Tax Incentives and Return Migration

Jacopo Bassetto (University of Bologna, IAB)
Giuseppe Ippedico (University of Nottingham, IZA) *

March 29, 2024

LATEST VERSION AVAILABLE HERE

Abstract

Brain drain is a growing concern for many countries experiencing large emigration rates of their highly educated citizens. While several European countries have designed preferential tax schemes to attract high-skilled individuals, there is limited empirical evidence on the effectiveness of fiscal incentives in a context of brain drain, and on migration responses beyond top earners. In this paper we investigate the effects of the Italian 2010 tax scheme *"Controesodo"*, which granted a generous income tax exemption to young high-skilled expatriates who relocate to Italy. Eligibility requires a college degree as well as being born in 1969 or later, which creates suitable quasi-experimental conditions to identify the effect of tax incentives. Using a Triple Difference design and administrative data on return migration, we find that eligible individuals are 27% more likely to move back to Italy post-reform. Additionally, using social security data from the main origin country of Italian returnees (Germany), we uncover significant effects throughout the wage distribution, suggesting that mobility in response to tax incentives is a broad phenomenon not limited to top earners. A cost-benefit analysis reveals that the direct fiscal impact of the reform – a lower bound of the total effect in the presence of human capital externalities – is marginally positive, by virtue of the tax scheme targeting young high-skilled individuals.

* Bassetto: jacopo.bassetto2@unibo.it; Ippedico: giuseppe.ippedico@nottingham.ac.uk. This paper was previously circulated as "*Can Tax Incentives Bring Brains Back? Returnees Tax Schemes and High-Skilled Migration in Italy*". We are grateful to Silke Anger, Santiago Pérez, Giovanni Peri, Enrico Rettore and Monica Singhal for their invaluable feedback. We thank Juho Alasalmi, Carlo Alcaraz, Marco Bertoni, Marianne Bitler, Breno Braga, Theresa Bührle, Andrea Cerrato, Sophie Cottet, Ben Elsner, Francesco Filippucci, David Jaeger, Ninghui Li, Diana Moreira, Enrico Moretti, Ashish Shenoy, Silvia Vannutelli, as well as participants to SIEP 2023, ZEW Taxation and Mobility workshop, EUTAX workshop 2023, SOLE 2023, ACLEC 2022, EALE 2022, Stanford SITE Migration, CEMIR Junior Economist Workshop on Migration 2022, 11th conference on Immigration in OECD countries, and seminar participants at St. Andrews, Nottingham, San Diego State, and UC Davis. Any omissions or errors are the sole responsibility of the authors.

1 Introduction

Brain drain is an growing concern for several countries experiencing large emigration rates of their highly educated citizens. (Docquier and Rapoport 2012; Boeri et al. 2012; Docquier, Ozden, and Peri 2014). Once a phenomenon mostly characterizing developing countries, in the last decade there has been an increase in brain drain from developed countries such as Southern European countries. These experienced substantial emigration flows especially after the Schengen treaty introduced free mobility of labor within the European Union (Dorn and Zweimüller 2021).

Many European countries have designed preferential tax schemes to attract high-skilled foreigners and expatriates, granting fiscal incentives to individuals who move their residence to the country.[1] Are tax incentives an effective policy to induce high-skilled immigration in a context of brain drain? While a growing literature finds large migration responses of top earners and specific workers (Kleven, Landais, and Saez 2013; Kleven et al. 2014; Akcigit, Baslandze, and Stantcheva 2016; Muñoz 2023), there is limited empirical evidence on migration decisions of broader segments of the population, such as young, highly educated individuals. Further, most of the existing evidence is from Scandinavian countries and the United States, characterized by a high-skilled immigrants surplus. Thus, the question of whether tax incentives are an effective policy to mitigate brain drain remains open.

In this paper, we shed light on this question in the context of Italy, an excellent setting to study the migration response to tax incentives for several reasons. First, the availability of administrative data on international migration: while most countries accurately record immigration flows of foreigners, Italy is an exception in that it collects administrative records of emigration and return migration of Italian citizens. The second is the existence of tax variation to identify a causal effect due to the introduction of a preferential tax scheme for high-skilled return migrants. In fact, as migration choices are likely correlated with unobserved economic conditions of destination and origin locations, selection and omitted variable bias might hinder identification of the effects of tax incentives. Third, Italy has experienced large outflows of high-skilled nationals since the early 2000s and negligible inflows of high-skilled foreigners, resulting in a net loss in human capital. Last, Italy is part of the Schengen area, characterized by unrestricted

[1] Preferential tax schemes have been introduced in the Netherlands (1985), Denmark (1991), Finland (1999), Sweden (2001), France (2004), Spain (2005), Portugal (2009), and more recently in Italy (2010).

labor mobility and low migration costs.

In late 2010, Italy introduced a preferential tax scheme (Law *"Controesodo"*, "counter-exodus") for young high-skilled expatriates who moved their residence back to Italy, in a context of increasing brain drain. Specifically, the 2010 scheme granted a generous income tax exemption to expatriates who return to Italy, as long as they hold a college degree and were born in or after 1969, i.e., under 41 years old in 2010. The joint presence of these eligibility requirements create suitable quasi-experimental variation to identify the elasticity of return migration to tax incentives.

In our empirical analysis we investigate the effects of the 2010 reform on return migration using two complementary data sources. First, we use administrative data on return migration of Italian expatriates from all host countries. Our identification exploits the eligibility criteria of the tax scheme in a Difference-in-Differences (DiD) design, comparing return migration of eligible (young college graduates) and ineligible Italians (college graduates born before 1969 and high school graduates) before and after the 2010 reform. While the two groups exhibit parallel trends before the reform, there has been a large and sudden increase in emigration of young college graduates after the Great Recession (Anelli et al. 2023), which may have mechanically increased return migration of eligible individuals relative to the ineligible. For this reason, we leverage the joint presence of the birth cohort and education requirements to estimate richer Triple DiD models, where we absorb time-varying country-specific unobserved determinants of return migration of each birth cohort and education group.

Second, we use social security data on the universe of Italian workers in Germany – among the main destinations of Italian expatriates – to estimate the same specification on the probability that eligible Italians leave the registry after the reform, which allows us to explore heterogeneous responses to the tax scheme based on their earnings. Further, as a robustness check, we add another layer of differencing by comparing Italian and Spanish citizens before and after the reform. As Spain was similarly affected by the recession but did not have a preferential tax scheme for young college graduates, any recession-induced determinant of differential return migration among eligible Italians around the reform should also have affected Spanish citizens leaving Germany.

We find that the 2010 tax scheme increased substantially return migration of young and high-skilled Italian expatriates eligible for the scheme. In our favorite specification using the Italian migration data - in which we absorb origin-country-specific time-varying shocks by birth cohort and education - eligible individuals are 27% more likely

to return after the introduction of the scheme. The estimated effect is driven by Italians returning from other European countries such as France, Germany, Switzerland and the United Kingdom. We then estimate a similar effect on the probability that eligible Italians expatriates leave Germany, compared both to ineligible Italians and to eligible Spanish citizens. Furthermore, these effects are relatively homogeneous across the wage distribution of young high-skilled Italians in Germany. Therefore, a key implication of our findings is that mobility in response to tax incentives is a broad phenomenon not limited to top earners.

Are tax schemes a cost-effective policy to reduce brain drain? To answer this question, we perform a simple cost-benefit analysis to compare the foregone tax revenue from infra-marginal returnees - who would have returned to Italy even absent tax incentives - with the additional revenue generated by marginal returnees, who would not have returned absent the tax schemes.[2] First, we derive a tractable expression for the ratio between marginal to infra-marginal returnees – a key parameter that we can causally estimate in our DiD framework – in order for the tax scheme to pay for itself, depending on the features of the tax scheme (eligibility, generosity and duration) as well as other behavioral parameters, such as out-migration after incentives elapse. We then use this formula to estimate the net fiscal impact of the 2010 scheme, by comparing the estimated marginal-to-inframarginal ratio to the fiscal break-even threshold.

We find that the 2010 reform roughly pays for itself: under our most conservative DiD estimates, the direct fiscal impact of the scheme – a lower bound of the overall effect in the presence of positive human capital externalities (Kerr et al. 2016) – is marginally positive. We then assess the sensitivity of this result to the policy and behavioral parameters. Our simulations show that the key drivers of fiscal break-even are the age of returnees – due to the longer horizon of young individuals' fiscal contributions – and the out-migration rate after the scheme elapses, both of which can be influenced by the policymaker by limiting eligibility to young (high-skilled) individuals and by carefully designing a gradual phase-out of incentives.

Our paper contributes to several strands of literature. First, we contribute to the growing public finance literature on migration responses to tax differentials. Previous work shows that top earners are highly geographically mobile in response to income tax

[2]In this paper we focus on the *direct* effect of tax incentives on income tax revenue. Tax-induced migration has also indirect effects due to human capital externalities (Kerr et al. 2016), intensive margin responses (Kleven et al. 2014) and tax competition (Kleven et al. 2020), as well as fiscal effects beyond income taxes, which are beyond the scope of this paper.

differentials, both internationally (Kleven, Landais, and Saez 2013; Kleven et al. 2014; Akcigit, Baslandze, and Stantcheva 2016; Muñoz 2023; Martínez 2022; Kalin et al. 2022) and within countries (Schmidheiny 2006; Liebig, Puhani, and Sousa-Poza 2007; Moretti and Wilson 2017; Agrawal and Foremny 2019; Schmidheiny and Slotwinski 2018; Akcigit et al. 2022)[3], and particularly in specific occupations such as inventors (Akcigit, Baslandze, and Stantcheva 2016; Moretti and Wilson 2017; Akcigit et al. 2022) and football players (Kleven, Landais, and Saez 2013). Still, an open question is whether a broader population beyond top earners and specific workers migrates in response to income tax differentials (Kleven et al. 2020): while top earners tend to be very elastic even to small tax rate differences, we cannot necessarily extrapolate their responses to the entire income distribution. We show that a tax scheme targeting young college graduates – a group of high-skilled workers at the onset of their career and thus not necessarily top earners – triggers substantial migration responses.

