis* implies that migrants' childbearing behavior would resemble the dominant behavior in the destination environment (Kulu, 2005). In the context of Portuguese return migration, overseas settlers may have developed their own fertility norms within the diaspora in the colonies and may have brought these norms back upon their return. Observing return migrant families, who had lived comfortably in the overseas territories with more children, may have incentivized native non-migrant Portuguese to adopt similar family structures. Even if it was not fertility norms directly, migrants may have been exposed to social determinants of fertility, such as female access to education and the labor market (Bertoli and Marchetta,

2015; Fernández and Fogli, 2006).

To capture fertility, and therefore the exposure of natives to potentially different migrant family sizes, there are two main alternatives. The first measure is the number of children in migrant families, observed in the repatriates' micro census, available at the municipality level. This measure reflects the family size of migrant families in absolute terms, with an average of 1.8 children per migrant family. However, there is not a great amount of variation in family size. The second measure is the θ ratio of migrant to native fertility, derived from the ages of children in migrant and native families in Figure 4, where the variation is at the district level. Since migrant fertility before the return is pre-determined, the average *theta* value pre-1974 is the relevant measure. This ratio reflects the difference in family size between repatriates and natives: the larger the difference, the greater the fertility gap between the two groups.

In this context, the triple differences-in-differences aims to examine how the return of migrant families with different fertility behaviors impacted the fertility decisions of the native Portuguese population. Specifically, it tests whether exposure to families with larger numbers of children, who had been born in the overseas territories, influenced the fertility choices of natives, potentially increasing family size in areas with higher concentrations of returnees. Figure A8 shows parallel trends in family size prior to 1974:

$$\text{Fertility}_{mt} = \beta^{c}_{OLS} \cdot (\text{Post}_t \times \text{ReturnShare}_m \times \text{MigrantFertility}_m) + \mu_m + \delta_{dt} + X'_{m,1940}\lambda_{OLS} + \epsilon_{mt} \tag{7}$$

The key term interaction term ($\text{Post}_t \times \text{ReturnShare}_m \times \text{MigrantFertility}_m$) interacts the post-period indicator, the returnees per capita in the municipality, and the fertility rates of migrant families. This term captures the differential effect on native fertility after the

return of migrants in municipalities where: i) migrants had larger families, and ii) there were more returnees per capita. A positive β^{c}_{OLS} would indicate that in municipalities with higher shares of returnees and where returnees had more children, the native population responded by increasing their fertility in the post-return period.

Table 3: OLS triple DiD results for outcome fertility: migrant family size

	(1)	(2)	(3)	(4)
Outcome:	Fertility	Fertility	Fertility	Fertility
Timeframe:	1960-1989	1960-1989	1960-1989	1960-1989
Return share × Post	0.146	0.207	0.277**	0.313**
	(0.164)	(0.196)	(0.113)	(0.122)
Return share × Post × Migrant Family Size	-0.003	-0.023		
	(0.092)	(0.103)		
Return share × Post × Migrant to Native Fertility			-0.101	-0.111
			(0.075)	(0.081)
Y mean	0.081	0.081	0.081	0.081
N	7,917	7,888	7,917	7,888
Municipality FE	Yes	Yes	Yes	Yes
District x Year FE	Yes	Yes	Yes	Yes
Controls	No	Yes	No	Yes

Notes: Municipality-level regression of fertility on the interaction of return shares × Post × migrant fertility, reflecting the triple difference-in-differences specification. Time frame: 1960-1987. Fertility is defined as the number of live births per resident population of women of reproductive age (15-44 years old). Column (1) uses only municipality and district-by-year fixed effects, and column (2) introduces controls for initial conditions in 1940: literacy, sex ratios, and population at the municipality level, interacted with $Post_t$. Columns (3)-(4) use an approximation for native-only fertility based on the age of children in migrant and native families in the 1981 census by district. Standard errors are clustered at the municipality level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

However, the results in Table 3 point to negative and significant β^{c}_{OLS} not supporting this hypothesis. Municipalities receiving larger repatriate families vs. smaller repatriate families, holding constant the returnees per capita, actually experienced significantly higher fertility.

3.3.3 Soldiers' Return

During the 1960s, while most European countries were decolonizing, Portugal held onto its overseas territories, leading to a prolonged war lasting over 13 years. This conflict came at a great social cost and ultimately led to the military coup that overthrew the dictatorship (Ciment, 1997; Fernandes, 2024; Rabaçal, 2017). Alongside the settler colonists, thousands of soldiers also returned home.

On average, 107,000 soldiers were deployed annually during the conflict, totaling approx-

imately one million soldiers over the course of the war (De Melo, 1988).[13]. The 1970 census shows that the deployed soldiers were mostly in their early 20s. On average, 43% of men aged 20-24 had the status of a soldier, completing compulsory military service, with the central Portuguese districts of Santarém and Portalegre exceeding 50% (see the map in Figure A9). Other age groups had a negligible percentage of soldiers: only an average of 3% in the 25-29 age group and less than 1% in all other age groups. This 20-24 age bracket would have reached their early 30s by 1981.

There is no specific variable in the 1981 census to identify returning soldiers: a returnee could be an overseas colonist returning to the metropole or a soldier who had been stationed in Africa during the war. From a demographic perspective, returning soldiers could be young men in their 20s or 30s when observed in the 1981 census. A large portion of men aged 30-34 in the 1981 census may have returned from the war, but this group could also include those who returned earlier. Meanwhile, a younger demographic group, such as men aged 20-24 in 1974, would appear as men aged 25-29 in the 1981 census. Therefore, any analysis should consider a broader range of age groups.

To define their relative demographic importance, the number of returning soldiers should be normalized by the relevant female age group responsible for the increase in fertility. As noted in Figure A4b, nearly half of all births were to mothers aged 24 and under, and there is a notable shift in the proportion of births to these young mothers post-1974. The maps in Figures A10 and A11 graph the ratios of returnee men to all resident women aged 15-24. There is a similarity with Figure 2, where some municipalities in the northern district of Bragança show a concentration of young returnee men compared to young women. Across the four maps, there is also noticeable geographical variation. Alternatively, rather than simply young women aged 15-24, we can consider women in reproductive age (15-44).

Equation 8 uses the same model as Equation 7 to test the relative importance of the

[13]Of the roughly 1.4 million soldiers recruited between 1961 and 1973, more than 400,000 were local African recruits, while around one million soldiers were specifically recruited from Portugal (da Cruz Rodrigues, 2020).

concentration of young returnee men:

$$\begin{aligned}\text{Fertility}_{mt} = \beta^{s}_{OLS} \cdot (\text{Post}_t \times \text{ReturnShare}_m \times \text{ReturneeMen}_{a,m}/Women_{15-24,m}) \\ +\mu_m + \delta_{dt} + X'_{m,1940}\lambda_{OLS} + \epsilon_{mt}\end{aligned} \tag{8}$$

Here, a denotes the age groups 20-24, 25-29, 30-34, and 35-39. All other variables are equivalent to the baseline specification, using municipality fixed effects, district-by-year fixed effects, and 1940 controls for initial conditions.

The aim of this model is to explore whether municipalities with a higher concentration of young returnee men from specific age groups experienced a differential impact on fertility rates, compared to other areas with fewer returnee men in relative terms, even after accounting for the overall number of returnees per capita. By employing this triple DiD approach, the model seeks to disentangle the influence of plausible returning soldiers from general population trends, thus testing whether the presence of these young men directly contributed to fertility increases, beyond what would be expected from the total number of returnees alone. Figures A12 and A12 show parallel trends in the returnee men to young women 15-24 across the four age groups.

Table 4 shows the results of the Equation 8 estimation, where the triple interaction term for returnee men aged 25-29 and also 30-34 to young women 15-24, interacted with Post and the returnees per capita are significant at 1% in Columns (6) and (7). For the age group 20-24, we do not expect to see any results as these returnee men would have been 13-17 years old in 1974 and would not have been deployed as soldiers. Similarly, men aged 35-39 may have been older than the soldier deployment age groups.

This evidence suggests that young returnee men (who were in the age range of deployed soldiers) played a key role in driving fertility increases in the post-return period. The significant interaction effects observed for the age groups 25-29 and 30-34 imply that men in these

age brackets were most likely to have contributed to the observed rise in fertility rates. These cohorts, having returned from overseas, were at an optimal age for family formation, which aligns with the demographic patterns of increased fertility among young women during this period.

Several potential mechanisms could explain this link between returning soldiers and elevated fertility rates. First, the return of a large number of men in their prime reproductive years likely alleviated any demographic imbalances caused by the prolonged war, which had previously removed many young men from the marriage and labor markets. With the return of these men, the marriage market may have experienced a resurgence, leading to an increase in marriages and subsequently, childbearing. This is consistent with historical findings from other post-war contexts, where the return of soldiers led to temporary fertility booms (Doepke et al., 2015).

Additionally, returning soldiers may have brought back different family formation norms or behaviors observed during their time abroad, similar to the previously discussed hypotheses of socialization and adaptation among civilian returnees. Although the soldiers were not permanent migrants, their extended deployment in overseas territories may have exposed them to different cultural and familial dynamics, which could have influenced their own family-building preferences upon their return. The observed fertility increases in municipalities with higher concentrations of returning soldiers suggest that these men may have acted as agents of change in local fertility norms, either through direct family formation or indirectly by influencing the fertility behaviors of their peers and communities.

Table 4: OLS triple DiD results for outcome fertility: returnee groups in different age groups

	(1)	(2)	(3)	(4)
Outcome:	Fertility	Fertility	Fertility	Fertility
Timeframe:	1960-1989	1960-1989	1960-1989	1960-1989
Return share × Post	0.185*	0.058	-0.012	0.144
	(0.098)	(0.100)	(0.083)	(0.097)
Return share × Post × Men 20-24 to Women 15-44	-0.874			
	(3.923)			
Return share × Post × Men 25-29 to Women 15-44		5.507		
		(5.870)		
Return share × Post × Men 30-34 to Women 15-44			6.367**	
			(2.669)	
Return share × Post × Men 35-39 to Women 15-44				0.713
				(4.140)
Y mean	0.081	0.081	0.081	0.081
N	7,888	7,888	7,888	7,888
Municipality FE	Yes	Yes	Yes	Yes
District x Year FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
	(5)	(6)	(7)	(8)
Return share × Post	0.080	-0.004	-0.006	0.048
	(0.088)	(0.062)	(0.059)	(0.082)
Return share × Post × Men 20-24 to Women 15-24	1.227			
	(1.313)			
Return share × Post × Men 25-29 to Women 15-24		3.375***		
		(1.263)		
Return share × Post × Men 30-34 to Women 15-24			2.302***	
			(0.578)	
Return share × Post × Men 35-39 to Women 15-24				1.796
				(1.373)
Y mean	0.081	0.081	0.081	0.081
N	7,888	7,888	7,888	7,888
Municipality FE	Yes	Yes	Yes	Yes
District x Year FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes

Notes: Municipality-level regression of fertility on the interaction of return shares × Post × returnee men in different age groups to women aged 15-24 and 15-44, reflecting the triple difference-in-differences specification. Time frame: 1960-1987. Fertility is defined as the number of live births per resident population of women of reproductive age (15-44 years old). Columns (1)-(4) use denomination by women aged 15-44, while columns (5)-(8) use women aged 15-24. Standard errors are clustered at the municipality level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

3.3.4 Marriage Markets

Given the high female ratios in reproductive ages prior to the return (See Figure A3), the population influx, which stabilised the female ratios, may have afforded better marriage opportunities for women. In conditions of male scarcity, once more potential partners became available, women were less constrained in their marriage market opportunities. Where war or migration created substantial sex imbalances, the short side of the market had an advantage (Abramitzky et al., 2011; Angrist, 2002; Grosjean and Khattar, 2019). Displacement due to exogenous population shocks may result in early marriage for women (Muñoz-Blanco, 2022).

Figure A14a applies the event study Equation (1) using the marriages per women of reproductive age as the dependent variable. Following the 1974 event, there is no clear, immediate increase or sustained upward trend in the coefficients for marriages per women 15-24. The estimates remain close to zero with wide confidence intervals, which suggests that the return of migrants (or the 1974 political and social events) did not have a statistically significant effect on marriage rates.

Similarly, Figure A14b uses uses illegitimate fertility as a percentage of total fertility. After the 1974 event, there is some evidence of a shift in the coefficients for illegitimate fertility. The estimates increase and remain above zero in some post-event years, though the confidence intervals remain wide and overlap with the zero. The point estimates suggest that illegitimate fertility may have risen slightly after 1974, but the lack of statistical significance indicates uncertainty regarding the magnitude and consistency of this effect.

These findings can be reconciled with the results in Section 3.3.3 by considering that the increase in total fertility if driven by the return of soldiers/young men was likely occurring within the framework of legitimate fertility (i.e., within marriages). This would mean that while overall fertility increased, it did not necessarily lead to a noticeable rise in illegitimate births. The absence of a sharp increase in marriages could also suggest that some marriages occurred earlier (before or during the war) and the fertility effects are only observed after

the young men returned, when they were ready to start or expand families.

Using the IPUMS 1981 Portugal extract, we observe that 2% of natives (who were living in the metropole in 1973) have a spouse from abroad, which includes both repatriates and other returnees, such as those from Europe. Among native women partnered with a migrant, the summary statistics show they had an average of 1.55 children, compared to 1.46 children for native women partnered with a native. More specifically, native women with migrant spouses had an average of 0.58 children under the age of 5, which was higher than the 0.3 children of native women married to native men. This difference suggests that women in marriages with migrant men exhibited higher fertility, particularly in the years following the return migration period.

3.4 Robustness

Sample Restrictions To establish whether these results are sensitive to the choice of sample, time frames, clustering, functional form, or definitions of the variables, Table A7 applies alternative empirical specifications. Shortening the time frame around the return event (see Columns (2)-(3)) does not substantially change the OLS results but leads to a smaller coefficient (1.5 additional births for 10 years around 1974 or 1 additional birth for 5 years, respectively). Municipalities in the vicinity of Lisbon's metropolitan area saw a higher influx of return migrants, likely because many initially arrived in this region and chose to settle there. When comparing the OLS coefficients between two samples—one excluding these metropolitan areas and the other including only these areas—the magnitude of the coefficients is similar, as shown in Columns (4) and (5). However, the sample focusing solely on the metropolitan areas exhibits greater variability.

Clustering The main OLS models apply municipality-level clustering, while district-level or two-way (municipality and year) clusters yield qualitatively similar results (see Columns (6)-(7)). Accounting for spatial dependence of shocks between spatial units (Conley, 1999), I use the latitude and longitude of municipal centers to calculate Conley standard errors at cut-off distances ranging from 25-75 km in Columns (8)-(10), which result in smaller standard errors.