Our second contribution is to show that tax incentives are an effective policy to attract high-skilled expatriates in a context of brain drain. While existing work finds that high-skilled immigrants are responsive to foreigners tax schemes (Kleven et al. 2014; Schmidheiny and Slotwinski 2018; Timm, Giuliodori, and Muller 2022), we are among the first to show that fiscal incentives induce return migration of high-skilled nationals residing abroad.[4] This is important as expatriates and foreigners may differ substantially in their migration responsiveness to tax differentials, as well as in their propensity to stay beyond the duration of the scheme, because of their stronger ties to their country of origin, linguistic and cultural proximity. In this regard, our paper also speaks to the literature investigating the role of migration policies on the mobility of high-skilled individuals (Kato and Sparber 2013; Kerr et al. 2017; Czaika and Parsons 2017; Boeri et al. 2012), and more generally the determinants of return migration (Dustmann and Görlach 2016a; Adda, Dustmann, and Görlach 2022).

Last, we uncover the causal effect of a large shock to net wage differentials on international migrations. While the migration literature has documented a strong association between income differentials and migration (Dustmann 2003; Grogger and Hanson 2011; Ortega and Peri 2013; Docquier, Ozden, and Peri 2014), the existing evidence is largely correlational due to the lack of exogenous sources of variation. We complement this

[3] In contrast, Young and Varner (2011) and Young et al. (2016) find little migration responses of millionaires within the US.

[4] A notable exception is Del Carpio et al. (2016), who study the effects of a program to attract Malaysian nationals living abroad that offers tax deductions upon return.

literature by studying how Italians expatriates eligible for the tax schemes respond to a large unexpected shock in net wage differentials between their home country and the destination countries. Finally, we also speak to the literature on migrants selection, and specifically to the selective return migration literature (Borjas and Bratsberg 1996; Dustmann and Görlach 2016b; Akee and Jones 2019).

The remainder of this paper unfolds as follows. In Section 2 we illustrate our setting by documenting the context of brain drain and the main features of the Italian tax schemes for return migrants. In Section 3 we describe our data sources and show some descriptive statistics. We begin our empirical analysis with some stylized graphs in Section 4.1, and then in Sections 4 and 5 we outline our identification strategy and present our results. In Section 6 we explain our cost-benefit analysis of the preferential tax schemes, and in Section 7 we conclude with a discussion and policy implications.

2 Setting

In this section we describe the institutional setting of this paper. First, we provide some context by showing the recent trends on the international migration of high-skilled Italians. Second, we describe the key features of the 2010 scheme, which introduced a preferential income tax regime to attract back high-skilled expatriates, and then we explain how we define treatment and control groups and periods. Last, as the Italian tax schemes are based on an exempted income shares rather than specific tax rates (e.g. a flat rate), we simulate the effect of eligibility on the average and marginal tax rate of a representative taxpayers for different levels of gross earnings.

2.1 The context of brain drain

Italy has been experiencing an unprecedented surge in emigration of its highly educated citizens in the past two decades. Since the early 2000s, young and tertiary-educated Italians are twice more likely to emigrate relative to the rest of the population (Appendix Figures C.1a and C.1b). The emigration rates of young and college graduates increased dramatically in the aftermath of the twin recession – the Great Recession in 2007-08 combined with the Sovereign Debt crisis that hit Southern Europe around 2011 – reaching almost a 0.5% annual emigration rate (Anelli et al. 2023). The main destinations of Italian emigrants are Western European countries, in line with the easiness to travel that EU

citizens enjoy within the Schengen area. Germany, Switzerland and the UK are consistently the top-3 destination countries of recent emigrants (Appendix Figure C.2a) and return migrants (Appendix Figure C.2b).

The recent high-skilled emigration wave has been very salient in the media.[5] In addition to losing high-skilled nationals, Italy has historically struggled to attract high-skilled foreigners, resulting in a net loss of human capital.[6] In this context of brain drain, Italy has tried to reverse the negative trend by granting fiscal incentives to high-skilled return migrants.

2.2 The 2010 preferential tax scheme

In December 2010, Italy introduced the first preferential tax scheme for inbound workers with Law 238/2010 *"Controesodo"* ("counter-exodus"), which granted a generous income tax reduction to eligible high-skilled returnees and immigrants. Under the 2010 tax scheme, eligible individuals pay substantially reduced income taxes: specifically, only 25% of their labor earnings is taxable,[7] which translates in a 30 percentage points reduction of their average and marginal income tax rates, as we show below. The expected duration of the scheme, at the time individuals made their return migration decision, was on average 3 fiscal (calendar) years from the year of return to Italy, although the effective duration ended up being longer (5 years on average).[8]

The key eligibility requirements of the 2010 scheme, which we exploit in our identification strategy, were to hold a college degree (at least a 3-year degree) and to be born on or after January 1st, 1969. In addition, there were other additional requirements: i) being a EU citizen, ii) having resided in Italy for at least 2 years prior to moving abroad, and iii) having spent at least 2 years abroad. While all EU citizens were technically eligible, the pre-residency requirement implied that most non-Italian citizens (or foreign

[5] In 2018, the Minister of Finance cited a report estimating the cost of brain drain as 14 billion per year, equivalent to 1% of the Italian GDP. This estimate was computed based on the cost of providing public education, from primary school to college, multiplied by the number of college-graduate expatriates. Source: https://www.agi.it/fact-checking/fuga_cervelli_costo-3390009/news/2018-01-20/.

[6] Becker, Ichino, and Peri (2004) document the peculiarity of Italy as a "net exporter of brains" among EU countries already for the late 1990s. As of 2010, Italy ranks at the bottom of OECD countries in terms of the share of high-educated among its foreign-born population (Appendix Figure C.3).

[7] Labor earnings include both employee and self-employed labor income, as well as business income. The 25% is a simple average between the taxable share for women (20%) and for men (30%).

[8] This was the result of the tax scheme having a set expiration date, which was postponed several times. In Figure A.1, discussed in Appendix A, we show the expected and effective duration depending on the year of return migration (ranging between 2-4 years and 3-7 years respectively).

born Italians) were likely ineligible. Therefore, the scheme targeted young high-skilled Italian expatriates who were at most 41 years old in 2010.

In late 2015, the 2010 scheme was replaced by a new scheme by legislative decree D.Lgs. 147/2015 *"Impatriati"* ("back to homeland"), which affected returnees who moved back to Italy starting from 2016. Relative to the 2010 scheme, the 2015 scheme was less generous in terms of taxable share of income (50%) but more generous in terms of duration, 5 fiscal years regardless of the year of return.[9] Furthermore, the 2015 reform slightly expanded the eligible pool, by removing the birth cohort requirement and relaxing some of the additional requirements, such as the pre-residency requirement. Finally, the preferential tax scheme was subject to another major change in 2019 - which is beyond our period of analysis - further expanding the eligible pool and increased the generosity of the scheme. In Appendix A we provide additional details on each of these preferential tax regimes.

In Figure 1, we summarize the key features of the preferential tax schemes, which we use to define our treatment and control periods and groups. Prior to 2011, returnees are subject to full taxation of their income, just like the rest of the population; therefore, the years 2006-2010 will be the pre-period in our empirical analysis.[10] Our post-period begins after the 2010 reform takes effect in 2011, and it composed of two phases depending on the year of return to Italy. In the first phase (2011-2015) the 2010 scheme is in place: eligible returnees pay income taxes only on 25% of their earnings for an average of 3 years (expected duration). In the second phase (2016-2018), eligible returnees under the 2015 scheme pay income taxes on 50% of their earnings for 5 years.

In our baseline analysis, we pool these two phases into a unique post-period and we keep the eligibility requirement fixed throughout the period of analysis. We do this for two main reasons. First, the expected tax discount from each of the two schemes is similar: overall, the 2015 scheme is less generous in terms of exempted income share (resulting in a 20% tax rate reduction rather than 30%, as we show below) but more generous in terms of duration (5 years rather than 2-4 years with uncertain extensions). Second, both schemes are similar in their eligibility requirements, as they both targeted high-skilled individuals who hold a college degree. While the 2010 scheme has a birth

[9]The taxable share was initially larger (70%), but in 2017 it was reduced to 50%.

[10]Researchers and university professors are eligible for a preferential tax scheme since 2003, still in place as of today. The researchers' scheme is more generous than the general schemes (taxable share 10% and duration 3-6 years) both in the pre- and the post-period, therefore it should not affect our pre-post comparison. For this reason, our pre-period begins in 2006.

cohort requirement (born 1969 or later), eliminated by 2015 reform, by the time the 2015 scheme kicks in (2016) it is not as binding as before: in Section 4.1 we show that as the peak age at return is around 35 years old, well below 47 years old in 2016, which would have been the cutoff age had the cohort requirement been preserved.[11] Results are nonetheless robust to excluding post-2015 years when the 2015 scheme with different eligibility requirement and exempt income percentage was in place.[12]

2.3 Income tax rates reduction under the schemes

How do these taxable shares translate in terms of average and marginal income tax rates? This is important to estimate a migration elasticity and for our cost-benefit analysis, as well as to compare the Italian schemes with those of other countries. To simulate the exact tax rate reduction under the preferential tax scheme, we recover the Italian income tax schedule in 2010 from the annual publication "OECD Taxing Wages" (OECD 2011).[13]

Let w denote the annual before-tax labor earnings of an eligible individual. Absent the incentives, after-tax earnings c are given by:

$$c = w - T(w)$$

where $T(w)$ is a non-decreasing step-wise function that determines the income tax due as a function of gross earnings. Let now s denote the share of income subject to income tax for individuals eligible for a given tax scheme. With the incentives, net earnings are now given by:

$$c = w - T(sw)$$

where s is equal to 0.2 and 0.3 for eligible women and men respectively under the 2010 tax scheme, and to 0.5 under the 2015 scheme. For simplicity, we use $s = 0.25$ for the 2010 scheme, a simple average between the taxable shares by gender.

In Figures 2a and 2b we simulate the reduction in the average and marginal income tax rates due to the 2010 scheme for different levels of before-tax earnings. The solid

[11] If anything, the inclusion of college-graduates born before 1969 among the controls in the post-2015 years will bias the results towards finding no effect of the tax scheme.