Variable Definitions Next, Columns (12)-(13) apply a 0.01% winsorizing of only high values and no winsorizing, respectively, achieving slightly higher point estimates. The primary reason for winsorizing the baseline at the top 1% is the long right tail of the fertility measure. Finally, Column (14) changes the functional form by transforming the dependent variable into the natural logarithm of fertility, yielding qualitatively similar results, with a 1 p.p. increase in returnees per capita resulting in a 2% increase in fertility. The crude birth rate, an alternative measure of fertility, denominates live births by the total resident population instead of women of reproductive age, and the coefficient suggests an increase of 0.3 births per 1,000 municipal residents.

3.5 Instrumental Variable

Background The parallel trends in the event study provide evidence that municipalities which received varying numbers of returnees per capita had evolved similarly in the past, and the observed increase in fertility occurred only in the years following the return. A related question concerns the factors that determined settlement patterns and whether migrants who returned to their municipalities of origin had a different impact on their communities compared to migrants who settled in the vicinity of metropolitan areas in search of better economic opportunities.

Portugal provides a suitable case for a natural experiment, as emigration to the overseas

provinces was only one of several out-migration streams in the decades preceding the return. The period following World War II up until the early 1970s saw high levels of outward migration to South America (mostly Brazil and Venezuela), Europe (mostly France and Germany), and the overseas provinces, primarily Angola and Mozambique (Antunes, 1970; Castelo, 2004; Newitt, 2015). While the government's migration policy favored sending more literate and skilled colonists to Africa, there were also restrictive requirements for any emigrant aiming to leave Portugal (Junta de Emigração, 1957; Baganha, 2003). For those who left Portugal, common factors encouraged and enabled their out-migration (Castelo, 2013; Pires et al., 1987).

However, there is one key difference between these two groups, which sets up a unique natural experiment. Migrants to other destinations, such as South America and Europe, were not repatriated in 1974, whereas the vast majority of Portuguese colonists in Africa had to return to Portugal. This largely unplanned return was a consequence of the regime change and was not the result of a planned handover of power and control (Newitt, 2009; Castelo, 2013), leading to approximately 95% of Portuguese settlers leaving Angola and Mozambique (Kalter, 2022).

Identifying assumptions By constructing a measure of destination-specific historic out-migration, I can identify the local average treatment effect (LATE) of the return by instrumenting the potentially endogenous return shares. This measure captures the relative intensity of emigration to the overseas provinces compared to all other migration flows. There were substantial migration movements throughout the 1960s and into the early 1970s.

The first stage of the estimation leverages the fact that return migrants' location decisions were correlated with family connections, as returnees either sought out their families or were contacted by the government to facilitate their settlement (Bohnet et al., 2022; Pires et al., 1987). Exogeneity requires that the variation in overseas emigration rates is not associated with systematic, unobserved differences between municipalities that could drive differential

fertility patterns. This assumption is supported by the parallel trends in the reduced form event study shown in Figure A15 and by the use of non-overlapping time frames. The instrument is calculated based on the period before the event study, ensuring that there is no feedback from fertility on emigration decisions.

The exclusion restriction requires that overseas emigration affects fertility changes only through the physical return of the migrants after 1974, and not through other channels—such as higher remittances that could have created conditions for increased fertility in the late 1970s, or significant matching between natives and migrants in the overseas provinces post-emigration. I provide evidence to rule out such alternative channels in Section 4.

In the following IV specification, Z_d is the instrument—defined as the overseas emigration rate, which is the total number of emigrants to the overseas provinces divided by the district's resident population in 1940. By controlling for total emigration from a district (also normalized by the population in 1940) and interacting it with Post_t, the specification holds the level of historical emigration constant, capturing the variation in overseas emigration:

$$Post_t \times ReturnShare_m = \beta_{FS} \cdot (Post_t \times Z'_d) + \gamma_{FS} \cdot W_d + \mu_m + \delta_{rt} + X'_{m,1940} \cdot \lambda_{FS} + \epsilon_{mt} \quad (9)$$

$$Fertility_{mt} = \beta_{IV} \cdot \widehat{Post_t \times ReturnShare_m} + \gamma_{IV} \cdot W_d + \mu_m + \delta_{rt} + X'_{m,1940} \cdot \lambda_{IV} + u_{mt} \quad (10)$$

A matrix of controls X'_{mc} consists of predetermined literacy rates, absent ratios, female ratios, and population size in the baseline census $c = 1940$ (municipal level) and the cumulative emigration per capita (district level). μ_m are municipality fixed effects and δ_t are year fixed effects. Standard errors are clustered by district, as the variation of the instrument is at this level. Given the smaller number of 20 districts overall, I present the p-value of the

wild cluster bootstrap test in all columns, which use district-level clustering.

Results The IV estimation results follow in Table 5, estimates the baseline OLS specification with a restricted time frame to ensure no overlap with the time frame of the instrument (alternative time frames are examined in the robustness checks). Columns (1)-(2) use the main sample and columns (3)-(4) apply the native-only approximation: as with the OLS estimates for natives-only, the magnitudes in the IV specifications are larger, as natives present higher fertility as observed by the age of children in migrant and native families in the census.

The magnitude of the coefficient means that a 1 p.p. increase in the returnees per capita resulted in 1.7 additional births per thousand vs. 1.6 for the OLS in the same sample. There are at least two possible reasons for this small gap between the two estimates. The first is measurement error, as the independent variable of returnees per capita is only measured in a single cross section of 1981. Therefore, a precise measurement of the migrant concentration across time is not available. The second is that the local average treatment effect may be larger than the average effect, as it considers the effect on the compliers - the districts which received back the emigrants they had sent to the overseas colonies. The ability to return to one's place of origin may signal stronger family connections and an emphasis on larger families.

Table A8 applies the same robustness checks as Table A7 and Table A9 shifts the time frames with different cutoff year than 1965. Another way of measuring fertility is using the census and Table A10 shows that the stock of children up to 4 years old is significantly larger in municipalities with more returnees per capita. Table A11 applies the OLS and the IV models to the outcomes of marriages and illegitimate fertility, confirming no effects as discussed in Figures A14a and A14b.

Table 5: Instrumental variable (IV) results for outcome fertility

	(1)	(2)	(3)	(4)
Outcome:	Fertility	Fertility	Fertility	Fertility
Sample:	All	All	Native-only	Native-only
Return share × Post	0.162***	0.170***	0.214***	0.289***
	(0.025)	(0.057)	(0.033)	(0.059)
First stage:				
Overseas emigration $\times Post$		0.539		0.539
		0.025		0.039
Montiel-Pflueger F stat		461.546		191.677
Y mean	0.076	0.076	0.060	0.059
N	6,792	6,576	3,113	3,014
P-value wild cluster bootstrap	0.000	0.003	0.000	0.000
Municipality FE	Yes	Yes	Yes	Yes
Year FE	No	Yes	No	Yes
District × Year FE	Yes	No	Yes	No
Controls	Yes	Yes	Yes	Yes

Notes: Municipality-level regression of fertility – on return shares × Post, an indicator for the timing of the return event. Time frame: 1965-1987. Fertility is defined as number of live births per resident population of women of reproductive age (15-44 years old). Columns (1) and (3) implement the OLS FE restricting the sample to begin at 1965 for all and native-only, respectively. Columns (2) and (4) use the instrument of overseas emigration 1945-1965, controlling for overall emigration. Controls for initial conditions in 1940: literacy, female ratios, absent ratios, and population size at the municipality level, interacted with $Post_t$. Standard errors clustered at the district level * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

4 Remittances

The changes in remittances flows can also impact fertility. Monetary transfers ceased for certain localities and were replaced with the physical return of some family members. For a labor-sending country like Portugal, migrant transfers represented a large part of the national output. I digitalise at district level for the period 1973-1981 from a comprehensive study of remittances by Chaney (1986), containing transfer information from the financial intermediaries connecting the migrant communities and their families back in Portugal.

Figure A17 traces the evolution of aggregate volume of remittances and as a percentage of GDP. Having reached nearly 10% before 1973, remittances experienced a temporary decline before recovering in the late 1970s to even higher levels. Further, in Table A12 I summarise the remittances by district, separating the value of 1973 and the mean value for the period

1974-1981. For all districts there is a marked increase in remittance values in the post-revolution period. Also the north districts – Aveiro, Bragança, Porto, Viana do Castelo – consistently demonstrate higher remittances values per capita, compared to the southern districts, Lisbon and Setúbal.

To establish whether districts that experienced higher returns were also affected in terms of remittances, I implement the following specification:

$$ln(Remittances)_{dt} = \beta_{rem} \cdot \widehat{(Post_t \times ReturnShare_d)} + \alpha_d + \delta_t + X_d'\gamma + \epsilon_{dt} \tag{11}$$

$ln(Remittances)_{dt}$ are remittances per capita, computed from Pinto and Sotto-Mayor (PSM), Borges Irmão (BI) or both combined, in thousands of 1980 escudos per capita. Similarly to the specification for fertility, I interact the return shares $ReturnShare_d$ with an indicator for post, taking the value of 1 for years after the return event in 1974. α_d are district fixed effects and δ_t are year fixed effects to account for time-invariant district specific unobservables and common time shocks for all districts, respectively. As controls in X_d, I include the per capita GDP in 1970, the share of employment in the agricultural sector and population density. I cluster the standard errors at the district level.

Further, I instrument the return shares with the overseas migration rate:

$$Post_t \times ReturnShare_d = \gamma \cdot (Post_t \times Z_d') + (Post_t \times W_{dc}') \cdot \lambda_{FS} + \delta_t + \mu_d + \epsilon_{dt} \tag{12}$$

The results in Table A13 show no impact of the return for districts with higher return shares. What can explain the lack of impact is the more substantial remittances flows from other Portuguese migrants, and the intensification of transfers in the post-1974 period. For example, several schemes were introduced in 1976, to encourage emigrants to send more

money to Portugal by offering more advantageous interest rates and tax breaks (Foreign-currency accounts,[14] Poupança-Crédito Schemes,[15], Escudo deposit accounts[16]).

5 Identification: Labor Markets

Fertility impacts can significantly influence women's labor force participation. Higher fertility rates often act as a constraint on women's ability to participate fully in the labor market (Bailey, 2006; Bloom et al., 2009). As childbearing responsibilities increase, many women may leave the labor force, facing the dual burden of caregiving and household responsibilities. Fertility changes due to external shocks have also been shown to affect women's labor force participation (Angrist and Evans, 1998; Aguero and Marks, 2008; Cruces and Galiani, 2007). The mobilization of men during wars led to increased female labor force participation, but the long-term effects varied, with higher mobilization rates suppressing wages and pushing many younger women out of the workforce, contributing to early marriages and a post-war fertility boom (Acemoglu et al., 2004; Doepke et al., 2015; Goldin, 1991).

This section introduces the analysis of age-specific labor force participation, which offers two key advantages. First, labor market shocks may impact different age groups unevenly, and aggregate analysis may overlook these effects. Second, fertility decisions are primarily relevant to younger segments of the labor force, as nearly half of all births in the 1970s were to women aged 24 or younger. Using newly digitized data on labor market outcomes by age group from census archives, I apply the following specification to investigate the impact of return migration on labor force participation:

[14]Passed on March 12, 1976 enabled emigrants to send money in any foreign currency and accrue interest if kept as a deposit.

[15]Passed on July 7-9, 1976, a form of credit available to emigrants who sent money to Portugal via the banking system, with lower rates than those available for residents. Similarly higher rates were available for deposit to the advantage of emigrants as well.

[16]Passed on October 9, 1976, were emigrant deposits not subject to taxes that could be held at fixed interest rates.

$$Post_t \times ReturnShare_d = \beta_{FS} \cdot (Post_t \times Z'_d) + \gamma_{FS} \cdot (Post_t \times W_d) + \mu_d + \delta_{rt} + \alpha_{at} + u_{dt} \quad (13)$$

$$Y_{dta} = \beta_{IV} \cdot \widehat{(Post_t \times ReturnShare_d)} + \gamma_{IV} \cdot (Post_t \times W_d) + \mu_d + \delta_{rt} + \alpha_{at} + \epsilon_{dt} \quad (14)$$

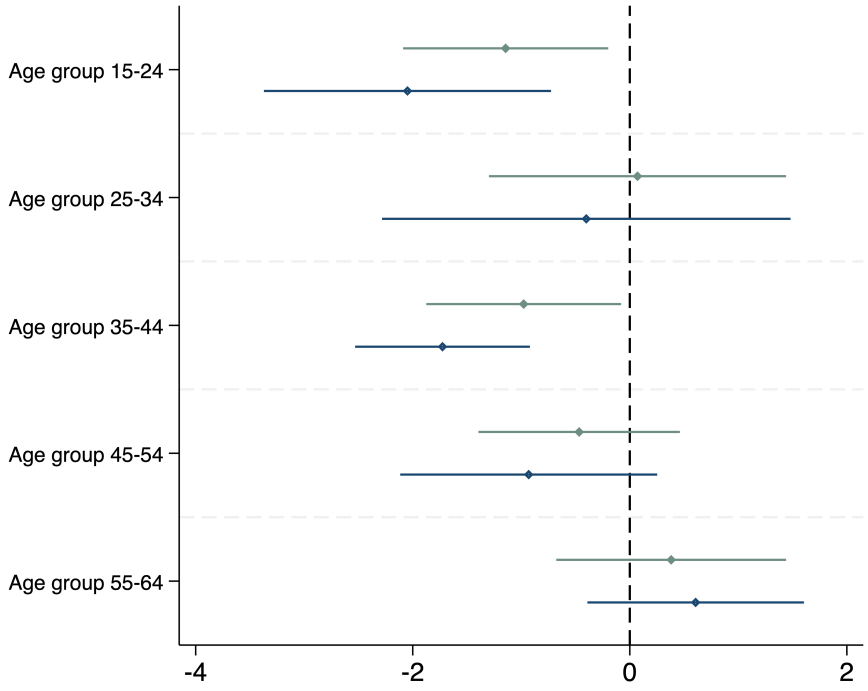
The outcome variable is labor force participation as measured at census years $t = 1960, 1970, 1981$, within a district, and at age group in 5-year intervals. Using the standard definition, the labor force participation is the number of employed and unemployed individuals denominated by all people within this age bracket.

Z_d is the instrument – cumulative number of emigrants to the overseas provinces, 1945-1960 per capita in census 1940 and W_d is the cumulative total number of emigrants in the same period per capita (interacted with $Post_t$). To account for time-invariant unobservables at the district level, this specification uses district fixed effects μ_d as well as region by census fixed effects δ_{rt} and allows for differential evolution of age groups with age group by census fixed effects α_{at}. Both the age-specific labor market series and the instrument are available only at the district level. Standard errors are clustered at the district level with a wild cluster bootstrap test reported in all columns.

Using the micro census of returnees, where women's ages and labor force status are reported, I calculate the native-only effects by excluding labor force-active migrant women from the numerator and migrant women from the denominator in 1981. The labor force participation rate for native women is 37.6%, compared to 36.6% for migrant women, with a similar difference of about 1 percentage point observed in the age brackets of younger women.

Figure 5 shows the coefficient plots for the impact of the return on female native labor force participation across the age distribution, showing that women in the 15-24 and 35-44 age

Figure 5: Labor force participation across the age distribution: native women. A regression (OLS and IV) of female labor force participation on returnees per capita, including fixed effects for district, census, age by census and region by census. Standard errors clustered at the district level.



ranges experienced a disproportionate decline. Note that the average share of young women in the labor force is 37%, while the average labor force participation of young men is more than twice that of women, at 83%. The point estimates for the younger age groups are both negative, with magnitudes ranging from 1.2-2 p.p. decline in the labor force participation of women following an increase of 1 p.p. in the returnees per capita. The average municipality experienced a decline in the labor force participation of young women by 5-8 p.p.

Table A14 uses as the outcome labor force participation and considers four samples: women and men aged 15-24 and 25-64, respectively. The point estimates for the younger age groups are both negative with magnitudes ranging from 1.2-2 p.p. decline in the labor force participation of women following an increase of 1 p.p. in the returnees per capita. These are substantially smaller, but still significant for younger men in the range of 0.9-1.3 p.p.

Out of the Labor Force: Students and "Homemakers" Choosing not to participate in the labor force typically involves being a student, retiring early due to disability, or assuming the role of a "homemaker" (from Portuguese *domestica*), a category predominantly filled by women. Table A15 explores these alternatives as outcomes, employing Equation 14 to determine the impact of return migration by sex and age group. With every 1 p.p. increase in returnees per capita, the probability of women aged 25–64 becoming "homemakers" rises by 1.1–1.6 p.p. Conversely, for younger women, the likelihood of being categorized as "students" increases by 0.8–1.3 p.p. This effect is subtler and more variable in young men, with an increase of 0.6–0.7 p.p. in being labeled as students.

The OLS and IV estimates show larger magnitudes in the IV, though the differences are not substantial. This could be attributed to attenuation bias, possibly resulting from the imprecise measurement of the key variable: migrant concentration. The IV approach isolates district-specific variations attributed to migrants returning to their original districts, while controlling for overall emigration rates. It excludes potentially endogenous variations, such as migrants choosing districts with favorable labor market conditions. Consequently,

the local average treatment effects may appear larger, primarily due to the elimination of endogeneity in migrant location choices.

In the aggregate, a 1 p.p. increase in returnees per capita is associated with a 0.7–3.2 percentage point increase in the likelihood of women becoming "homemakers," which aligns with age-specific labor market trends (see Table A16). The differences between the OLS and IV estimates are more pronounced in these broader analyses, likely due to greater attenuation bias. The municipal-level analysis excludes the 1970 census data, which had already shown a significant increase in female labor force participation, particularly among younger cohorts (see Figure A5). Nonetheless, the overall results remain qualitatively similar, with the age-specific analysis highlighting the disproportionately larger effects on younger individuals.

Discussion The return migration event had a significant impact on younger women in several key ways. The sudden influx of returnees, particularly young men, caused notable demographic shifts that affected both labor market participation and fertility patterns for women aged 15–24. The decline in labor force participation among this group can be attributed to increased competition in the labor market, resulting from the larger population, as well as societal pressures on women to take on traditional roles as homemakers. Additionally, the presence of young returnee men contributed to a rise in family formation, particularly among younger women, as reflected in the increased fertility rates in municipalities with higher concentrations of returnees.

6 Conclusion

This paper investigates the demographic and labor market effects of return migration following the 1974 Portuguese Revolution, which triggered the large-scale repatriation of Portuguese settlers from former African colonies. Using a detailed municipal panel dataset spanning 1940 to 1990, the analysis focuses on the fertility impact of this forced migration.

An event study and instrumental variable approach reveal that municipalities receiving more returnees experienced a significant increase in fertility rates, particularly among nonmigrants, and it was driven by the return of young men. A 1 percentage point increase in returnees per capita led to an additional 1.3 to 1.7 births per thousand women. The findings rule out alternative explanations, such as exposure to different migrant family size, marriage markets, or remittance flows, as the primary drivers of the fertility increase. The analysis also reveals a marked 5–8 percentage point decline in labor force participation among young native women. These findings underscore how labor market changes and demographic shifts caused by return migration disproportionately affected younger women, leading many to exit the workforce and accelerating family formation during this period.

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Additional Tables

Table A1: Summary statistics of key demographic and economic variables

	N	Mean	StDev	Min	Max
Municipal characteristics					
Fertility	8236	0.081	0.034	0.000	0.186
Fertility (natives only)	5964	0.080	0.040	0.000	0.186
Illegitimate fertility	8518	0.083	0.061	0.000	1.000
Marriages	8236	0.041	0.010	0.000	0.072
Emigrants	8520	0.004	0.006	0.000	0.029
Migration					
Returnees per capita	301	0.041	0.029	0.005	0.168
Overseas emigration	24	0.068	0.043	0.020	0.182
Total emigration	24	0.224	0.168	0.036	0.526
Migrant fertility					
Migrant family size	304	1.804	0.292	1.069	2.833
Migrant-native fertility pre	39	1.326	0.301	0.890	2.210
Migrant-native fertility post'	39	0.994	0.177	0.662	1.356
Labour markets 1960					
Labour force participation women	301	0.133	0.070	0.024	0.368
Labour force participation men	302	0.937	0.040	0.825	1.000
Homer maker, women	302	0.660	0.079	0.431	1.000
Labour markets 1981					
Labour force participation women	302	0.346	0.115	0.084	0.751
Labour force participation men	302	0.797	0.039	0.647	0.961
Home-maker, women	302	0.454	0.123	0.150	0.911

Notes: Summary statistics of key demographic and economic variables. The municipal characteristics are winsorized at 1% for the high values only and use a denominator imputed between two census years, accounting for the migrant return in 1975. Fertility is defined as live births to number of women of reproductive age (15-44). Native-only fertility is an approximation on the basis of age of children in migrant and native families in the 1981 census by district. Non-marital fertility is % of total fertility. Marriages are the total number of marriages per women of reproductive age (15-44). Emigrants are number of emigrants leaving the municipality relative to the resident population, 1965-1987. Initial conditions are the literacy rate – number of literate people over total population, the sex ratio – ratio of women to men, and the total population (in thousands) all as measured in 1940. The return share is the number of returnees from the overseas provinces per capita. The overseas emigration is the cumulative number of migrants to the overseas provinces in the period 1945-1975 relative to the population of the district in 1940. The districts of Portalegre, Beja and Évora reported together in the archives. The total emigration rate is the cumulative number of emigrants in the period 1945-1975 relative to the population of that district in 1940. The labor force participation variables are at the municipality level and are denominated by total population of working age. 'Home-maker' (from Portuguese *domestica*) is a category almost exclusively for women who are out of the labor force, engaged in home production.

Table A2: Summary statistics of micro data in census 1981 (5% sample).

	Native Portuguese	Overseas returnees	Europe returnees
Individual characteristics			
Female	0.52	0.48	0.44
Age	33.41	33.28	34.54
Married	0.49	0.57	0.67
Children younger than 7	0.72	0.56	0.55
Children older than 7	2.06	1.91	1.79
Education			
Literate	0.72	0.95	0.89
Educational qualification	0.51	0.79	0.57
Work, men			
Paid work	0.52	0.57	0.66
Unemployed	0.02	0.05	0.03
Domestic	0.00	0.00	0.00
Activity sector, men			
Primary	0.19	0.07	0.33
Secondary	0.45	0.34	0.44
Tertiary	0.36	0.59	0.24
Work, women			
Paid work	0.25	0.25	0.19
Unemployed	0.03	0.10	0.03
Domestic	0.27	0.28	0.46
Activity sector, women			
Primary	0.21	0.04	0.25
Secondary	0.30	0.18	0.22
Tertiary	0.49	0.78	0.53

Notes: Mean values for three groups from the population micro census in 1981 (5% of total census). All variables beside age are proportions, denominated by the relevant population group. The three groups are defined on the basis of residence in 1973: i) Native Portuguese were resident in Portugal, ii) Overseas returnees were resident in the former Portuguese colonies (5.19% of total census respondents) and iii) Europe include France, Germany or another European country (1.44% of total census respondents). The sample for 'Children younger than 7' is restricted to women aged less than 45.

Table A3: Summary statistics of demographic characteristics in the 1940 and 1950 censuses.

	N	Mean	StDev	Min	Max
1940					
Families per capita	302	0.236	0.019	0.179	0.293
Female ratio	302	0.514	0.022	0.338	0.563
Absent ratio	302	0.014	0.009	0.000	0.053
Absent men ratio	302	0.020	0.014	0.000	0.077
Single ratio	302	0.587	0.044	0.463	0.734
Single men ratio	302	0.611	0.044	0.487	0.759
Separated ratio	302	0.002	0.001	0.000	0.006
Widowers ratio	302	0.058	0.008	0.029	0.078
Literacy ratio	302	0.360	0.091	0.092	0.702
Catholics ratio	302	0.929	0.098	0.406	1.004
Population	302	25654.881	44169.674	691.000	694389.000
1950					
Families per capita	303	0.246	0.022	0.183	0.293
Female ratio	303	0.509	0.034	0.001	0.563
Absent ratio	303	0.019	0.010	0.000	0.053
Absent men ratio	303	0.027	0.016	0.000	0.077
Single ratio	303	0.554	0.068	0.022	0.734
Single men ratio	303	0.582	0.053	0.423	0.759
Widowers ratio	303	0.057	0.009	0.005	0.078
Literacy ratio	303	0.470	0.088	0.254	0.705
Catholics ratio	303	0.959	0.064	0.444	1.004
Population	303	28080.521	49698.025	728.000	783226.000

Notes: Municipality-level characteristics in 1940 and 1950. Families per capita, female ratio, temporarily absent 'Temporariamente ausente' *ratio, ratio of singles to all individuals with marital status information available (single, married, separated, divorced, and widowed), widowed ratio, literacy ratio, Catholic ratio, and population size.*

Table A4: Summary statistics of Portuguese overseas settlers and emigrants from 1950-1970, based on percent male, single, and literate. Data represent average values across all districts in Portugal.

	N	Mean	StDev	Min	Max
Percent male					
Overseas migrants	438	0.55	0.07	0.35	0.97
Emigrants	462	0.59	0.10	0.07	0.86
Percent literate					
Overseas migrants	438	0.81	0.07	0.29	1.00
Emigrants	462	0.74	0.09	0.16	1.00
Percent single					
Overseas migrants	438	0.43	0.08	0.03	0.70
Emigrants	462	0.45	0.12	0.08	0.74
Percent younger than 14					
Overseas migrants	196	0.17	0.06	0.01	0.47
Emigrants	110	0.21	0.26	0.01	1.00

Notes: District-level summary statistics of the characteristics of overseas migrants and emigrants leaving Portugal. Younger than 14 statistics are available for emigrants only for the period 1950-1954 and for overseas migrants 1950-1959. All other series are for the 1950-1970 period. All four differences between the two groups are statistically significant, using an independent two-sample t-test.

Table A5: Municipality-level characteristics from the 1940s and returnees per capita: OLS correlations

Outcome	(1) Returnees per capita	(2) Returnees per capita	(3) Returnees per capita	(4) Returnees per capita	(5) Returnees per capita	(6) Returnees per capita	(7) Returnees per capita	(8) Returnees per capita	(9) Returnees per capita	(10) Returnees per capita	(11) Returnees per capita	(12)
Families per capita	0.144											0.058
	(0.113)											(0.118)
Female ratio		0.426**										0.166
		(0.182)										(0.119)
Absent ratio			0.253*									1.489***
			(0.139)									(0.523)
Absent men ratio				0.117								-0.871***
				(0.087)								(0.297)
Single ratio					-0.101**							-0.033
					(0.048)							(0.046)
Single men ratio						-0.110*						0.051
						(0.058)						(0.075)
Separated ratio							10.999***					7.024***
							(1.949)					(2.025)
Widowed ratio								0.990***				-0.212
								(0.194)				(0.270)
Literacy ratio									0.160***			0.108***
									(0.026)			(0.032)
Catholics ratio										-0.013		0.007
										(0.013)		(0.017)
ln Population											0.006**	-0.002
											(0.002)	(0.003)
N	300	300	300	300	300	300	300	300	300	300	300	300
District FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: A regression of returnees per capita from the 1981 census on municipality-level characteristics from the 1940 census: families per capita, female ratio, temporarily absent *'Temporariamente ausente'*, ratio of singles to all individuals with marital status information available (single, married, separated, divorced, and widowed), separated ratio, widowed ratio, literacy ratio, Catholic ratio, and population size. All columns include district-level fixed effects. Standard errors clustered at the district level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A6: Municipality-level characteristics from the 1950s and returnees per capita: OLS correlations

Outcome	(1) Returnees per capita	(2) Returnees per capita	(3) Returnees per capita	(4) Returnees per capita	(5) Returnees per capita	(6) Returnees per capita	(7) Returnees per capita	(8) Returnees per capita	(9) Returnees per capita	(10) Returnees per capita	(11) Returnees per capita
Families per capita	0.110										0.068
	(0.101)										(0.093)
Female ratio		0.046									-0.008
		(0.079)									(0.019)
Absent ratio			0.314**								-0.002
			(0.127)								(0.389)
Absent men ratio				0.242**							0.072
				(0.091)							(0.276)
Single ratio					-0.039						-0.008
					(0.031)						(0.023)
Single men ratio						-0.104*					-0.001
						(0.051)					(0.047)
Widowed ratio							0.711***				-0.021
							(0.162)				(0.229)
Literacy ratio								0.175***			0.168***
								(0.030)			(0.035)
Catholics ratio									-0.032		-0.029*
									(0.020)		(0.015)
ln Population										0.006**	0.001
										(0.002)	(0.002)
N	300	300	300	300	300	300	300	300	300	300	300
District FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: A regression of returnees per capita from the 1981 census on municipality-level characteristics from the 1950 census: families per capita, female ratio, temporarily absent *'Temporariamente ausente'*, ratio of singles to all individuals with marital status information available (single, married, separated, divorced, and widowed), widowed ratio, literacy ratio, Catholic ratio, and population size. All columns include district-level fixed effects. Standard errors clustered at the district level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A7: Robustness of OLS results