[12] In the robustness checks, we also exclude year 2011, as some minor eligibility requirements were not clear until mid-2011, when *Agenzia dell'Entrate* (the Italian fiscal authority) issued some clarifications.

[13] We also use the 2017 version for the 2015 scheme (OECD 2017). The Stata code that computes these tax rates is available upon request.

lines plot the average and marginal tax rates without the incentives ($T(w)/w$ and $T'(w)$ respectively), while the dotted lines plot the average and marginal tax rates under the fiscal incentives ($T(sw)/w$ and $T'(sw)$ respectively).[14]

The 2010 tax scheme translates in a 30 percentage points reduction in the average and marginal tax rates throughout the income distribution, as shown by the difference between the two lines.[15] The reason for such a large drop is due to the progressivity of the tax schedule: since the taxable income under the scheme (25%) is taxed at a much lower rate than the exempted income (75%), this amplifies the generosity of the tax incentives. For example, consider an eligible individual with gross earnings 100,000 euros. Under the scheme, this individual is taxed as if their earnings were just 25,000, resulting in a tax liability of just 5,000 euros (as the average tax rate is about 20% at 25,000 euros), thus an effective average tax rate of 5%, which is shown by the dotted line at the actual level of gross earnings.[16]

Overall, the preferential tax schemes grant a generous tax discount which is sizable throughout the entire income distribution, thus not limited to top earners. This is important since the 2010 scheme specifically targeted young high-skilled individuals, who may be at the onset of their careers and thus not necessarily high earners.

3 Data

In this section we describe the two main data sources that we use in our empirical analysis: the Italian migration data and the German social security data.

3.1 Italian migration data

The Italian National Statistical Institute (Istat) collects information from civil registries on all changes of residence, both within Italy and to/from abroad. These administrative,

[14]The graphs are simulated for a representative single taxpayer (the tax unit in Italy is the individual) taking into account all the standard deductions of the Italian tax schedule. Also, we assume for simplicity that individual earnings are deriving entirely from labor income.

[15]Appendix Figures A.2a and A.2b show that the tax rates reduction is remarkably similar if we include the compulsory social security contributions (payroll taxes) paid by the employee, which are unaffected by the tax schemes.

[16]The corresponding reduction for the 2015 scheme (shown in Appendix Figures A.3a and A.3b) is around 20 percentage points, a lower drop than with the 2010 scheme but a still sizable reduction. Appendix Figures A.4a and A.4b show the 2015 scheme graphs including social security contributions.

individual-level records include information on year of migration, origin and destination (Italian municipality or foreign country) as well as several demographic variables such as date of birth, birthplace, gender, education level, citizenship and marital status at the time of migration.[17] In this paper we use a customized, aggregate version of the Istat data, which includes yearly counts of Italian citizens returning to Italy from abroad (and emigrating abroad) by year of migration (2002-2018), birth cohort, education (less than high school, high school and college), sex, country of origin of returnees (or destination for emigrants) and a foreign-born indicator.[18]

These administrative international migration records are based on the enrollment and dis-enrollment from the *Anagrafe degli Italiani Residenti all'Estero* (AIRE; Registry of Italians Residing Abroad). Italian citizens are required by law to change their residence whenever they migrate abroad for more than 6 months, which involves a dis-enrollment from the civil registry of their municipality of origin and the enrollment in the AIRE registry. The main benefit of enrolling is that foreign income is not subject to income taxation in Italy, in addition to access to voting from abroad and consular services. Once they return to Italy, they are dis-enrolled from the AIRE registry and enrolled in the civil registry of their destination municipality, which is our measure of return migration. Istat collects all these individual records and aggregates them into emigration (from Italy to abroad) and return migration (from abroad to Italy) flows.[19]

The key advantage of the Istat data for our purposes is that, despite there is no information on earnings (as in most international migration datasets), we observe the all the variables determining eligibility for the 2010 scheme (birth cohort, education and year of return migration). The limitation is that there is no information on the stock of Italian expatriates abroad, which is crucial to construct a return migration rate, i.e. the inflows of returnees as a fraction of the number of Italian expats in each destination country, by birth cohort and education level.[20] For this reason, we complement

[17] Access to the full individual-level microdata is restricted. Researchers can apply for access, which must happen in the Istat cold rooms in Italy with several restrictions.

[18] In our data, birth cohorts are aggregated in 5-year intervals (e.g. 1964-1968, 1969-1973, etc.). We also obtained data with the exact year of birth but with a coarser country breakdown (Germany, Switzerland, UK, France and US), which we use in our graphical analysis in Section 4.1.

[19] Despite the substantial benefits to enroll in the AIRE registry, there is evidence that a large fraction of Italians do not enroll when they emigrate abroad (Anelli et al. 2023), and, consequently, they do not appear in the return migration data. Importantly, registration in AIRE was not required in order to be eligible for the 2010 scheme, as long as beneficiaries were able to prove their residence abroad (e.g. with pay stubs, lease, etc.). Therefore we should not expect any change in reporting incentives before-after 2010. In Appendix B we show some checks and provide additional details on the Istat-AIRE data.

[20] The Italian Ministry of Interior keeps track of the stock of Italians abroad using the AIRE registry for

the Istat data with the OECD *Database on Immigrants in OECD and non-OECD Countries* (henceforth "DIOC"). This comprehensive database is based on destination countries decennial censuses, and include information on migrant stocks by country of origin, education, age and sex, which allow us to estimate the number of eligible and ineligible Italian expatriates in the main host country.[21]

To construct our estimation sample, we drop individuals with educational level below high school to have a better control group for college graduates (the group targeted by the reform), and we limit our analysis to individuals born between 1954-1983, which ensures that we only include return migrants who were between 23 and 64 years old between 2006-2018, thus likely in the labor force. Last, we limit the analysis to Italian citizens born in Italy, to ensure that they satisfy the requirement of pre-residency in Italy prior to emigrating. [22]

3.2 German social security data

Our second main data source is the "Integrated Employment Biographies" (henceforth IEB) provided by the Institute for Employment Research (*Institut für Arbeitsmarkt- und Berufsforschung*, henceforth IAB). The IEB data is based on social security records and covers nearly all private sector employees in Germany, and have been used extensively in the literature (e.g. Card, Heining, and Kline 2013). The data include a large set of employment-related variables, such as average daily wages, industry, occupation, begin and end dates of each spell, type of spell, reason of termination, as well as key demographics (date of birth, education, sex and citizenship) which allow us to precisely identify Italians eligible for the tax schemes. For this paper, we obtained access to the full-count IEB data covering the universe of Italian citizens (as well as Spanish citizens) with at least one employment spell in Germany between 2006-2018.

As we do not observe individuals' migration behavior in the German data, we as-

voting purposes; however, they do not retain information about education level.

[21] In Appendix B, we explain in detail how we use the DIOC data to construct the stock of Italian expatriates as of 2010 by birth cohort, education, sex and host country (36 countries).

[22] In addition, eligibility requires at least 2 years of residency abroad before moving to Italy. While we do not observe the length of stay abroad, it is likely that individuals enrolled in the AIRE registry were abroad for at least 2 years. Importantly, any measurement error in this regard should not create a problem for our identification as long as it is not differential between treated and controls, before and after 2010. This would be the case if, for instance, eligible individuals were more likely to slightly extend their stay abroad in order to meet the 2-year requirement to qualify for the 2010 scheme. If this was the case, however, this should bias our results in the direction of finding no effect.

sume that working-age Italians who leave the registry for more than one year after their last employment spell are return migrants to Italy.[23] While most Italian citizens who disappear from the data likely return to Italy, some could also migrate to other countries or simply exit the labor force. Despite we cannot completely rule out this possibility, we take a number of steps to ensure that we are capturing return migration. First, as we observe the reason of termination, we exclude all individuals whose employment spells terminate for non-migration related reasons (e.g. death, retirement, etc.). Second, in Appendix B we validate our return migration measure ("leavers") by comparing it with actual migration flows of Italian citizens from Germany to Italy from the OECD International Migration Database, which are based on data from the German migration data (Destatis). Overall, while both the Italian migration data and the German social security data are imperfect measures of return migration, their limitations are nonetheless very different in terms of their underlying causes – under-reporting in the Istat data and imperfect proxy of migration in the IEB data. Therefore, it is reassuring that we find very similar results in our empirical analysis, as we show in the next sections.

In Table 1 we show the main characteristics of our sample of Italian citizens in Germany, separately for the pre- (2006-2010) and the post-period (2011-2016) and by treatment status, splitting the ineligible group into high school graduates born in 1969 or after and college graduates born before 1969. In the pre-period, relative to high school graduates in the same birth cohorts, eligible individuals (young college graduates) are slightly more likely to be female (44% vs. 40%), they have the same age (31 years old), enter in the registry at a later age (22 vs. 18 years old), likely after completing their tertiary studies in Italy, and overall spend fewer years in Germany (8 vs. 12). In terms of gross earnings, they earn the annual equivalent of 38,000 euros in the pre-period and 45,000 euros in the post-period, 54% more than high school graduates with the same average age (31 years old) but 43% less than college graduates born before 1969 (46 years old in the pre-period). Finally, they are more likely to be employed in large firms and in Finance and Insurance, although these baseline differences are stable between pre- and post period. Overall, while we expect eligible and ineligible individuals to differ in many respects because of their different age and education (by construction), we take these differences into account in our empirical analysis, as we explain in the next sections.

[23] In a similar fashion, Dicarlo (2022) proxies migrants from Italy to Switzerland with exits from the Italian Social Security data.

4 Evidence from Italian migration data

We begin our empirical analysis with stylized visual evidence using the Italian migration data (Section 4.1). We then turn to our econometric specification (Section 4.2) and then discuss the results in Section 4.3.