Outcome:	(1) Fertility	(2) Fertility	(3) Fertility	(4) Fertility	(5) Fertility
Return share × Post	0.162***	0.149***	0.101**	0.137***	0.207
	(0.042)	(0.044)	(0.046)	(0.042)	(0.145)
Y mean	0.081	0.081	0.077	0.081	0.075
N	7,888	5,712	2,992	7,018	870
Robustness:	Baseline	Short timeframe 10 years	Short timeframe 5 years	Exclude metropolitan areas	Only metropolitan areas
Outcome:	(6) Fertility	(7) Fertility	(8) Fertility	(9) Fertility	(10) Fertility
Return share × Post	0.162***	0.162***	0.135***	0.135***	0.135***
	(0.053)	(0.040)	(0.026)	(0.027)	(0.024)
Y mean	0.081	0.081	0.081	0.081	0.081
N	7,888	7,888	8,207	8,207	8,207
Robustness:	District cluster	Two-way cluster	Conley 25km	Conley 50km	Conley 75km
Outcome:	(11) Fertility	(12) Fertility	(13) Fertility	(14) ln(Fertility)	(15) Birth rate
Return share × Post	0.162***	0.171***	0.171***	1.982***	0.033***
	(0.042)	(0.043)	(0.043)	(0.646)	(0.010)
Y mean	0.081	0.081	0.081	-2.607	0.019
N	7,888	7,888	7,888	7,888	13,600
Robustness:	Impute 1970-81 without shock	Winsorize at 0.01% high	Not winsorize	Logarithm form	Crude birth rate
Municipality FE	Yes	Yes	Yes	Yes	Yes
District x Year FE	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes

Notes: Municipality level regression of – fertility – on return shares times *Post*, an indicator for the timing of the return event. Fertility is defined as number of live births to women in reproductive age (15-44 years old). Time frame: 1960-1987 except column (2) and (3) where it is 1965-1985 and 1970-1980, respectively. Column (4) excludes the municipalities around Lisbon and Porto, as these attracted more returnees and column (5) uses only metropolitan areas. Columns (6)-(10) implement different clustering methods: district-level, two-way (municipality and year), and Conley standard errors at distance cut-offs of 25-75km. Column (11) implements a different imputation of the denominator for fertility, not accounting for the population increase of women aged 15-44 exactly after 1974, but as it is observed in 1981. Columns (12) and (13) apply alternative winsorizing: either 0.01% at high only or no winsorizing, respectively. Column (10) uses the ln of fertility. Standard errors clustered at the municipality level, except in Column (6)-(10). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A8: Robustness of IV results

	(1)	(2)	(3)	(4)	(5)
Outcome:	Fertility	Fertility	Fertility	Fertility	Fertility
Return share × Post	0.170***	0.153***	0.225***	0.141**	0.829***
	(0.058)	(0.056)	(0.047)	(0.056)	(0.240)
First stage:					
Overseas emigration ×*Post*	0.539	0.539	0.539	0.540	0.868
	0.029	0.029	0.045	0.022	0.076
Montiel-Pflueger F stat	336.871	338.598	142.495	584.957	132.194
Robustness:	Baseline	Balanced timeframe 10 years	Short timeframe 5 years	Exclude metropolitan areas	Only metropolitan areas
Y mean	0.076	0.080	0.077	0.076	0.070
N	6,576	5,480	2,740	5,856	720
P-value wild cluster bootstrap	0.003	0.011	0.000	0.015	0.010

	(6)	(7)	(8)	(9)	(10)
Outcome:	Fertility	Fertility	Fertility	Fertility	Fertility
Return share × Post	0.170*	0.170***	0.170***	0.170***	0.170***
	(0.097)	(0.058)	(0.044)	(0.052)	(0.055)
First stage:					
Overseas emigration ×*Post*	0.539	0.539	0.539	0.539	0.539
	.	0.029	0.029	0.029	0.029
Montiel-Pflueger F stat	28.447	336.871			
Robustness:	Municipality cluster	Two-way cluster	Conley 25km	Conley 50km	Conley 75km
Y mean	0.076	0.076	0.076	0.076	0.076
N	6,576	6,576	6,576	6,576	6,576
P-value wild cluster bootstrap	0.120	0.007			

	(11)	(12)	(13)	(14)	(15)
Outcome:	Fertility	Fertility	Fertility	ln(Fertility)	Birth rate
Return share × Post	0.190***	0.165***	0.165***	2.293***	0.041***
	(0.059)	(0.058)	(0.058)	(0.731)	(0.010)
First stage:					
Overseas emigration ×*Post*	0.539	0.539	0.539	0.539	0.539
	0.029	0.029	0.029	0.029	0.029
Montiel-Pflueger F stat	336.871	336.871	336.871	336.871	336.871
Robustness:	Impute 1970-81 without shock	Winsorize at 0.01% high	Not winsorize	Logarithm form	Crude birth rate
Y mean	0.076	0.076	0.076	-2.669	0.015
N	6,576	6,576	6,576	6,576	6,576
P-value wild cluster bootstrap	0.003	0.007	0.011	0.005	0.001
Municipality FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes

Notes: Municipality level regression of – fertility – on return shares times *Post*, an indicator for the timing of the return event. Fertility is defined as number of live births to women in reproductive age (15-44 years old). Time frame: 1960-1987 except column (2) and (3) where it is 1965-1985 and 1970-1980, respectively. Column (4) excludes the municipalities around Lisbon and Porto, as these attracted more returnees and column (5) uses only metropolitan areas. Columns (6)-(10) implement different clustering methods: district-level, two-way (municipality and year), and Conley standard errors at distance cut-offs of 25-75km. Column (11) implements a different imputation of the denominator for fertility, not accounting for the population increase of women aged 15-44 exactly after 1974, but as it is observed in 1981. Columns (12) and (13) apply alternative winsorizing: either 0.01% at high only or no winsorizing, respectively. Column (10) uses the ln of fertility. Standard errors clustered at the municipality level, except in Column (6)-(10). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A9: Robustness of IV results – timeframes

	(1)	(2)	(3)	(4)	(5)	(6)
Outcome:	Fertility	Fertility	Fertility	Fertility	Fertility	
Return share × Post	0.170***	0.156***	0.155***	0.137**	0.140**	0.193***
	(0.058)	(0.058)	(0.060)	(0.060)	(0.059)	(0.060)
First stage:						
Overseas emigration × *Post*	0.539	0.587	0.644	0.629	0.666	0.837
	0.029	0.030	0.031	0.030	0.029	0.035
Montiel-Pflueger F stat	336.871	389.003	441.382	452.624	522.836	587.759
Timeframe sample:	1965-1987	1964-1987	1963-1987	1962-1987	1961-1987	1960-1987
Timeframe instrument:	1945-1965	1945-1964	1945-1963	1945-1962	1945-1961	1945-1960
Y mean	0.076	0.077	0.078	0.079	0.080	0.081
N	6,576	6,850	7,124	7,398	7,672	7,946
P-value wild cluster bootstrap	0.004	0.017	0.018	0.026	0.024	0.004
Municipality FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Municipality level regression of demographic outcome – fertility – on return shares times $Post_t$, an indicator for the timing of the return event in 1974, instrumented by the overseas migration rate. Fertility is defined as number of live births per resident population of women in reproductive ages (15-44 years old). Column (1) uses the baseline specification, column (2) excludes the municipalities around Lisbon and Porto, as these attracted more return migrants. Columns (3) and (4) implement a different definition of the dependent variable: either 0.1% at high only or no winsorizing transformation, respectively. Column (5) implements clustering by district. Columns (6) applies all robustness check simultaneously (with 0.1% high only winsorized series). Column (7) uses the ln of fertility instead and also clusters standard errors by district. Standard errors clustered at the municipality level, except in Column (5), (6) and (7) where it is at district level * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A10: Robustness with stock of children aged 0-4 and 5-9 (placebo).

	(1)	(2)	(3)	(4)
	Children 0-4	Children 0-4	Children 5-9	Children 5-9
	OLS	IV	OLS	IV
Return share × Post	0.299**	0.945***	-0.016	-0.769*
	(0.142)	(0.362)	(0.480)	(0.426)
Y mean	0.408	0.408	0.375	0.375
N	538	538	508	508
First stage:				
Instrument		0.808***		0.808***
		(0.105)		(0.105)
Montiel-Pflueger F stat		28.165		28.165
Municipality FE	Yes	Yes	Yes	Yes
Region x Year FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes

Notes: Municipality-level regression at time periods 1960, 1970 and 1981. The dependent variable is the stock of children aged 0-4 and 5-9 (placebo) to women aged 15-44, removing migrant women and proportionately plausibly migrant births. IV of overseas emigration, controlling for overall emigration over 1945-1965. Controls: population, literacy and sex ratio in 1940 interacted with *Post*. Standard errors clustered at the municipality level * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A11: Marriage markets and non-marital fertility

Model:	(1) OLS FE	(2) IV	(3) OLS FE	(4) IV
Outcome:	Marriages	Marriages	Illegitimate fertility	Illegitimate fertility
Return share × Post	-0.001	0.007	0.124	0.089
	(0.012)	(0.033)	(0.091)	(0.105)
First stage:				
Overseas emigration $\times Post$		0.808***		0.808***
		(0.131)		(0.131)
Montiel-Pflueger F stat		38.160		38.160
Y mean	0.043	0.043	0.081	0.081
N	5,918	5,918	5,918	5,918
P-value wild cluster bootstrap	0.913	0.878	0.226	0.449
Municipality FE	Yes	Yes	Yes	Yes
Region × Year FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes

Notes: Municipality-level regression of demographic outcome on return shares times $Post_t$, an indicator for the timing of the return event in 1974. Marriages are defined as number of marriages per resident population of women in reproductive age (15-44 years old). Non-marital fertility is the share of non-marital *fora casamento* births out of all live births. Controls: literacy, sex ratio and population size in the baseline census $c = 1940$. The IV is cumulative emigration to the overseas provinces, controlling for overall emigration, measured at the district level. Standard errors clustered at the district level * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A12: Summary statistics about remittances

	(1) PSM p.c. 1973	(2) PSM p.c. post1973	(3) BI p.c. 1973	(4) BI p.c. post1973	(5) GDP p.c.	(6) Agriculture %	(7) Pop density
Aveiro	0.19	0.65	0.81	1.82	21	27	233
Beja	0.35	0.74	0.23	0.37	14	66	20
Braga	0.31	1.43	0.28	0.80	14	33	277
Bragança	0.50	1.84	0.40	1.53	13	72	93
Castelo Branco	0.49	1.40	0.20	0.76	12	50	38
Coimbra	0.44	1.11	0.26	0.66	19	42	161
Évora	0.15	0.22	0.28	0.77	15	51	69
Faro	0.27	0.64	0.11	0.24	12	45	66
Guarda	0.56	2.49	0.02	0.82	9	60	41
Leiria	1.06	3.11	0.26	0.55	18	44	126
Lisboa	0.08	0.24	0.08	0.43	32	8	858
Portalegre	0.10	0.16	.	.	15	59	25
Porto	0.01	1.01	0.26	1.04	19	12	692
Santarém	0.16	0.42	0.15	0.44	17	44	70
Setúbal	0.01	0.05	0.07	0.22	32	21	127
Viana do Castelo	0.50	2.46	0.50	1.79	8	65	120
Vila Real	0.67	2.06	0.13	0.41	9	69	66
Viseu	0.29	1.03	0.40	1.20	14	65	89

Notes: Remittances in thousands of escudos per capita for 1973 and post-1973, respectively. Bank Pinto and Sotto Mayor (PMS) in (1) and (2) and Borges and Irmão (BI) in (3) and (4). GDP per capita in thousands of escudos in 1970 by district in (5). Percentage of population active in agriculture in 1970 in (6) and population density: inhabitants per km in (7). Data source: Chaney (1986).

Table A13: Alternative mechanisms: OLS and IV results for outcome remittances

Outcome:	(1) ln Remittances per capita	(2) ln Remittances per capita	(3) ln Remittances per capita	(4) ln Remittances per capita	(5) ln Remittances per capita	(6) ln Remittances per capita
	Pinto & Sotto-Mayor	Borges Irmão	Pinto & Sotto-Mayor and Borges Irmão	Pinto & Sotto-Mayor	Borges Irmão	Pinto & Sotto-Mayor and Borges Irmão
Second stage:						
Return share × Post	-3.733	14.560	2.311	2.807	13.394	1.587
	(7.154)	(9.545)	(4.164)	(7.188)	(8.647)	(3.287)
Y mean	-0.640	-0.851	0.131	-0.640	-0.851	0.131
N	144	136	136	144	136	136
First stage:						
Overseas emigration				0.535***	0.535***	0.535***
				(0.105)	(0.105)	(0.105)
Montiel-Pflueger F stat:				26.187	25.012	25.012
District FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes

Notes: District-level regressions of the logged remittances per capita on return shares times *Post*1974, an indicator for the timing of the return event. Time frame: 1973-1981. Columns (1)-(3) use OLS fixed effects, while columns (4)-(6) implement the instrument of overseas emigration in the period 1945-1970, controlling for overall emigration. All columns include district and year fixed effects. Controls include the GDP per capita in 1970, the share of employment in the agricultural sector and population density. Data source: Chaney (1986). Standard errors clustered at the district level * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A14: District-level labor market outcomes, by age group: in the labor force

	(1)	(2)	(3)	(4)
Model:	OLS FE	IV	OLS FE	IV
Outcome:	Labor force participation	Labor force participation	Labor force participation	Labor force participation
Panel A: Women				
Sample	15-24 Women	15-24 Women	25-64 Women	25-64 Women
Return share × Post	-1.148**	-2.022***	-0.236	-0.609*
	(0.482)	(0.672)	(0.332)	(0.317)
First stage:				
Overseas emigration × *Post*		1.052***		1.046***
		(0.146)		(0.130)
Montiel-Pflueger F stat		51.914		65.073
Y mean	0.371	0.371	0.235	0.235
N	114	114	453	453
P-value wild cluster bootstrap	0.130	0.044	0.573	0.107
Model:	OLS FE	IV	OLS FE	IV
Outcome:	Labor force participation	Labor force participation	Labor force participation	Labor force participation
Panel B: Men				
Sample	15-24 Men	15-24 Men	25-64 Men	25-64 Men
Return share × Post	-0.931***	-1.299***	0.374*	0.620**
	(0.151)	(0.223)	(0.203)	(0.260)
First stage:				
Overseas emigration × *Post*		1.052***		1.052***
		(0.146)		(0.129)
Montiel-Pflueger F stat		51.914		66.448
Y mean	0.825	0.825	0.914	0.914
N	114	114	456	456
P-value wild cluster bootstrap	0.006	0.000	0.114	0.143
District FE	Yes	Yes	Yes	Yes
Region × Year FE	Yes	Yes	Yes	Yes
Age group × Year FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes

Notes: District-level regressions of labor force participation within an age group on returnees per capita times $Post_t$, an indicator for the timing of the return event. Time periods: 1960, 1970, 1981. The p-value of the wild cluster bootstrap test of the hypothesis Return share × Post = 0 is reported (bootstrap replications = 999). Fixed effects for district, region by year, and age group. Standard errors are clustered at the district level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A15: District-level labor market outcomes, by age group: 'home-makers' & students

	(1)	(2)	(3)	(4)
Model:	OLS FE	IV	OLS FE	IV
Outcome:	Home-maker ouf of the Labor force	Home-maker ouf of the Labor force	Home-maker ouf of the Labor force	Home-maker ouf of the Labor force
Panel A: Women				
Sample:	Women	Women	Women	Women
Age range:	15-24	15-24	25-64	25-64
Return share × Post	-0.480	-0.864	1.071***	1.566***
	(0.632)	(0.707)	(0.320)	(0.482)
First stage:				
Overseas emigration × *Post*		1.052***		1.052***
		(0.153)		(0.130)
Montiel-Pflueger F stat		47.131		65.280
Y mean	0.376	0.376	0.621	0.621
N	76	76	304	304
P-value wild cluster bootstrap	0.481	0.419	0.054	0.041
Model:	OLS FE	IV	OLS FE	IV
Outcome:	Student ouf of the Labor force	Student ouf of the Labor force	Student ouf of the Labor force	Student ouf of the Labor force
Panel B: Women and men				
Sample:	Women	Women	Men	Men
Age range:	15-24	15-24	15-24	15-24
Return share × Post	0.794***	1.310***	0.603***	0.713***
	(0.178)	(0.175)	(0.188)	(0.217)
First stage:				
Overseas emigration × *Post*		1.052***		1.052***
		(0.153)		(0.153)
Montiel-Pflueger F stat		47.131		47.131
Y mean	0.165	0.165	0.145	0.145
N	76	76	76	76
P-value wild cluster bootstrap	0.069	0.013	0.142	0.084
District FE	Yes	Yes	Yes	Yes
Region × Year FE	Yes	Yes	Yes	Yes
Age group × Year FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes

Notes: District-level regressions of labor force participation within an age group on returnees per capita times $Post_t$, an indicator for the timing of the return event. Time periods: 1960, 1970, 1981. The p-value of the wild cluster bootstrap test of the hypothesis Return share × Post = 0 is reported (bootstrap replications = 999). Fixed effects for district, region by year, and age group. Standard errors are clustered at the district level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

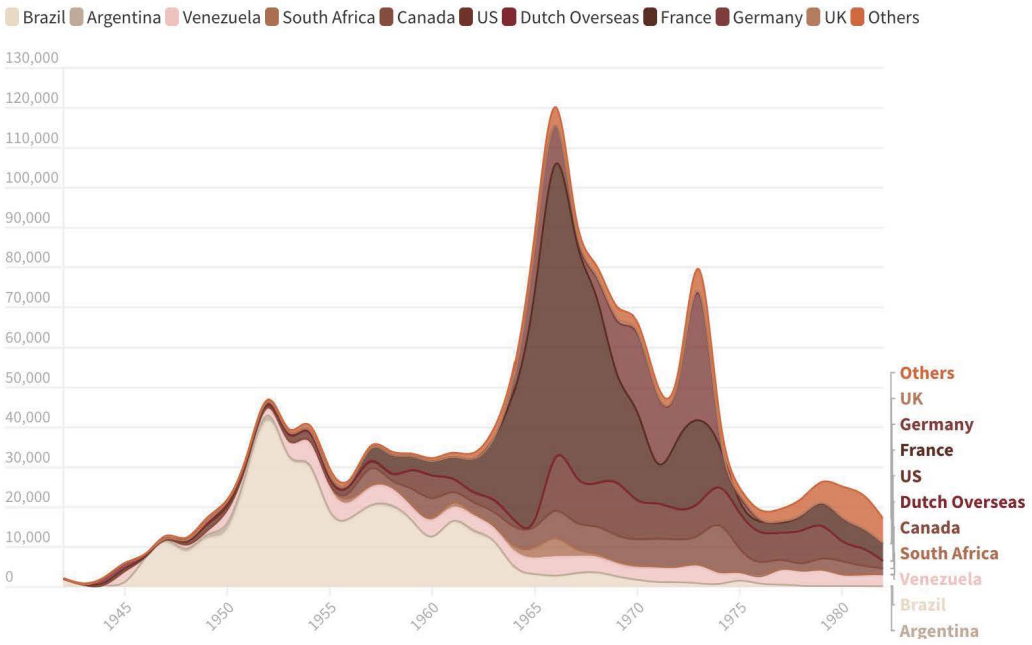
Table A16: Municipality-level labor market outcomes: 'Home-makers'

	(1)	(2)	(3)	(4)
Model:	OLS FE	IV	OLS FE	IV
Outcome:				
Panel A: Women				
Sample	All	All	Native-only	Native-only
	Women	Women	Women	Women
Return share × Post	0.712*	3.219***	0.478	3.231***
	(0.368)	(0.685)	(0.374)	(0.677)
First stage:				
Overseas emigration $\times Post$		1.172***		1.167***
		(0.156)		(0.152)
Montiel-Pflueger F stat		56.548		58.791
Y mean	0.556	0.556	0.562	0.562
N	599	599	588	588
P-value wild cluster bootstrap	0.027	0.001	0.127	0.001
Municipality FE	Yes	Yes	Yes	Yes
Region by Year FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes

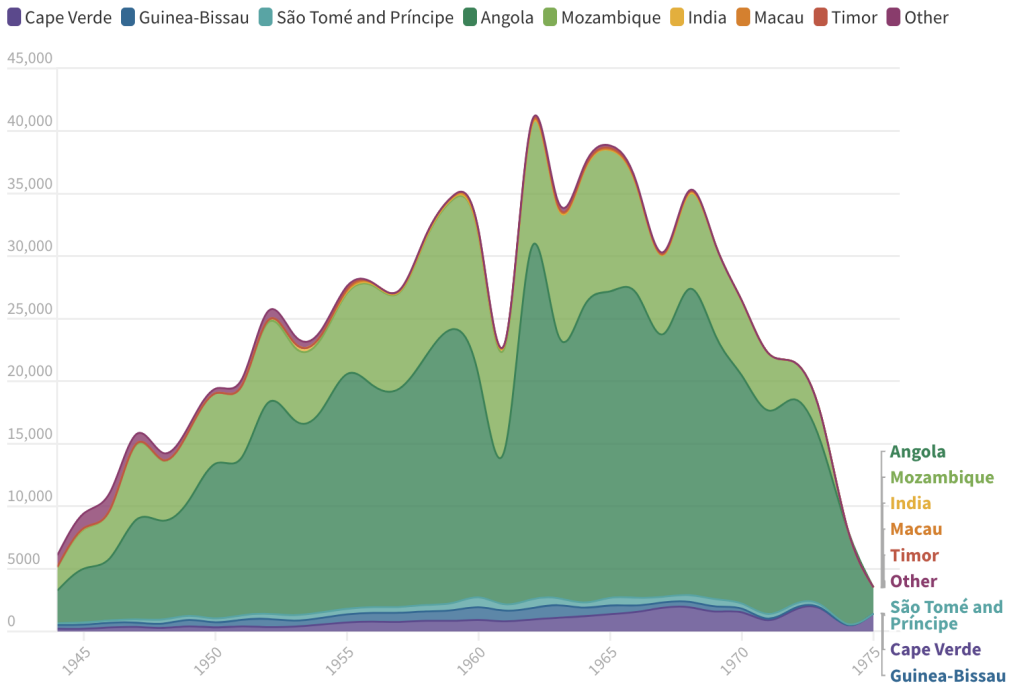
Notes: Municipality-level regressions of "homemakers" on returnees per capita times $Post_t$, an indicator for the timing of the return event. Samples: all in columns (1)-(2) and natives-only in columns (3)-(4). Controls include educational completion (upper secondary and higher), interacted with $Post_t$. Time frame: 1960, 1980. Fixed effects for municipality, region by year. Standard errors are clustered at the district level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Additional Figures

Figure A1: Emigration from Portugal to foreign countries and colonies / 'overseas provinces', 1945-1975, by destination. Data source: Chapter *'Migratory Movements'*, digitized from the *Demographic Annals* of INE Portugal Archives.

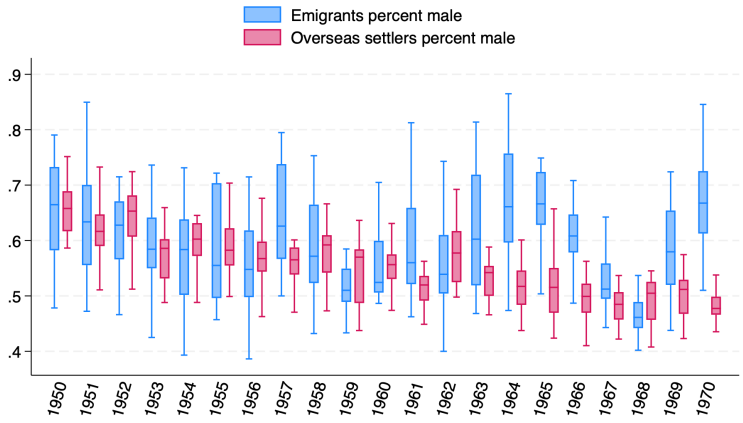


(a) Emigrants leaving Portugal to foreign countries

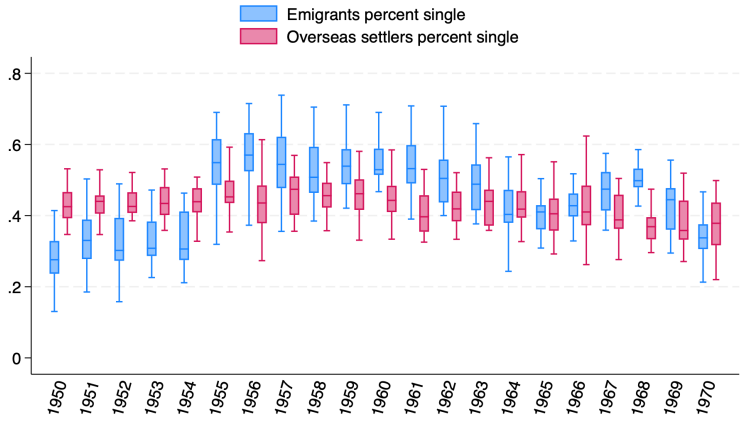


(b) Emigrants to the colonies / 'overseas provinces' of Portugal (via sea route)

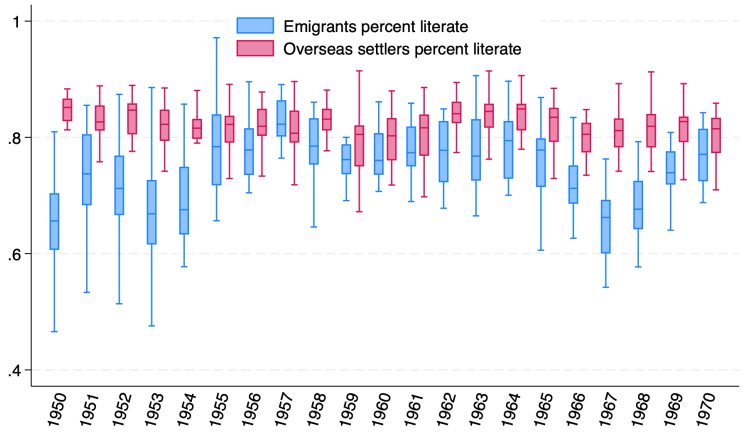
Figure A2: Box plot showing characteristics of Portuguese overseas settlers and emigrants from 1950-1970, based on percent male, single, and literate. Data represent average values across all districts in Portugal. Source: 'Migratory Movements' chapter, digitized from the *Demographic Annals* 1940-1975, INE Portugal Archives.



(a) Percent male

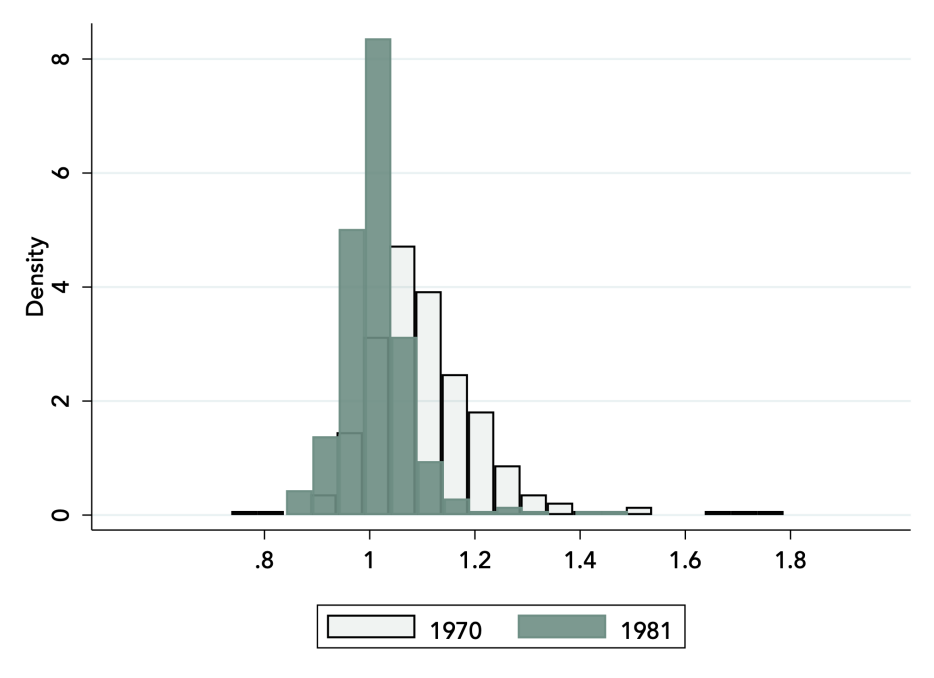


(b) Percent single



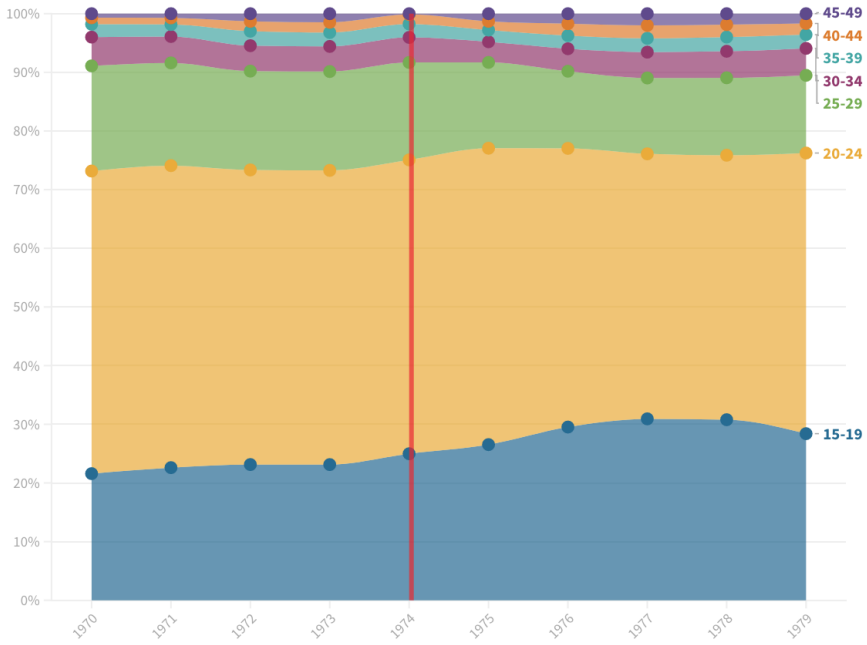
(c) Percent literate

Figure A3: Histogram of the female ratio in reproductive ages.

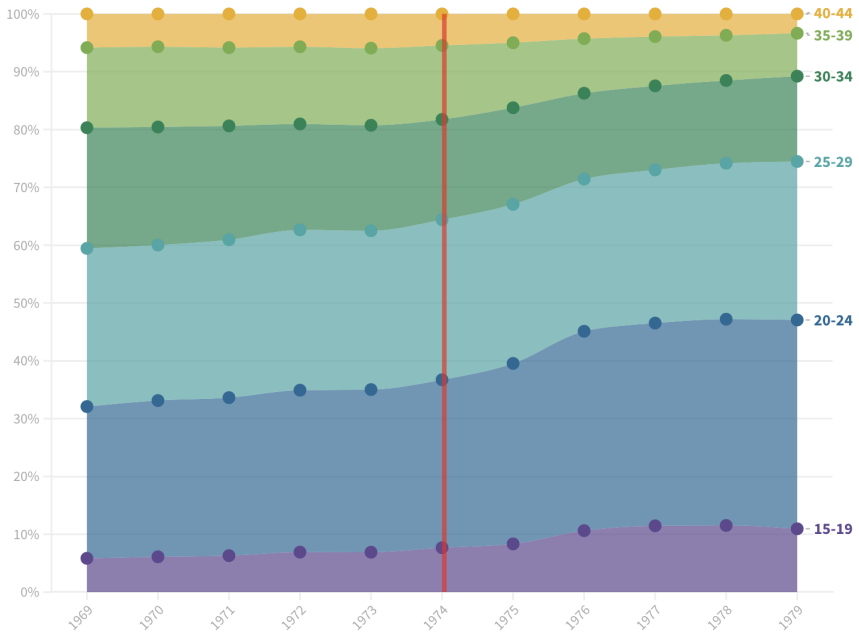


Notes: Distribution of the female ratio in ages: 15-44, Census year 1970 and 1981, respectively.

Figure A4: Age distributions of women: giving birth and getting married. Data Source: Chapter *Live births* and *Marriages* digitized from the *Demographic Annals* 1940-1975, from INE Portugal archives.

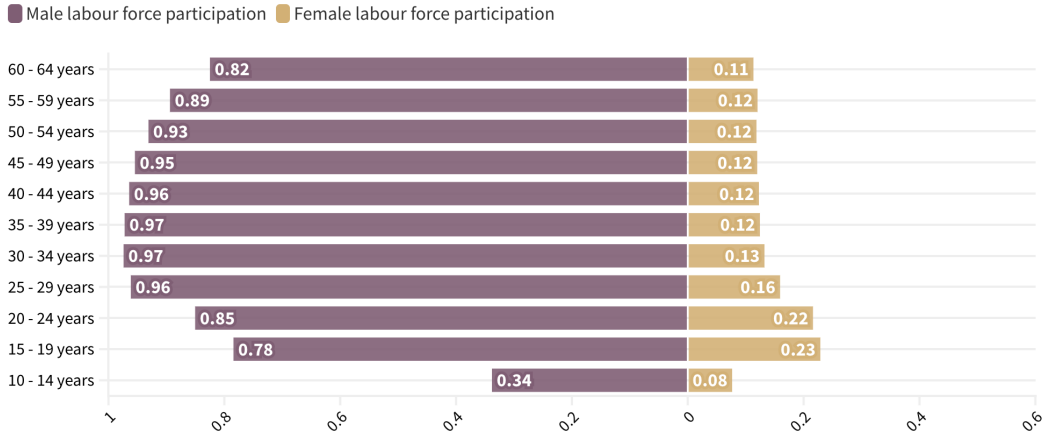


(a) Age of women at marriage

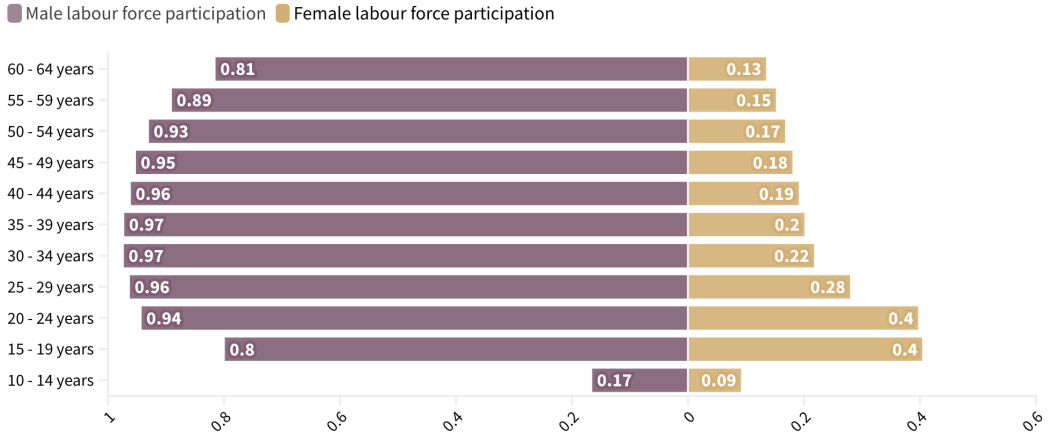


(b) Age of mothers

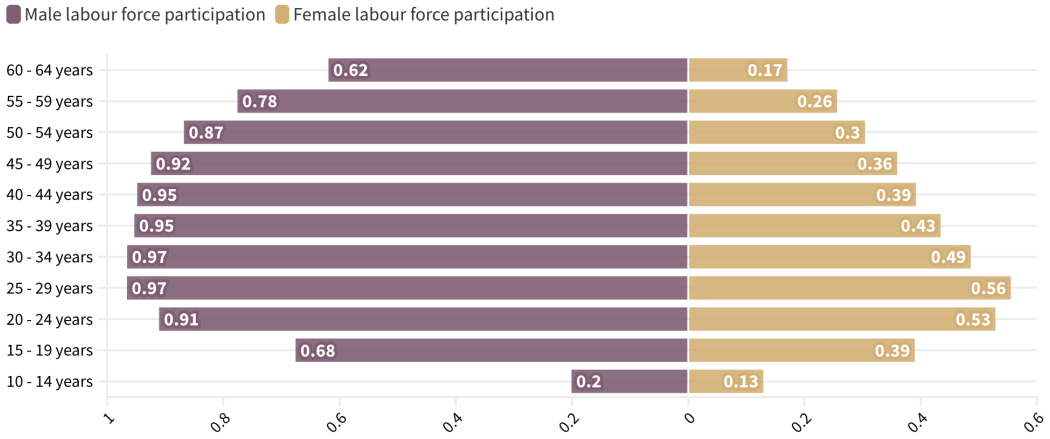
Figure A5: Age pyramids of labor force participation 1960, 1970, 1981. Data source: Census digitised from INE Portugal archives.



(a) Census 1960

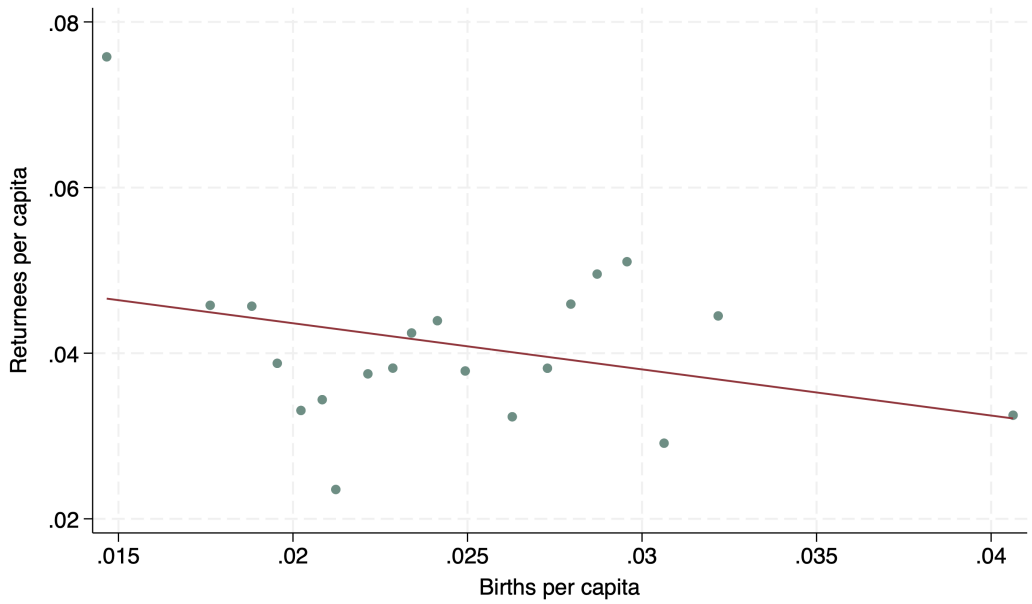


(b) Census 1970

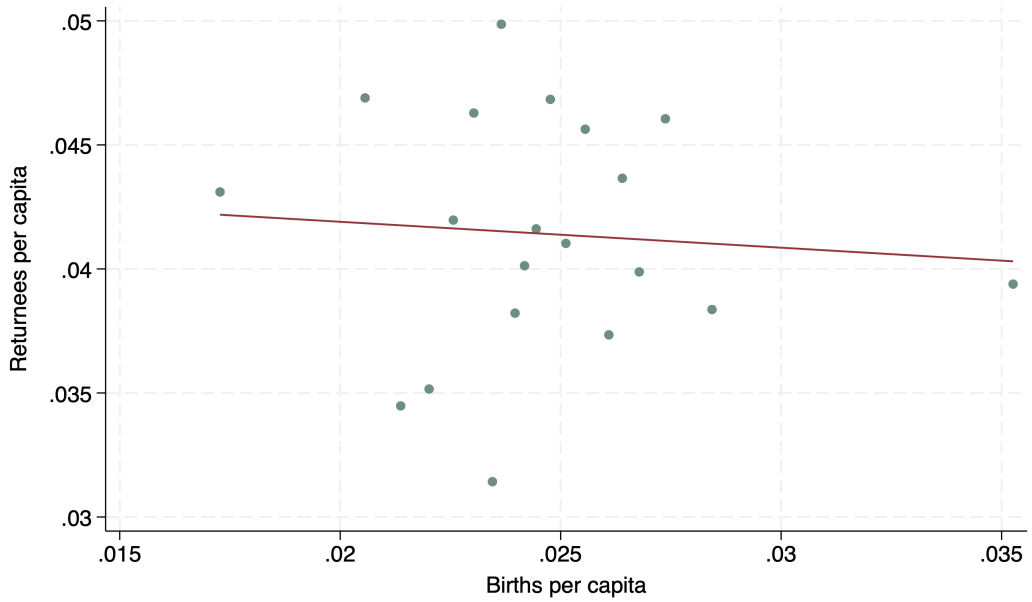


(c) Census 1981

Figure A6: Bin scatters of average 1940s births per capita and returnees per capita in 1981, without and with district fixed effects and controls, respectively.

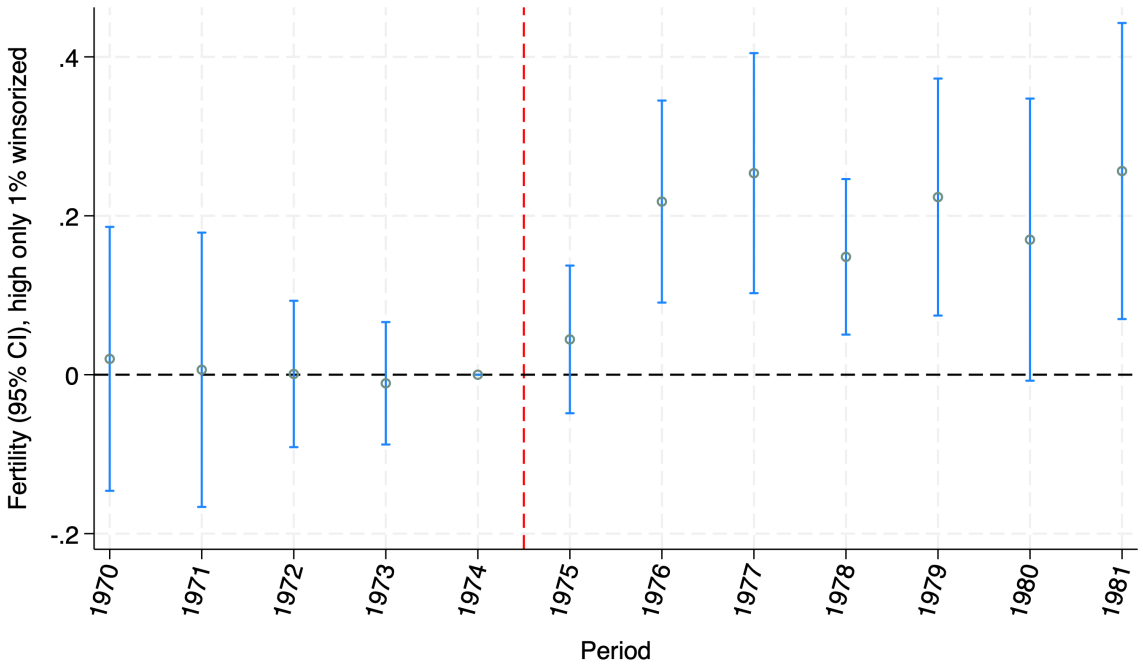


(a) No controls.