4.1 Visual evidence

Return migration over time

Does return migration of eligible individuals increase after the 2010 reform? We begin with a simple time-series graph plotting return migration flows of eligible and ineligible individuals. Figure 3a shows the number of Italian expatriates returning to Italy in each year, by eligibility for the income tax incentives of the 2010 scheme.[24] In the pre-period (prior to 2011), return migration flows are stable and do not exhibit differential trends based on eligibility status nor anticipation effects, which provides reassurance on the validity of our parallel trend assumption. In contrast, we see a clear slope change after 2011 for eligible group: by 2015, eligible individuals are twice more likely to return than they were in 2010, while we do not see such an increase for the ineligible group. By the end of the post-period, the inflow of eligible individuals is almost 3 times the level of 2010, as opposed to a moderate 1.5 increase for the control group.[25]

As our control group pools together individuals from different cohorts and education levels, a single line may mask heterogeneous trends across groups. Therefore, in Figure 3b we breakdown the non-eligible group by plotting separate series for college graduates born before 1969, as well as high school graduates born on or after 1969 and before 1969. Reassuringly, all groups are on similar trends before 2011, and none of the control groups displays such a distinct slope change as the one experienced by the eligible group after 2011, when the 2010 scheme is introduced.

[24] In Figure 3a, the ineligible series is standardized to match the eligible in 2010.

[25] Overall, the timing is consistent with the policy changes described in Section 2.2: we do not see any effect in 2011, consistent with the fact that the 2010 scheme became law only in December 2010, and some eligibility requirements were not fully clear until early 2012 (see Appendix A); and we see a slowdown in 2015, corresponding with the 2015 reform, which may have induced eligible individuals to slightly delay their return to until the decree was approved in late 2015.

Return migration by birth cohort and education

Which birth cohorts are driving the divergence shown in the time-series graphs? International migration flows are usually characterized by inverse-U-shaped with respect to age, peaking during prime working age. While the combination of a birth cohort and an education requirement implies that the time-series are not picking up a pure mechanical effect of age on the propensity to return, still, workers may exhibit different migration-by-age profiles depending on their education level. For instance, college graduates who complete their studies in Italy may emigrate later in life than high school graduates, and therefore may be more likely to return later.

For these reasons, as an alternative way to show our identifying variation, we plot the distribution of returnees by birth cohort and education level. Specifically, Figures 4a and 4b display the distribution of return migration flows by cohort of birth, separately college and high school graduates, for the five-year period preceding the reform (2006-2010) and after the reform (2012-2016) respectively. The horizontal axes indicate the year of birth, from older to younger cohorts, while the vertical axes plot the total number of returnees in each birth cohort, by education level.

Prior to the 2010 reform (Figure 4a), the distribution of returnees by birth cohort is remarkably similar between college and high school graduates, with no difference across individuals born before or after 1969. Further, we do not see evidence of a college-specific age profile in return, which would have complicated the interpretation of our treated-control comparison: for both series, the 1973-1974 cohorts are the most likely to return, implying that the peak age at return migration is about 35-36 years old. This also implies that the birth cohort requirement of the 2010 scheme (being born after 1969, thus 41 years old in 2011) was binding for a non-negligible share of returnees.

After the 2010 reform (Figure 4b), the same graph shows a completely different picture: while the two series still overlap to the left of the vertical line, i.e. for individuals born before 1969 who were all ineligible regardless of their educational attainment, we see a striking divergence between college-educated (eligible) and high school graduate (ineligible) returnees to the right of the vertical line. The divergence is concentrated among the cohorts born between 1971 and 1986 - therefore by individuals between their late 20s and early 40s years old - but is not driven by any particular cohort among these.[26] Interestingly, while the high school returnees distribution is still showing a peak

[26]There is only very a small difference at the exact discontinuity, i.e. between 1968 and 1969 (which

age around 36 years old, the college series now peaks in correspondence of the 1982-1983 cohort, implying that eligible returnees are on average younger than before 2010, with a peak age at return around 32-33 years old.[27]

Emigration

Overall, the graphical evidence is consistent with eligibility for the fiscal incentives increasing return migration flows. Nevertheless, other changes unrelated to the tax schemes could have contributed to the divergence in return migration occurring after 2010, such as the increase in emigration among young and high-skilled individuals after the twin recession (Anelli and Peri 2017; Anelli et al. 2023). Specifically, one may worry that a simple before-after 2010 comparison between eligible and ineligible returnees may capture a "mechanical" increase in return flows due to the higher propensity of the former to emigrate after 2010 relative to the latter.

To mitigate this concern, in Appendix Figures C.5a and C.5b we plot the year-of-birth distribution of *emigrants* by education level pre- and post-2010 respectively, i.e. a placebo version of Figures 4a and 4b. Reassuringly, we do not see any differential changes between the two periods: the distributions of college and high school graduates completely overlap even among post-reform emigrants born after 1969, in contrast to the stark divergence among post-reform returnees. In Appendix C we provide additional evidence to show that differential emigration is unlikely to be a major confounder in our analysis. In the next section, we describe our empirical strategy and we explain formally how we deal with these threats to identification in our regression framework.

4.2 Empirical strategy

We now turn to our empirical strategy to estimate the effects shown in the graphical evidence in a regression framework. Our identification strategy exploits the joint presence of the two key eligibility requirements of the 2010 scheme: being born in 1969 or later

is why we do not implement a regression discontinuity design), albeit in the expected direction. One potential explanation is that individuals born within a few years from the threshold may have anticipated a potential modification of the birth cohort requirement over time, possibly affecting their future eligibility.

[27] This is easier to see in Appendix Figure D.1, where we overlap the two graphs and shift the pre-series rightwards by 6 years.

(birth cohort requirement) as well as having a college degree (education requirement), which jointly define treatment status.[28]

Baseline DiD

We begin with a simple Difference-in-Differences (DiD) model in the spirit of Kleven et al. (2014), in which we collapse the migration data at the treatment by year level by combining the two eligibility requirements (cohort and education) into a single treatment indicator:

$$y_{gt} = \beta Treat_g * Post_t + \gamma Treat_g + \lambda_t + \epsilon_{gt} \tag{1}$$

where y_{gt} denotes a migration outcome for group g in year t (e.g., return migration rate relative to 2010), $Treat_g$ is an indicator for the eligible group, $Post_t = \mathbb{1}(t \geq 2011)$ is a dummy post-period years[29] and λ_t denotes year fixed effects. The eligible group is college graduates born in 1969 or later, while the control group includes high school graduates as well as college graduates born before 1969. Besides excluding individuals with less than high school, we also exclude foreign-born Italians (who might not be eligible) and individuals born prior to 1954 and after 1983, so that all individuals in our sample period (2006-2018) are in working-age (23-64 years old).

Our main outcome of interest is the return migration rate among Italians abroad, i.e. the yearly return migration flows relative to the stock of expatriates as of 2010 (using the OECD DIOC data), just before the preferential tax scheme kicks in. We focus on this outcome for three reasons. First, it is economically meaningful and has an intuitive interpretation. Second, it accounts for the distribution of eligible and non-eligible individuals among expatriates before the introduction of tax incentives, which is especially important for the regressions exploiting the host-country variation, as we explain below. Third, it allows us to directly compare the results obtained using the Italian migration data and the German social security data, as in the latter the outcome is the individual probability of leaving Germany, i.e. the individual-level counterpart of a return migration rate.[30]

[28] We use the terms "Eligible" and "Treated" interchangeably, as we do not observe actual take-up of tax schemes in our data. Thus, our estimates should be interpreted as intention-to-treat (ITT) effects.

[29] In the baseline, the pre-period is 2006-2010 and the post-period is 2011-2018, which includes post-2015-scheme years. Results are robust using 2011-2015 as the post-period (2010 scheme years only).

[30] As an alternative outcome, we use the log count of returnees (or the hyperbolic sine to deal with zeros), which we also use to compute the elasticity to the net-of-tax rate.

The identifying assumption is that, absent tax incentives, eligible and non-eligible individuals would have had a similar evolution in the likelihood of returning. Subject to this common trend assumption, β can be interpreted as the reduced-form, intention-to-treat (ITT) effect of eligibility for tax incentives on return migration. Figure 3a provides some reassurance on the validity of our parallel trend assumption. Nevertheless, several threats could pose a challenge to a causal interpretation of the estimated effect. For instance, if labor demand for college graduates in Italy was less impacted than demand for high school graduates by the Sovereign Debt crisis in 2011, we would overestimate the effect of tax incentives. Further, group-specific labor demand shocks may have also differentially affected emigration flows, mechanically increasing returns among these broadly defined groups.

Triple DiD

To deal with these threats, we exploit the joint presence of the birth cohort and education requirements to estimate a Triple Difference-in-Differences (Triple DiD) model:

$$y_{cet} = \beta \mathbb{1}(c \geq 1969) * \mathbb{1}(e = college) * Post_t + \gamma_{ce} + \psi_{ct} + \phi_{et} + \epsilon_{cet} \tag{2}$$

where y_{cet} denote a migration outcome for individuals in birth cohort c with education level e in year t, and the effect of eligibility is now captured by the triple interaction $\mathbb{1}(c \geq 1969) * \mathbb{1}(e = college) * Post_t$. The key advantage of a Triple DiD model is that we can include birth cohort-by-year (ψ_{ct}) and education-by-year (ϕ_{et}) fixed effects, which absorb any cohort-specific and college-specific time-varying shocks such as differential changes in the relative labor demand for college-educated workers in Italy, as well as the increased emigration among younger individuals in the post-period.