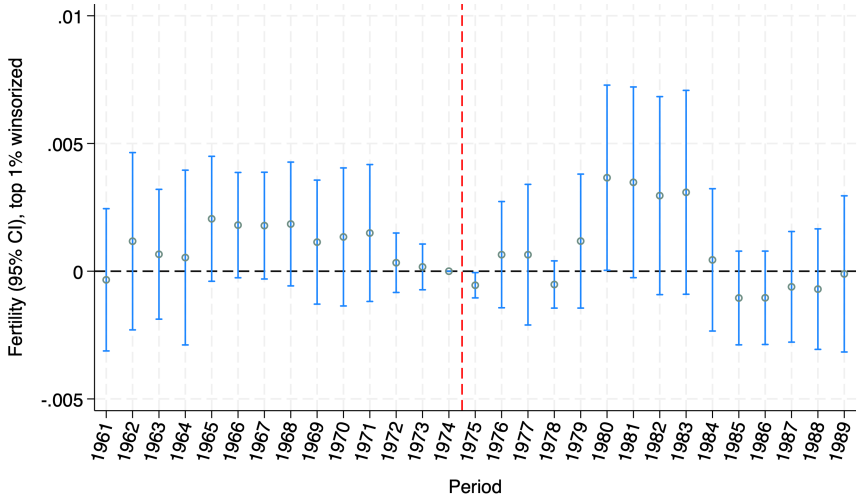
(b) District fixed effects and controls.

Figure A7: Event study of fertility: native-only approximation

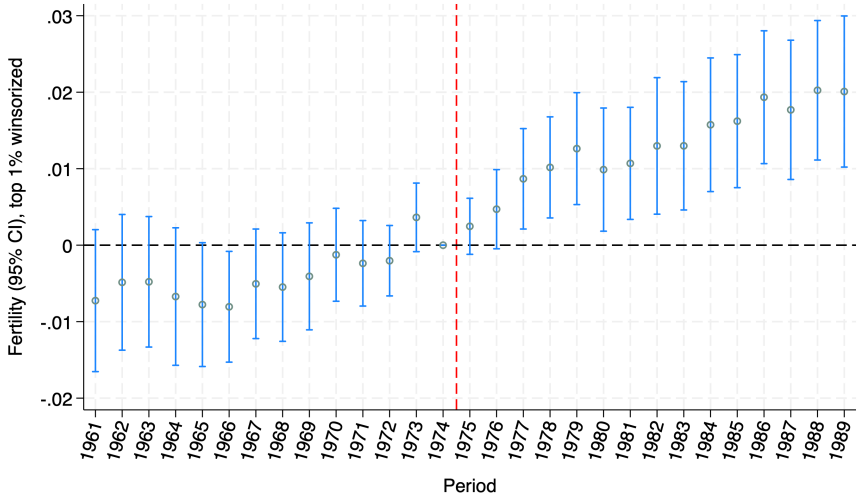


Notes: Main event study on the return shares – number of returnees relative to overall population. The return shares are interacted with year indicators. Fertility is measured as births within a municipality net of migrant births per number of native women of reproductive age (15-44). Time frame 1970-1981, omitting 1974 as the baseline year. Fixed effects for municipality and district-by-year. Controls include literacy, population size, absent and female ratios in 1940, interacted with year fixed effects. Standard errors clustered at the municipality level.

Figure A8: Event study: Family size and migrant-to-native fertility. Period 1960-1989 period with 1974, the year before the event as the omitted baseline year. Fixed effects for municipality and year and district by year. Controls include population size, literacy rates, absent and female ratios in 1940 interacted with year fixed effects. Standard errors clustered at the municipality level.



(a) Migrant family size



(b) Migrant-to-native fertility

Figure A9: Soldiers map in 1970 and returnees per capita in 1981. Percentage of 20-24 year old men who had a soldier status in the 1970 census. Data source: 11^{th} Portugal Population Census 1970. 20% Estimate — 2nd Volume. Category: *A cumprir serviço militar obrigatório* (completing compulsory military service) from INE Portugal.

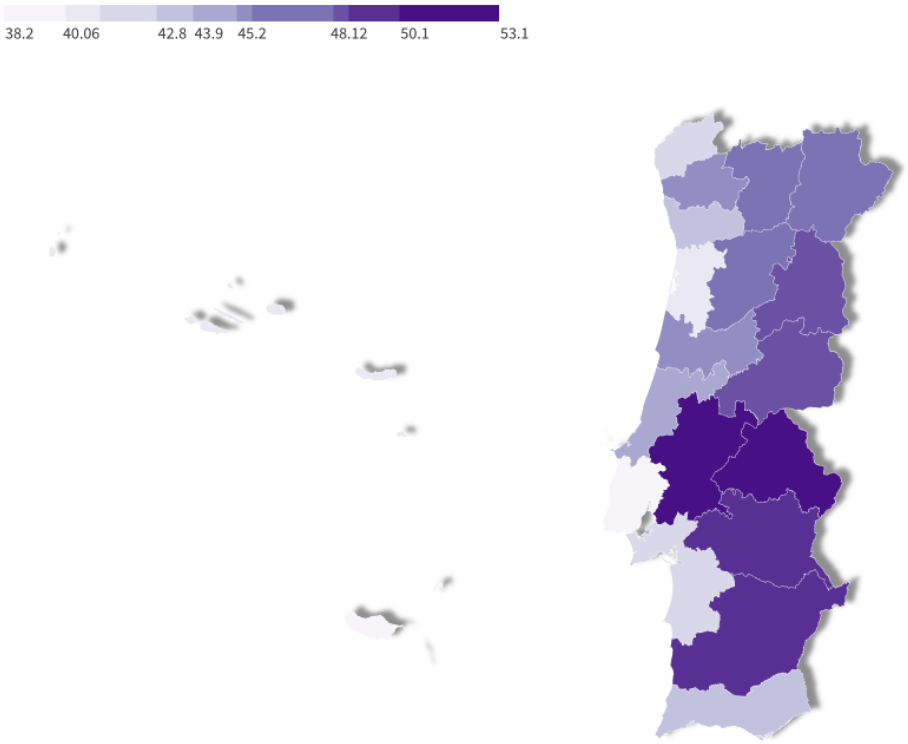
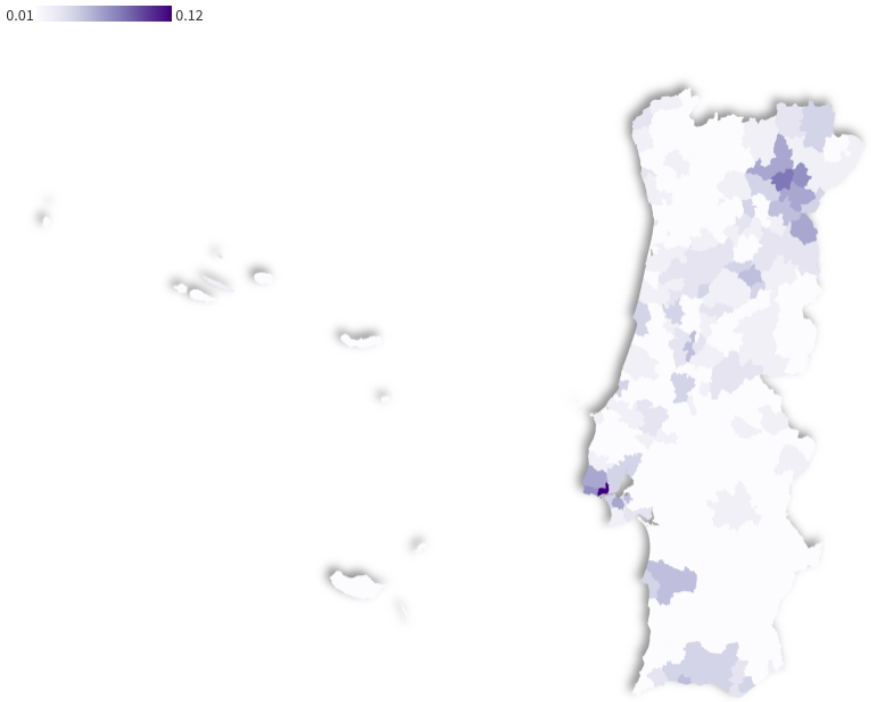
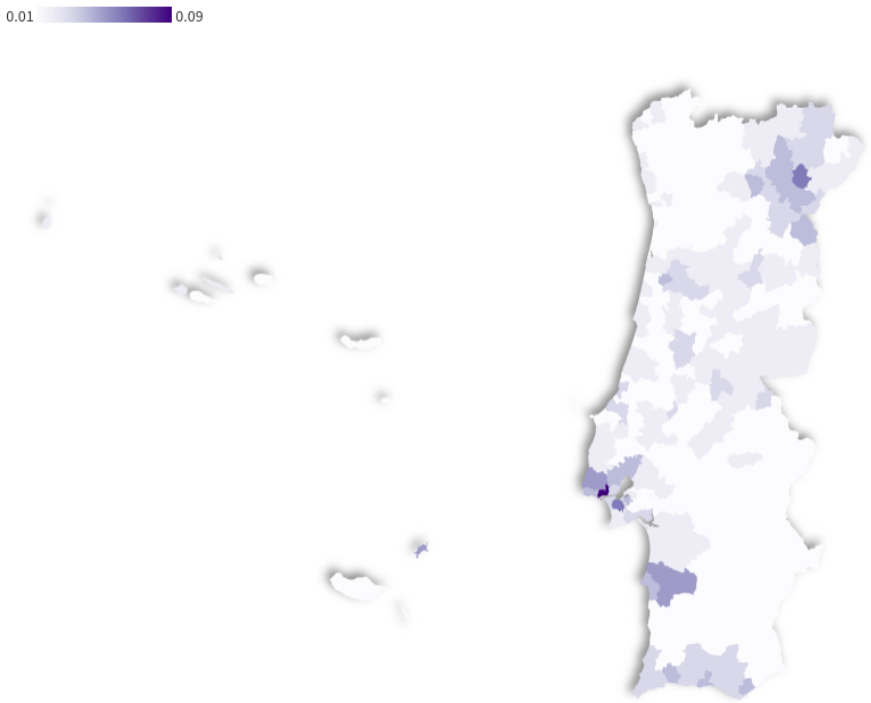


Figure A10: Maps of returnee men, aged 20-24 and 25-29 respectively, to resident women aged 15-24 at the municipality level.

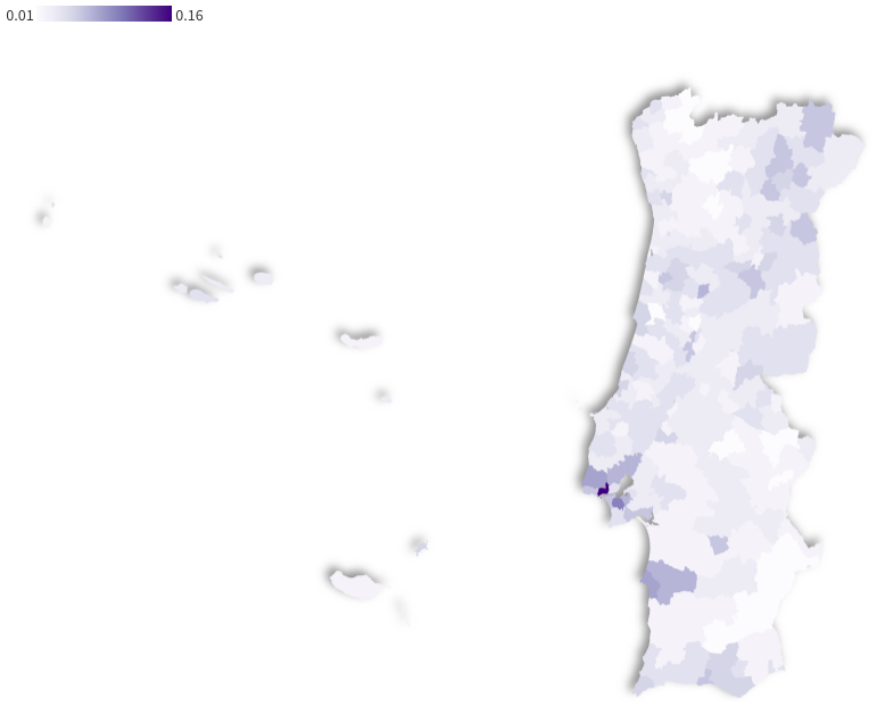


(a) Returnee men 20-24 to all women 15-24

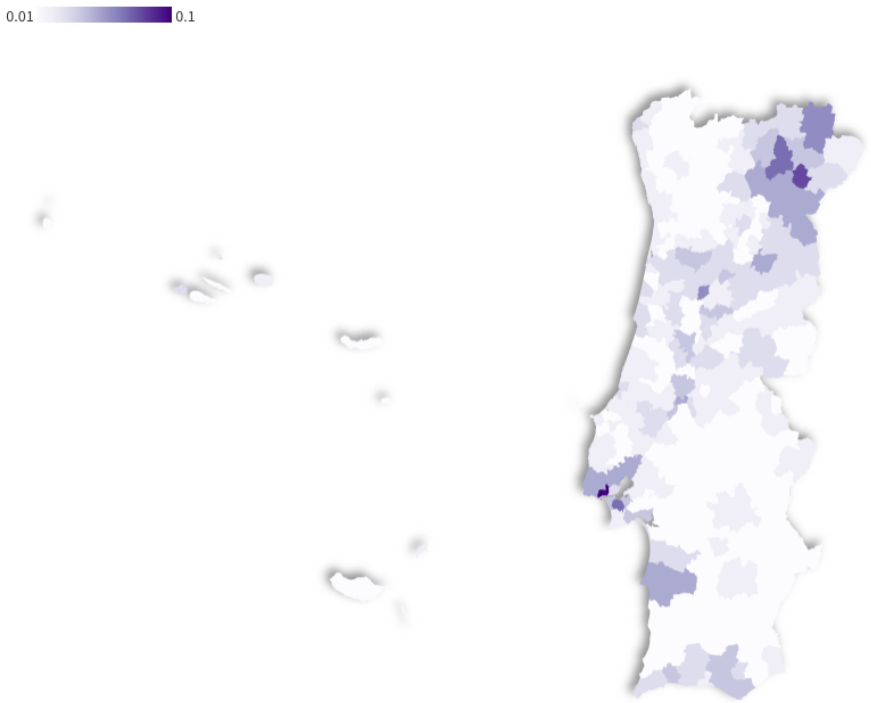


(b) Returnee men 25-29 to all women 15-24

Figure A11: Maps of returnee men, aged 30-34 and 35-39 respectively, to resident women aged 15-24 at the municipality level.