Furthermore, we use all the information available in the Italian administrative data to estimate a Triple DiD specification across cells defined by birth cohort c, education level e, origin country o, sex s and year of migration t:

$$y_{ceost} = \beta \mathbb{1}(c \geq 1969) * \mathbb{1}(e = college) * Post_t + \gamma_{ceos} + \psi_{cot} + \phi_{eot} + \zeta_{st} + \epsilon_{ceost} \tag{3}$$

In this richer specification, while eligibility is still identified by the triple interaction between the indicators for education ($e = college$), birth cohort ($c \geq 1969$) and the post period years, we can also allow returnees from different origin countries o - who

likely experience origin-specific labor market shocks and hence different opportunity costs of moving back to Italy - to be on different trends. Specifically, the inclusion of cohort-by-origin-by-time ψ_{cot} and education-by-origin-by-time ϕ_{eot} fixed effects absorbs any *origin country specific* shock pertaining to young and college-educated returnees after 2010, such as country-specific labor market shocks that may affect the probability of returning to Italy differently for Italian expatriates of different cohorts and education ("push factors"). Put differently, the identifying variation now stems from comparing eligible and non-eligible individuals *within* origin countries, thus partialling out any time invariant characteristic of foreign countries as well as country-specific trends.[31]

We estimate Equation 3 with Weighted Least Squares using as weights the stock of Italian expatriates residing in each foreign country as of 2010 by cohort, education and sex (constructed using the OECD DIOC data), a measure of the size of the group "at risk" of returning to Italy. Further, we cluster standard errors at the cohort-education-origin-sex level to account for within-cell serial correlation.[32]

The inclusion of cohort-(by-origin-)by-year and education-(by-origin-)by-year fixed effects in the previous specifications should fully absorb the greater propensity of college graduates and younger cohorts to return to Italy due to their increasing emigration after the double dip recession. Still, one may worry that our estimates may capture a return migration trend, unrelated to tax incentives, specifically characterizing the eligible group (young college graduates), and, only kicking in after the 2010 reform. For this reason, using the German social security data, we will further compare young high-skilled Italians with Spanish citizens, who experienced remarkably similar emigration pattern during the Recession, but who did not have access to a comparable tax scheme in their origin country.

4.3 Effects of eligibility on return migration

Baseline DiD results

In Table 2, we confirm the visual evidence presented above by estimating a simple DiD regression with multiple periods (Equation 1), where we collapse data into eligibility status by year cells, thus mimicking the trends shown in Figures 3a and 3b. In Column

[31] Further, we allow for different slopes by between women and men (ζ_{st}).
[32] Results are robust to alternatives such as multi-way clustering.

1 we pool all control groups into the non-eligible group, while in Columns 2 and 3 we use only college graduates born before 1969 and high school graduates born on or after 1969 as control groups respectively. The estimates are in line with the graphical evidence. Looking at Column 1, the coefficient of the interaction term $Treated * Post$ is positive and statistically significant, implying that eligible individuals are more likely 54% more likely to return in the post period relative to non-eligible individuals (a 0.7 percentage points increase relative to a baseline of 1.3%). Consistent with Figure 3b, the effect is slightly smaller if we only use college graduates born before 1969 (48% increase) or high school graduates born after 1969 (45% increase) as control group. The table also shows the implied share of marginal to inframarginal individuals among post-reform eligible returnees (ranging between 38-50%), i.e. how many eligible individuals would not have returned absent the incentives (the DiD coefficient) divided by the pre-period mean outcome among the treated plus the pre-post change among the controls, which we use in our cost-benefit analysis in Section 6.

To obtain an elasticity, in Appendix Table D.1 we estimate same DiD regressions using log return migration as outcome and the log average net-of-tax rate - instrumented with the $Treat * Post$ interaction - as the key explanatory variable.[33] The advantage of this log-log specification is that the coefficient can be directly interpreted as the elasticity of return migration with respect to the average net-of-tax rate, which we can compare to the literature; the drawback is that we are implicitly assuming full take-up (as we proxy the reduced tax rate with eligibility) and a constant elasticity across the earnings distribution. We estimate an elasticity slightly above 1, which is smaller than the corresponding elasticity for *foreigners* in other contexts such as Denmark (1.59 in Kleven et al. 2014), or in the Netherlands ($\approx$2 in Timm, Giuliodori, and Muller 2022), but substantially larger and more precisely estimated than previous estimates for returning *expatriates* (e.g. compared to the Danish case). This is consistent with Italian tax incentives targeting Italian expatriates, as Italy is experiencing a brain drain which was not the case in the Scandinavian context.

[33] We use the average net-of-tax rates plotted in Figure 2a assuming a gross income of 75,000 euros, as explained in Section 2.3. As the tax rate reduction is fairly constant (30 p.p.) throughout the income distribution, the elasticity is not particularly sensitive to this choice.

Triple DiD results

One may worry that treated individuals could have been on different trends than non-eligible individuals post-reform, e.g. due to a differential impact of the recession on demand for college graduates relative to high school graduates in Italy. As eligibility in our setting is jointly based on both age and education, we can estimate a Triple DiD model where we compare the pre-post difference in return migration among young college graduates, netting out the difference by education level among young individuals and the difference by birth cohort among college graduates. The key advantage of this Triple differencing approach is that it allows us to include different intercepts by for each birth cohort and education level as well as differential trends by education and by cohort by including their interaction with year fixed effects (Equation 2).

The Triple DiD results are shown in Table 3, where observations are now birth cohort (grouped in 5-year bins) by education by year cells. In Column 1, we first replicate the DiD regression by including intercepts for each combination of cohort and education (as well as year fixed effects) but no group-specific slopes, and we obtain a coefficient comparable in size to the one in Column 1 of Table 2. In contrast, in Column 2 we fully saturate the model by also including cohort-by-year and education-by-year fixed effects, which absorb the pre-post variation in return migration specific to each cohort and to college graduates. This tighter specification delivers an estimate which is still statistically significant and economically meaningful (a 28% increase relative to the baseline), but almost half in size relative to the DiD estimate.

The comparison reveals that, while a sizable fraction of the observed divergence between eligible and ineligible returnees in the graphical analysis can be attributed to time-varying unobservables common to individuals belonging to the same cohort or with the education level, eligibility for the tax incentives predicts a large and significant increase in return migration even after controlling for these differential trends.

Variation across host countries

As European countries were unevenly affected by the double-dip recession, which in turn could have influenced the opportunity cost of moving back to Italy differentially between eligible and non-eligible individuals, origin country-specific labor demand shocks specific to the eligible group may be partially driving the effects estimated in Tables 2

and 3. To assess whether this is the case, we estimate regressions where we leverages within-origin-country variation to estimate the effect of eligibility on return migration rates (Equation 3), therefore a much richer variation than the previous tables and in the graphical analysis shown in Section 4.1. To deal with serial correlation within groups - which now are defined by birth cohort, education level, origin country and sex - we cluster standard errors at the cohort-education-origin-sex level. Further, to deal with the heterogeneous size of these finer cells, we weight observations by the stock of Italian expatriates in each cell as of 2010.

The results are presented in Table 4, which is articulated in three columns. In Column 1 we estimate a simple DiD regression where we only include year and group fixed effects. The estimate is highly statistically significant and its size is in line withe the previous tables, suggesting that using these finer cells - coupled with weighting to deal with heterogeneous group size - does not alter significantly the estimate relative to the baseline DiD on aggregated data. Similarly, in Column 2 we show the corresponding Triple DiD estimate, by including cohort-by-year and education-by-year effects, as well as specific slopes to each origin country and by gender. Again, the results are in line with Table 3. Column 3 shows the result of estimating Equation 3, i.e. a Triple DiD model where we further absorb *origin-specific* time-varying shocks common to each birth cohort and to college graduates. Our results survive to this demanding specification, with eligibility post-reform predicting a 27% increase relative to the baseline, which reassures that post-2010 host-country shocks specific to young and to high-skilled workers are not driving the estimated effect of tax incentives on return migration.

Last, this richer source of variation delivers enough power to estimate a dynamic specification, where we allow the treatment effect to differ by year.[34] Figure 5 plots the estimated β_τ coefficients and the corresponding 95% C.I., both for the baseline with all controls, and for narrower control groups defined by education (i.e., high school graduates born in or after 1969) and cohort (i.e., college graduates born before 1969) as controls. Consistent with the raw-data evidence shown in Figures 3a and 3b, the effect grows over time, with the coefficient starting to be marginally significant around 2012-13

[34]Specifically, we estimate the following regression:

$$y_{gt} = \sum_{\tau} \beta_\tau * Treat_g * \mathbb{1}(t = \tau) + \gamma_g + \xi' X_{gt} + \epsilon_{gt} \tag{4}$$

i.e. the corresponding event-study specification to Equation 3, with groups g still being defined combinations of cohort, education, origin and sex, where $\tau \in [2006, 2018]$, 2010 is the excluded year, and X_{gt} includes origin-year and female-year fixed effects.

and then becoming larger and more stable around 2014. Importantly, the yearly effect in the post-2015 scheme years (2016-2018) is similar in size to the previous years (2013-2014), implying that our estimates are not driven by the post-2015 scheme years with expanded eligibility criteria.

Heterogeneity and robustness checks

Which countries do marginal returnees tend to leave to return to Italy in response to the tax incentives? Do migration responses differ between women and men? To answer these questions, in Figure 6 we show the estimates from separate regressions for the main groups that we observe in the Italian data. The baseline coefficient shows the estimate in Column 2 of Table 3. The estimates are not significantly different by gender: while for women we estimate a slightly larger effect (consistent with the larger incentive), the coefficients are not statistically significantly different from each other.[35] In terms of countries of origin, the migration response is driven by returnees from the main EU countries such as Germany, Switzerland, UK and France, consistent with expatriates in nearby countries, thus with a lower migration costs (as opposed to the more distant and visa-restricted United States), being more responsive to the shock in net wage differentials created by the tax incentives.

In Appendix Table D.4, we then perform some additional robustness checks by estimating Equation 3 using different sub-samples. Column 1 is the baseline - the same specification of Column 3 of Table 4. In Columns 2-3, we keep European countries and Switzerland and EU countries only. Coefficients are slightly larger, suggesting that countries within the free-mobility Schengen area are the key drivers of our estimated effects. Last, in Columns 4-5, we show that results are robust to excluding years 2016-2018 - when returnees are subject to the new regime of the 2015 scheme (without the birth-cohort requirement) - as well as to the exclusion of year 2011, as some eligibility requirements of the 2010 scheme were not clear until mid-2011.

[35] Joint regressions with the interaction of $Treat * Post$ with dummies for female and for the main countries deliver similar results.

5 Evidence from German social security data

As a second approach to evaluate the effects of tax incentives on return migration, we use the universe of Italian migrants working in Germany. As we observe education and birth cohort in the German social security data, we can replicate the analysis using individual-level data on Italian citizens who leave the register. Then, by exploiting the panel structure of the data and the detailed labor market information, we can characterize the last spells before leaving and investigate whether tax incentives affect the selection of return migrants.

5.1 Empirical strategy

To investigate the effect on returns, we estimate the following equation:

$$L_{igt} = \beta Treat_g * Post_t + \gamma_g + \psi' X_{igt} + \lambda_t + \epsilon_{igt} \tag{5}$$

where L_{igt} is a dummy for individual i in the eligibility group g leaving the German labor market in year t, $Treat_g$ is a dummy for being eligible to the tax incentives (born after 1969 and with tertiary education degree), $Post_t$ is a dummy equal to 1 for the post-2010 scheme years, X_{igt} is a vector of individual- and group-by-time controls[36], λ_t are year fixed effects and ϵ_{it} is the error term. In all regressions, standard errors are clustered at the individual level to take into account the panel structure of the data. The parameter of interest is β which captures the post-reform difference in the probability of leaving between treated and control migrants relative to the pre-reform difference.

An important threat to identification, which we can tackle with the German data, is that young college graduate Italian expatriates may have experienced differential labor market conditions in their host countries relative to the controls after 2010, which may have influenced the probability of return migration regardless of the tax incentives. For instance, if eligible Italians in Germany tend to be employed in specific sectors (e.g. Finance), and if firms in these sectors faced negative shocks during the post-period (for instance, German banks being exposed to the Sovereign debt crisis hitting Southern Europe because of their bond holdings), these push factors could have induced young

[36]Controls include birth cohort, education, sex, age at entry, years in the registry, as well as year-by-sector and year-by-occupation indicators, year-by-education and year-by-cohort fixed effects. Thus, the model mimics the Triple DiD analysis with the Italian data.

college graduate Italians to be more likely to return to Italy, for reasons unrelated to the tax incentives. For this reason, as a check on the validity of our DiD design, we use Spanish citizens in Germany as an additional layer of differencing by estimating the following Triple DiD specification:

$$L_{ignt} = \beta Treat_g * Italian_n * Post_t + \gamma_g + \psi' X_{ignt} + \lambda_t + \epsilon_{ignt} \tag{6}$$

where we compare eligible individuals of Italian nationality n with eligible individuals with Spanish nationalities to the same pre-post difference among the ineligible. The key intuition for this Triple DiD is that, if recession-induced labor market shocks increased return migration among young high-skilled Italians in Germany, it should also have affected return migration of this group among Spanish nationals. Spaniards are a natural comparison group for Italians for two reasons: i) Spain had a similar double-dip recession to Italy, which triggered with similarly large emigration flows towards Germany (Bertoli, Brücker, and Moraga 2016), and ii) Spain did not implement any preferential tax scheme targeted to young college graduates in this period.[37]

Last, we also present results of dynamic DiD regressions where, instead of a $Post_t$ dummy, we include interactions between the $Eligible_g$ dummy and year fixed effects:

$$L_{igt} = \sum_{\tau} \beta_\tau Treat_g * \mathbb{1}(t = \tau) + \gamma_g + \psi' X_{igt} + \lambda_t + \epsilon_{igt} \tag{7}$$

5.2 Effects on the probability of leaving the German registry

In this section we present results of estimating Equation 3 with the IEB data on Italian workers in Germany. The outcome variable is the individual probability of leaving the register in year $t+1$, conditional on being in the register in year t. Treated and control groups are constructed in the same as for analysis with the Italian migration data. As there is evidence in the literature that return migrants are likely to transition through unemployment spells before returning (Bijwaard, Schluter, and Wahba 2014; Akee and Jones 2019), we limit the analysis to leavers who were employed in the year before

[37] In 2005, Spain introduced a preferential tax scheme for high earners (Royal Decree 687/2005), also known as "Beckham Law" due to soccer player David Beckham being one of the first beneficiaries. Under this scheme, foreigners (and long-term expatriates with at least 10 years abroad) who relocate to Spain for employment reasons can choose to be taxed as nonresidents and pay a flat 24% income tax rate for 6 years. Importantly for our purposes, the Spanish scheme primarily targets foreigners and does not limit eligibility based on education and/or age.

disappearing.[38] For this reason, the post-period will be 2010-2016.

In Figure 7, we show an event-study graph by plotting the coefficients of the interaction between the Treated dummy and year FEs. While we do not see any pre-trend prior to 2011, the probability that the eligible group leaves the registry is significantly higher after 2011 relative to the controls, regardless of whether we use all control groups, high school graduates born on or after 1969 or college graduates born before 1969.

Table 5 shows the corresponding DiD results, pooling all control groups in Column 1, and separately for the two usual control groups, namely college graduates born before 1969 (Column 2) and high school graduates born on or after 1969 (Column 3) as control groups respectively. We find a positive and statistically significant effect of the tax scheme on the probability of leaving the register. Specifically, we estimate a 0.5 percentage point increase in the probability of leaving the register after the 2010 reform for the eligible group relative to the controls, which corresponds to a 21% increase relative to the baseline. The coefficients are similar by using the young high school graduates (Column 2) and the college graduates born before 1969 (Column 3) as control groups, with the effect ranging between 20-37% of the baseline probability of leaving. Reassuringly, these effects are similar to the ones in Tables 2 and Figure 6 using the Italian data on return migration from Germany, which suggests that the probability of leaving the register is likely a good proxy for the probability of returning to Italy.

5.3 Heterogeneous effects by earnings and firms characteristics

To shed light on the characteristics of workers migrating in response to the tax incentives, we estimate the DiD model separately for different subgroups of workers, depending on their wage and their firm characteristic in their last employment spell the year before leaving. To account for the potentially different composition of the eligible and ineligible (due to their age and education), we compute separate wage distributions for the four groups defined by education (college and high school) and birth cohort (born on or before 1969 and born after 1969), and compare each quartile among eligible with the corresponding quartile among the ineligible groups.

Figure 8 show graphically the results of this exercise. Importantly, we find homogeneous effects throughout the wage distribution of Italian workers in Germany, except

[38] Results are robust to using the employment spell two years before leaving.

for the bottom quartile. Furthermore, we find a stronger responsiveness of workers employed in medium-sized and large firms, in sectors such as IT, communication and healthcare. Overall, while in line with the literature on migration responses to taxation (e.g. Kleven et al. 2014), our findings suggest that tax-induced migration is a broad phenomenon, not limited to top earners or specific occupations.

5.4 Comparing Italians and Spaniards

In Table 6, we show the results of comparing Italians to Spaniards. In Column 1, we estimate a simple DiD model only on eligible individuals (young college graduates) with the treatment dummy being an indicator for being an Italian citizens. Despite the different definition of treatment and control groups, the point estimate is significant although in size than our baseline, implying that eligible Italians were 16% more likely to leave Germany post-reform relative to "eligible" Spaniards, i.e. Spanish citizens born after 1969 with a college degree. In Column 2, to deal with the potentially different composition across education and age among Italian and Spanish migrants in Germany, we estimate a Triple DiD specification on a 1:1 matched sample of Italians and Spaniards based on observable characteristics.[39] The coefficient of the triple interaction $Italian * Treated * Post$ is significant and almost identical to the baseline (a 20% increase). Finally, in Column 3 we estimate a placebo DiD regressions where we run our main specification by using Spaniards instead of Italians. If our estimated treatment effect is indeed due to these differential shocks hitting young college graduates, then the placebo should deliver a significant "treatment" effect among Spanish expatriates in Germany. Reassuringly, the placebo $Treated * Post$ interaction is not statistically significant and is much smaller in size than the true estimate, suggesting that the latter is not driven by these unobserved confounders.

6 Effects on income tax revenue

Are preferential tax schemes are a cost-effective policy to attract expatriates back? Our results shows that eligible expatriates were more likely, relative to controls, to return to Italy after the introduction of the 2010 tax scheme, implying that the tax incentives

[39] Matching variables: education, age, gender, sector, occupation, years in the registry.

induced a number of high-skilled individuals who would not have returned absent the incentives to move back to Italy (the "marginal returnees"). At the same time, the benefit accrued to those individuals who would have returned even absent the incentives (the "infra-marginal" returnees). Is the increase in tax revenue from marginal returnees enough to offset the loss in tax revenue from infra-marginal returnees?

To answer this question, we perform a simple cost-benefit analysis to estimate the effects of the tax scheme on income tax revenue. Our analysis focuses on the *direct* fiscal impact through the tax-scheme-induced return migration (i.e. on the extensive margin). For simplicity, we abstract from the indirect effects arising from fiscal cross-effects on other tax bases besides labor income (VAT, capital income, social security) as well as from non-fiscal effects, such as human capital externalities and other economic effects on receiving firms and locations. Since the latter are the key rationale behind the implementation of these tax schemes targeting high-skilled individuals, in line with the extensive literature documenting their positive externalities on other workers (Moretti 2004; Winters 2014; Kerr et al. 2016; Anelli et al. 2023), our cost-benefit analysis should be interpreted as a lower bound of the overall effect of the tax schemes.

Our key result is that the 2010 scheme marginally breaks even: the fraction of marginal to infra-marginal returnees implied by our most conservative DiD estimates is close to the break-even critical value that equates fiscal benefits and costs. To show that, we provide a tractable formula for the fiscal break-even threshold, which we estimate based on the migration data, the scheme features (e.g. taxable share and duration) and under a set of assumptions about unobserved behavioral parameters, such as out-migration after the scheme elapses.[40] While deliberately simple, our cost-benefit analysis highlights how the fiscal impact crucially depends on key features of the tax scheme, such as the eligibility criteria, with important policy implications for the design preferential tax schemes.

[40]While the results of our cost-benefit analysis are based on a number of assumptions which we cannot completely test given our data limitations, we spell each assumption very clearly and we discuss their plausibility, as well as the quantitative and qualitative implications of relaxing each of them.