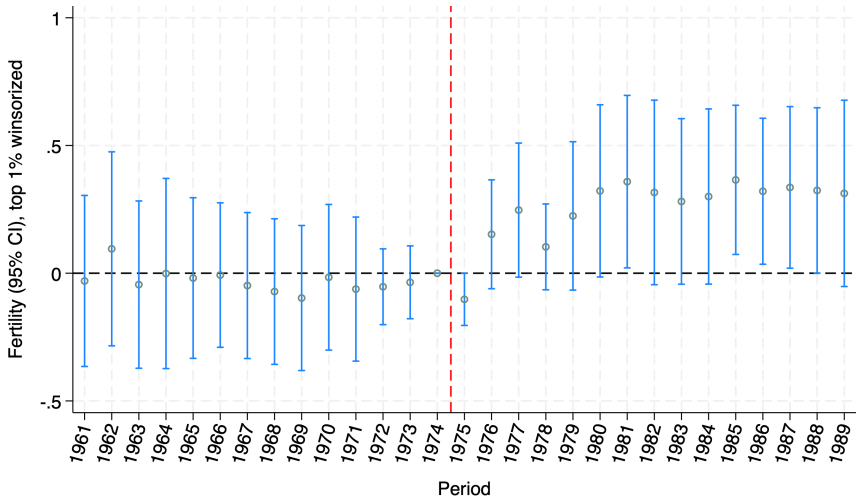


(a) Returnee men 30-34 to all women 15-24

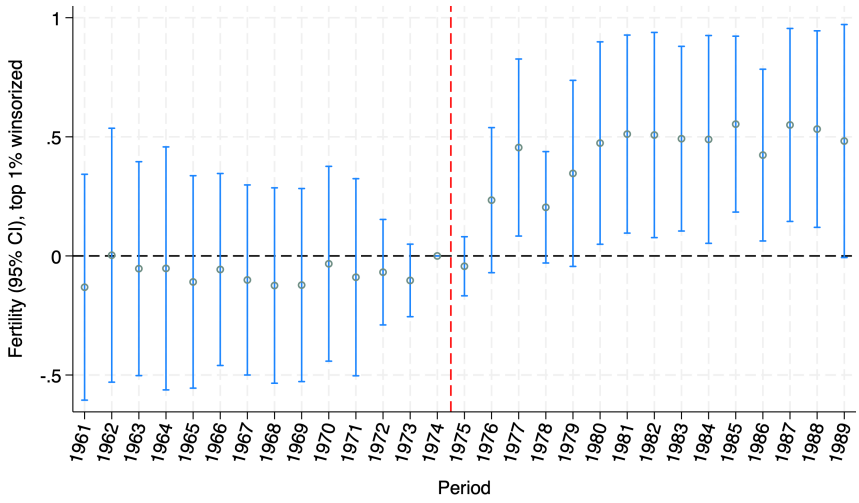


(b) Returnee men 35-39 to all women 15-24

Figure A12: Event study: Ratio of returnee men to young women 15-24, interacted with time indicators. Period 1960-1989 period with 1974, the year before the event as the omitted baseline year. Fixed effects for municipality and year and district by year. Controls include population size, literacy rates, absent and female ratios in 1940 interacted with year fixed effects. Standard errors clustered at the municipality level.

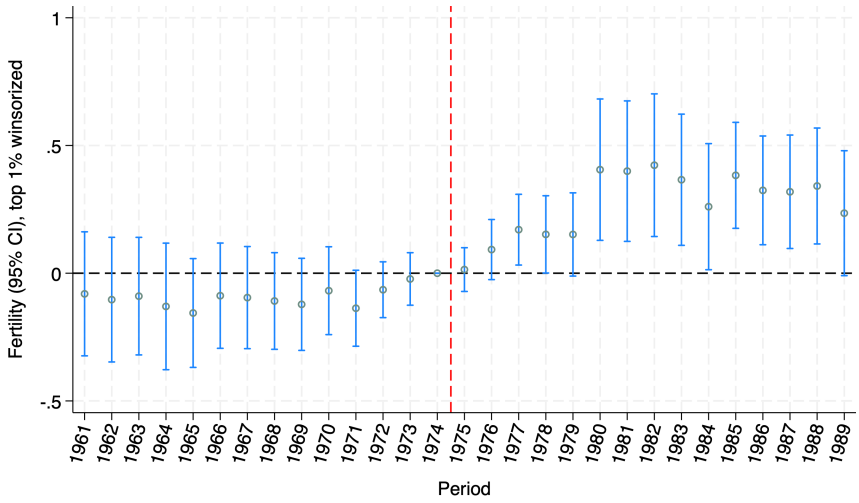


(a) Returnee men 20-24 to young women 15-24

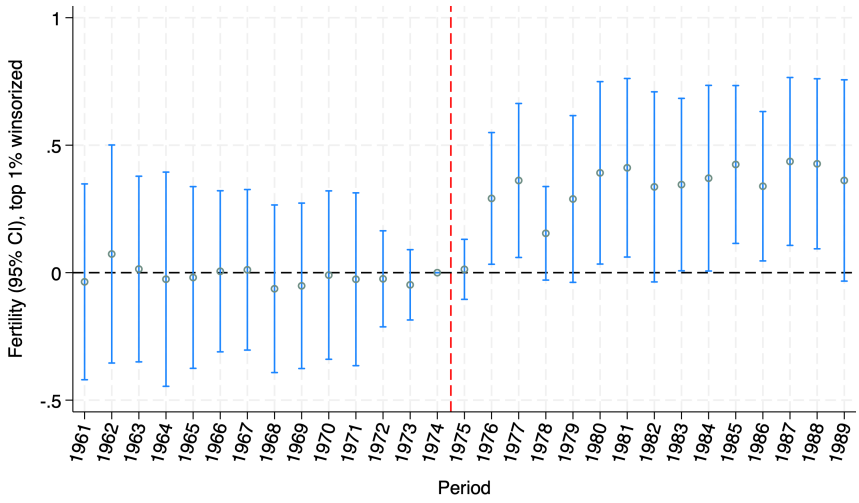


(b) Returnee men 25-29 to young women 15-24

Figure A13: Event study: Ratio of returnee men to young women 15-24, interacted with time indicators. Period 1960-1989 period with 1974, the year before the event as the omitted baseline year. Fixed effects for municipality and year and district by year. Controls include population size, literacy rates, absent and female ratios in 1940 interacted with year fixed effects. Standard errors clustered at the municipality level.

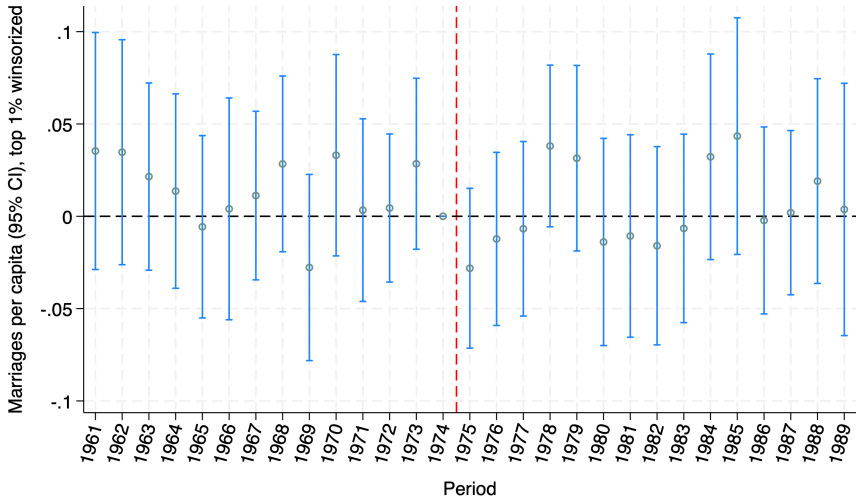


(a) Returnee men 30-34 to young women 15-24

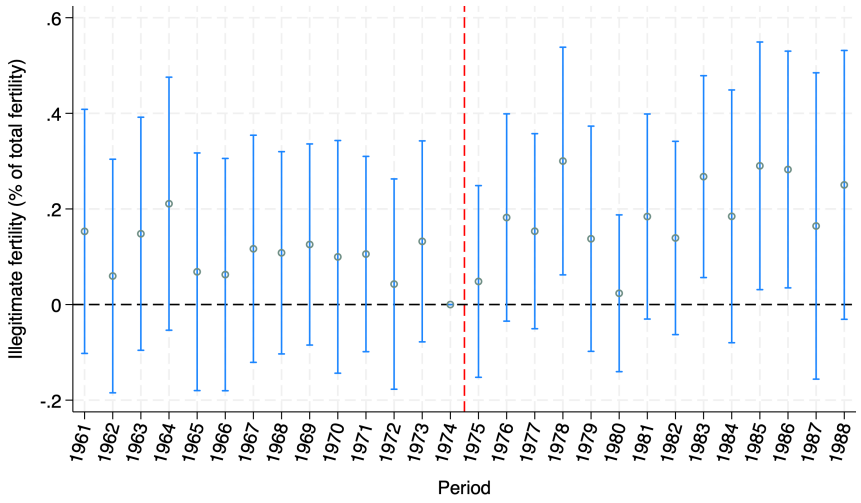


(b) Returnee men 35-39 to young women 15-24

Figure A14: Event study of marriages and non-marital fertility. Period 1960-1989 period with 1974, the year before the event as the omitted baseline year. Return shares are interacted with year indicators. Fixed effects for municipality and year and district by year. Controls include literacy rates and female ratios in 1940 interacted with year fixed effects. Standard errors clustered at the municipality level.

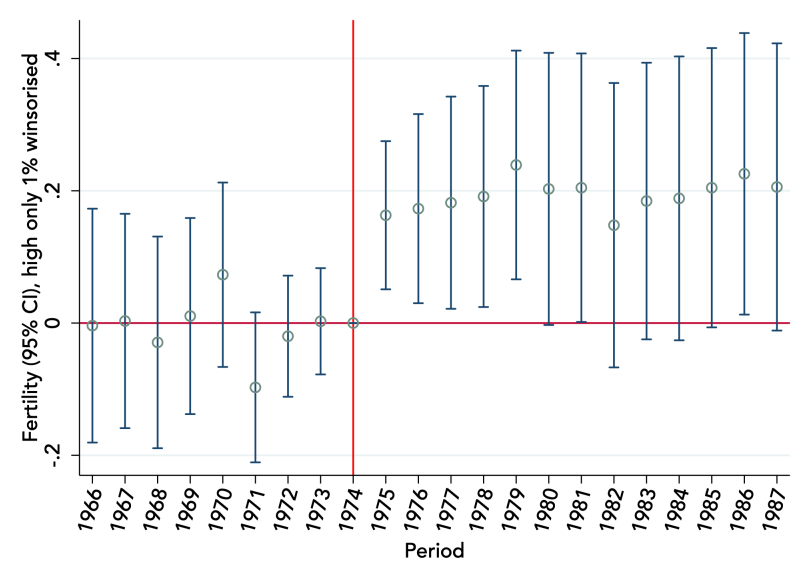


(a) Marriages relative to women aged 15-44.



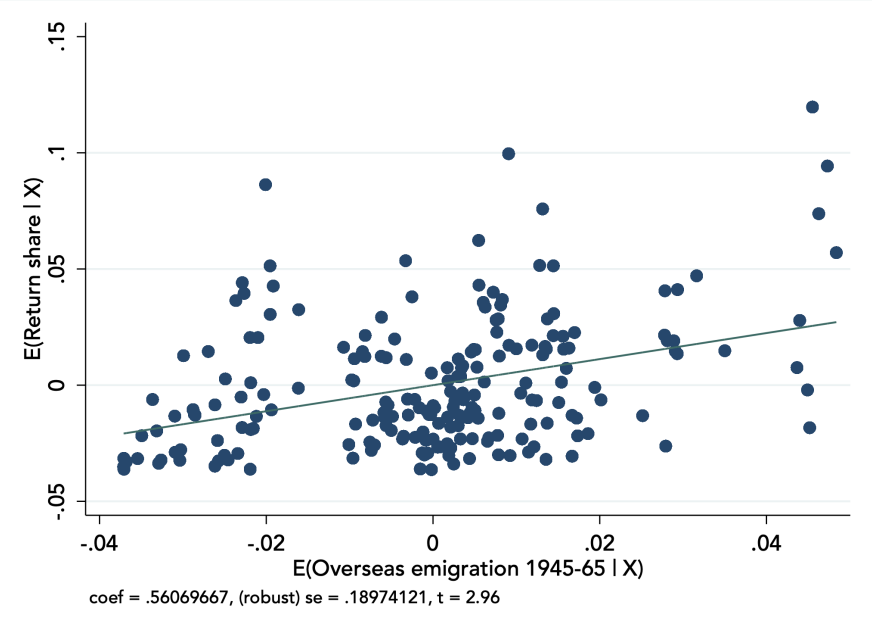
(b) Non-marital fertility (as % of total fertility)

Figure A15: Reduced form event study of fertility



Notes: Reduced form event study on the instrument: overseas emigration, controlling for total emigration (cumulative district-level series 1945-1965 per 1940 population). Time frame 1966-1987 with 1974, the year before the event, as the omitted baseline year. The instrument is interacted with year indicators. Fertility is measured as births within a municipality per number of native women of reproductive age (15-44). Fixed effects for municipality and region by year. Controls include population, literacy and female ratio in 1940, interacted with year fixed effects. Standard errors clustered at the municipality level.

Figure A16: First stage, added variable plot of return shares on overseas emigration



Notes: Added variable plot, regression of return shares in 1981 on overseas emigration 1945-1965 (relative to 1940 population), controlling for overall emigration 1945-1975 (relative to 1940 population), female ratio and literacy rate in 1940. Standard errors clustered at the district level.

Figure A17: Evolution of remittances 1965-1981: remittances of emigrants in millions of U.S. dollars and as % of GDP. Data source: Chaney (1986).