6.1 The fiscal impact of the 2010 scheme

Let the total number of post-reform eligible returnees be denoted by $M + I$, where M and I denote marginal and infra-marginal returnees respectively.[41] To fix ideas, consider Figure 3a. If our identification assumptions hold, the average post-reform value of the eligible series (red line) proxies $M + I$, the average post-reform value of the ineligible one (blue line) gives I, and thus the number of marginal returnees M is simply the difference between the two lines. Therefore, the share of marginal returnees M/I is simply the ratio between the Average Treatment Effect (ATE) and the average post-reform outcome for the untreated group.[42]

Having defined marginal and infra-marginal eligible returnees, we can now provide a formula to compare the costs and benefits for the Italian public finance. Recall from Section 2.3 that $T(w_{it})$ denotes the tax liability of individual i with w_{it} gross annual earnings in year t, and $T(sw_{it})$ denotes the tax liability under a given tax schemes, where s is the taxable share. Let β be a discount factor and δ denote the yearly probability that an eligible returnee leaves the labor force, either by re-emigrating abroad or by transitioning into unemployment. For simplicity, we assume that $\delta = 0$ throughout the duration of the tax scheme, and $\delta > 0$ afterwards.

In order for the scheme to have a positive net fiscal impact, we need the following condition to be satisfied:

$$\underbrace{\sum_{t=1}^{d} \beta^t \sum_{i \in M} T(sw_{it})}_{\substack{\text{Revenue from M} \\ \text{during scheme}}} + \underbrace{\sum_{t>d} \beta^t (1-\delta)^t \sum_{i \in M} T(w_{it})}_{\substack{\text{Revenue from M} \\ \text{after scheme}}} \geq \underbrace{\sum_{t=1}^{d} \beta^t \sum_{i \in I} [T(w_{it}) - T(sw_{it})]}_{\text{Revenue loss from I}} \tag{8}$$

The left-hand-side of (8) – the fiscal benefit of the tax scheme – is the additional tax revenue generated by marginal returnees ($i \in M$), who would not have returned absent the incentives, and it is the sum of two terms. The first component is the present

[41] The concept of marginal and infra-marginal returnees is based on the potential outcome framework, with the two groups corresponding to "compliers" and "always-takers". Formally, let Y_i^0 denote the probability that an eligible expatriate i returns to Italy absent the reform ($D = 0$), and Y_i^1 the probability of i returning with the incentives in place ($D = 1$). Under the assumption of no-defiers (i.e., $Y_i^1 \geq Y_i^0$), we have that $i \in I$ if and only if $Y_i^1 = Y_i^0$, while $i \in M$ if and only if $Y_i^1 > Y_i^0$.

[42] This is the case because in the graph the control series is standardized to be equal to the mean of the treated in the pre-period. If that was not the case, the ratio M/I would be given by the DD effect divided by the sum of the mean outcome for the treated in the pre-period and the change in the mean outcome for the untreated.

discounted value (PDV) of the reduced tax revenue from those M individuals during their first d years in the country, when they benefit from the tax scheme (with taxable share s). The second term is the PDV of the full tax revenue from M individuals after the scheme elapses (i.e. for $t > d$), assuming that a fraction δ of them out-migrates abroad again in each post-scheme year.

The right-hand-side of (8) – the fiscal cost of the tax scheme – is the loss in tax revenue stemming from the fact that infra-marginal returnees ($i \in I$), who would have returned even absent the incentives, benefit from the scheme as well. This foregone revenue is given by the PDV of the difference between the full tax revenue and the reduced tax revenue from I individuals throughout the d years when the tax scheme (with taxable share s) is in place.

We can then solve Equation 8 to obtain the minimum share of marginal to infra-marginal returnees such that for the fiscal benefit outweighs the cost, and compare this break-even threshold to the M/I estimated in our DiD analysis in Section 4. To solve (8), we use the 2010 scheme parameters $s = 0.25$ and $d = 5$.[43] As the statutory retirement age in Italy is 65 and the average age of eligible post-reform returnees in the migration data is 35 years old, these imply 25 years of fiscal contributions for marginal returnees (beyond the 5 years duration). Unfortunately, we do not observe earnings, take-up and the duration of stay in the Italian migration data. Therefore, to obtain the break-even condition, we make the following assumptions based on the available data:

(i) full take-up; no intensive margin responses; no pass-through to gross wages

(ii) average initial earnings: $w_{i1} = w_1 = 75,000 \ \ \forall i \in \{M, I\}$ [44]

(iii) annual earnings growth by age: $(w_t - w_{t-1})/w_t = 3\%$ [45]

(iv) out-migration rate: $\delta = 5\%$ [46]

[43]The taxable share of 0.25 is a simple average between 0.2 (women) and 0.3 (men), while the 5-year duration is a simple average of the effective number of years of reduced taxation that returnees in 2011-2015 benefited from under the 2010 scheme, which ranges between 3-7 years (see Figure A.1 for details).

[44]The average gross earnings of beneficiaries of the 2010 tax scheme is around 75,000 euros, according to the statistics released by Ministry of Economics and Finance for 2016, the earliest year available (MEF 2017). This implies $T(w) = 26,250$ and $T(0.25w) = 3,750$ using the tabulation plotted in Figure 2a.

[45]Source: authors' elaboration on Italian Labor Force Survey data.

[46]Estimating δ requires panel data following individuals over time throughout their stay in Italy after returning, which is not possible with our data. Note that a 5% annual out-migration rate implies that over 22% (40%) of marginal returnees will have left the country 5 years (10 years) after the incentives elapse.

Under assumptions (i)-(iv), and using a discount rate of $(1-\beta) = 1\%$[47], the break-even condition simplifies to:

$$\frac{M}{I} \geq 30.6\%$$

i.e. we need at least 31 marginal returnees for each 100 infra-marginal, or, put differently, a 31% increase in the probability that eligible individuals return. As our most conservative estimates of the M/I ratio range between 27-34% (Table 4), we conclude that the 2010 scheme had a marginally positive net fiscal impact.

6.2 Sensitivity to parameter values

We now discuss how relaxing the assumptions in the previous section and varying parameter values affects the cost-benefit analysis. To assess the sensitivity of the break-even condition, in Figure 9 we simulate the break-even marginal-to-inframarginal ratio (i.e., the solution of Equation 8) for a plausible range of values for each parameter, keeping all the other parameters fixed to the baseline.

Out-migration rate. A key parameter governing the fiscal impact is δ, the out-migration rate (or "depreciation rate") of the stock of returnees after the scheme elapses. Figure 9 shows that the break-even threshold is highly sensitive to the out-migration rate. Therefore, it is crucial for the policymaker to keep subsequent out-migration low in order to achieve a positive fiscal impact, as we discuss at the end of this section.

Discount rate. As the fiscal benefit derives from marginal returnees' tax contributions post-scheme while the fiscal cost from infra-marginal returnees during the scheme, a higher discount rate β increases the break-even threshold of the scheme, as shown in Figure 9. In other words, the higher the borrowing cost for the government, the costlier is to subsidize returnees today in exchange for larger contributions in the future.

Taxable share and duration. Increasing the taxable share s – or reducing the duration d – produces two effects: i) it mechanically increases the threshold, as per-capita revenue during the scheme goes up both from M and I individuals, for a given fraction of marginal returnees; and ii) it plausibly reduces the fraction of marginal returnees $\frac{M}{I}$ as tax incentives are less attractive, reducing tax revenue from M both during and after the scheme. Therefore, the total effect is ambiguous and it depends on the size of the behavioral response: if marginal returnees are highly elastic to a higher s (or lower d),

[47] This is roughly the yearly interest rate on newly issued Italian government bonds between 2010-2020.

then it is likely that the latter effect dominates, reducing tax revenue. Focusing on i), Figure 9 shows that while the taxable share has a negligible impact on the threshold, a longer duration significantly tightens the conditions for a fiscal break-even, since a longer duration reduces tax revenue after the scheme.

Age at return. Returnees' age is another important factor determining the break-even of the tax scheme, as shown in Figure 9. The higher the age at return, the lower the number of years of fiscal contribution from marginal returnees after the scheme elapses and before their retirement, and therefore the lower the net fiscal benefit.[48] Importantly, the policymaker can influence this parameter by setting an age limit or a birth cohort requirement, such as in the 2010 scheme.

Average earnings. As the tax rate reduction is largely independent from the level of annual earnings (Figure 2a), the level and growth rate of annual earnings have little impact on the break-even condition, as shown in Figure 9. Still, an implicit assumption in our analysis is that marginal and inframarginal returnees have the same average earnings levels ($w_M/w_I = 1$) and trajectories. Generally, higher earners tend to be more responsive to tax incentives through migration (Kleven et al. 2020), in line with our findings using the German data. If this is the case, a ratio $w_M/w_I > 1$ would reduce the break-even threshold of the policy, as shown in Figure 9.

Imperfect take-up. In the analysis we assume full take-up for both marginal and inframarginal individuals. While marginal returnees are by definition aware of the incentives, it is plausible that take-up might be lower for infra-marginal individuals, who might not be aware of the incentives or their eligibility. If take-up rate is lower for I than for M, this will go in the direction of improving the net fiscal impact of the scheme.

Intensive margin and pass-through. Another implicit assumption is that the only behavioral response to the incentives is on the extensive margin through return migration. In reality, conditional on returning, eligible individuals may respond also on the intensive margin by increasing their before-tax earnings during the scheme, and possibly decreasing earnings after the scheme elapses. While for self-employed individuals such a response is the result of an individual choice (e.g. hours worked), for employed individuals this could be due to employers adjusting downward returnees' gross wages because of their eligibility for the scheme ("pass-through").[49] To the extent that firms'

[48] Younger individuals may also be more mobile and thus have a higher probability of re-emigrating (i.e., a lower δ), which however we are unable to estimate with our data.

[49] Kleven et al. (2014) find that gross wages of foreigners eligible for the 1991 Danish tax scheme in-

profits are taxed less than individuals, any pass-through goes in the direction of worsening the net fiscal impact of the scheme.

6.3 Discussion

Overall, our simple cost-benefit analysis of the 2010 scheme offers a few insights on the design of cost-effective tax schemes in a context of brain drain. Two key determinants for the fiscal break-even are returnees' age and their out-migration rate after the incentives elapse. These two parameters that can be directly influenced by the policymaker, respectively by setting a age requirement and by designing a gradual phase-out of the incentives. Further, if the tax scheme targets high-skilled individuals (such as college graduates) who plausibly exert positive human capital spillovers beyond their direct fiscal impact, the fiscal impact is likely a lower bound of the true impact of the scheme.

How does fiscal break-even condition change with subsequent tax schemes? As discussed above, changing the generosity of the scheme plausibly changes the migration elasticity and therefore the marginal-to-inframarginal ratio. Nonetheless, we can use our framework to qualitatively assess how the legislative changes should affect the break-even threshold.

The 2015 reform removed the birth-cohort requirement, plausibly increasing the average age of returnees, reducing the years of post-scheme fiscal contributions and tightening the conditions for the scheme to break-even. However, it also established a standard duration of 5 years – as opposed to the 2010 scheme ex-ante uncertain duration – which unambiguously increases the fiscal balance of the scheme (given that the ex-post duration was the same, 5 years), as incentives are more attractive to expatriates and equally costly for the government.

The 2019 reform further eliminated the high-skilled requirement, which we expect to reduce human capital externalities for a given fiscal cost of the policy, tightening the conditions for a break-even. Finally, the 2019 scheme features an extended duration for individuals with stronger observable ties to Italy (e.g. having children, buying a house established as primary residence, etc.), which is a potential avenue to keep out-migration low, albeit at the cost of reduced post-scheme contributions.

creased after the scheme elapsed, implying that employers were retaining a fraction of the tax savings by reducing gross wages during the scheme, consistent with the predictions of a wage bargaining model.

7 Conclusions

Large emigration flows of young and highly educated individuals have characterized the recent history of several countries. While governments worry about reversing brain drain, few effective policies have been adopted. In this paper we investigate the effects of a unique policy to induce return migration of young high-skilled expatriates introduced by Italy in 2010. The reform granted a large income tax discount to Italian expatriates moving back to Italy, as long as they have a college degree and they were born on or after 1969. Exploiting these eligibility criteria in a Triple Differences strategy and using administrative data on return migration, we find that eligible individuals are 27% more likely to return post-reform, specifically from other European countries such as France, Germany, Switzerland and the UK.

We then focus on Germany, the main origin country for Italian returnees, and estimate similar effects on the probability that Italian workers return to Italy, as proxied by exits from German social security data. Furthermore, we find that marginal returnees were mostly medium and high earners and leave on medium-sized firms in the IT, communication and healthcare industries. Overall, our findings show that tax-induced mobility is a broad phenomenon, beyond top earners in specific occupations (e.g. inventors or football players), and may result in a substantial reallocation of human capital across sending and receiving regions.

Last, we perform a simple cost-benefit analysis to compare the fiscal benefit of attracting and retaining marginal returnees (who returned because of the scheme) with the fiscal cost of subsidizing infra-marginal returnees (who would have returned anyway). Our analysis shows that the direct impact of the 2010 scheme on income tax revenue – a lower bound of the true effect in the presence of positive human capital externalities (Kerr et al. 2016) – is marginally positive by virtue of targeting *young* high-skilled individuals, whose fiscal contributions span several years beyond the duration of the incentives. The result is based on the assumption of a reasonably low out-migration rate after incentives elapse, a key parameter that can be influenced by the policymaker, for instance with a gradual phase-out of tax incentives, or alternatively by extending the duration for returnees develop "ties" to their home country, such as having children or buying a home (as it is the case in Italy since 2019).

A few limitations of our study are worth highlighting and suggest some caution in interpreting our estimates. First, as we do not observe actual take-up, our estimates

are intention-to-treat effects of eligibility for tax incentives on return migration. Second, we do not observe in our data for how long eligible returnees remain in Italy, nor their earnings, which are essential for a precise cost-benefit analysis. Last, we are unable to estimate the spillover effects of marginal returnees besides their direct fiscal impact. In future work, we plan to use Italian social security data to answer some of these questions.

To conclude, many countries have enacted or are enacting preferential tax schemes to attract high-skilled expatriates and foreigners. Our findings show that well-designed tax incentives are a cost-effective policy to reduce brain drain and to influence migration choices of workers at the margin, although more research (and more data) is needed to estimate the spillover effects of tax-induced immigration, the welfare implications for countries that lose workers, and the effects on tax competition (Lehmann, Simula, and Trannoy 2014), which could inform the design of preferential tax schemes in the future.

References

Adda, Jérôme, Christian Dustmann, and Joseph-Simon Görlach. 2022. "The dynamics of return migration, human capital accumulation, and wage assimilation." *The Review of Economic Studies* 89 (6): 2841–2871.

Agrawal, David R., and Dirk Foremny. 2019. "Relocation of the Rich: Migration in Response to Top Tax Rate Changes from Spanish Reforms." *Review of Economics and Statistics* 101(2):214–232.

Akcigit, Ufuk, Salomé Baslandze, and Stefanie Stantcheva. 2016. "Taxation and the International Mobility of Inventors." *American Economic Review* 106 (10): 2930–81.

Akcigit, Ufuk, John Grigsby, Tom Nicholas, and Stefanie Stantcheva. 2022. "Taxation and Innovation in the Twentieth Century." *The Quarterly Journal of Economics* 137 (1): 329–385.

Akee, Randall, and Maggie R Jones. 2019. "Immigrants' earnings growth and return migration from the US: Examining their determinants using linked survey and administrative data." NBER Working Paper No. 25639.

Anelli, Massimo, Gaetano Basso, Giuseppe Ippedico, and Giovanni Peri. 2023. "Emigration and Entrepreneurial Drain." *American Economic Journal: Applied Economics* 15 (2): 218–52.

Anelli, Massimo, and Giovanni Peri. 2017. "Does emigration delay political change? Evidence from Italy during the Great Recession." *Economic Policy* 32 (91): 551–596.

Arslan, Cansin, Jean-Christophe Dumont, Zovanga Kone, Yasser Moullan, Caglar Ozden, Christopher Parsons, and Theodora Xenogiani. 2015. "A new profile of migrants in the aftermath of the recent economic crisis." OECD Social, Employment and Migration Working Papers, No. 160.

Becker, Sascha O, Andrea Ichino, and Giovanni Peri. 2004. "How Large is the "Brain Drain" from Italy?" *Giornale degli economisti e annali di economia*, pp. 1–32.

Beine, Michel, Frédéric Docquier, and Hillel Rapoport. 2001. "Brain drain and economic growth: theory and evidence." *Journal of development economics* 64 (1): 275–289.

Bertoli, Simone, Herbert Brücker, and Jesús Fernández-Huertas Moraga. 2016. "The European crisis and migration to Germany." *Regional Science and Urban Economics* 60:61–72.

Bijwaard, Govert E, Christian Schluter, and Jackline Wahba. 2014. "The impact of labor market dynamics on the return migration of immigrants." *Review of Economics and Statistics* 96 (3): 483–494.

Boeri, Tito, Herbert Brücker, Frédéric Docquier, and Hillel Rapoport. 2012. *Brain drain and brain gain the global competition to attract high-skilled migrants*. Oxford University Press.

Borjas, George J., and Bernt Bratsberg. 1996. "Who Leaves? The Outmigration of the Foreign-Born." *The Review of Economics and Statistics* 78 (1): 165–176.

Card, David, Jörg Heining, and Patrick Kline. 2013. "Workplace heterogeneity and the rise of West German wage inequality." *The Quarterly journal of economics* 128 (3): 967–1015.

Czaika, Mathias, and Christopher R Parsons. 2017. "The gravity of high-skilled migration policies." *Demography* 54 (2): 603–630.

Del Carpio, Ximena V, Caglar Ozden, Mauro Testaverde, and Mathis Wagner. 2016. "Global Migration of Talent and Tax Incentives." World Bank Policy Research Working Paper 7875.

Dicarlo, Emanuele. 2022. "How Do Firms Adjust to Negative Labor Supply Shocks? Evidence from Migration Outflows." IZA Discussion Paper No. 14994.

Docquier, Frédéric, Çağlar Ozden, and Giovanni Peri. 2014. "The labour market effects of immigration and emigration in OECD countries." *The Economic Journal* 124 (579): 1106–1145.

Docquier, Frédéric, and Hillel Rapoport. 2012. "Globalization, brain drain, and development." *Journal of Economic Literature* 50 (3): 681–730.

Dorn, David, and Josef Zweimüller. 2021. "Migration and labor market integration in Europe." *Journal of Economic Perspectives* 35 (2): 49–76.

Dustmann, Christian. 2003. "Return migration, wage differentials, and the optimal migration duration." *European Economic Review* 47 (2): 353–369.

Dustmann, Christian, and Joseph-Simon Görlach. 2016a. "The economics of temporary migrations." *Journal of Economic Literature* 54 (1): 98–136.

———. 2016b. "Estimating immigrant earnings profiles when migrations are temporary." *Labour Economics* 41:1–8.

Fackler, Thomas A, Yvonne Giesing, and Nadzeya Laurentsyeva. 2020. "Knowledge remittances: Does emigration foster innovation?" *Research Policy* 49 (9): 103863.

Grogger, Jeffrey, and Gordon H Hanson. 2011. "Income maximization and the selection and sorting of international migrants." *Journal of Development Economics* 95 (1): 42–57.

Kalin, Salla, Ilpo Kauppinen, Kaisa Kotakorpi, Jukka Pirttilä, et al. 2022. "Migration and tax policy: Evidence from Finnish full population data." VATT Institute for Economic Research.

Kato, Takao, and Chad Sparber. 2013. "Quotas and quality: The effect of H-1B visa restrictions on the pool of prospective undergraduate students from abroad." *Review of Economics and Statistics* 95 (1): 109–126.

Kerr, Sari Pekkala, William Kerr, Çağlar Özden, and Christopher Parsons. 2016. "Global talent flows." *Journal of Economic Perspectives* 30 (4): 83–106.

———. 2017. "High-skilled migration and agglomeration." *Annual Review of Economics* 9:201–234.

Kleven, Henrik J., Camille Landais, Mathilde Muñoz, and Stefanie Stantcheva. 2020. "Taxation and Migration: Evidence and Policy Implications." *Journal of Economic Perspectives* 34 (2): 119–142.

Kleven, Henrik J., Camille Landais, and Emmanuel Saez. 2013. "Taxation and international migration of superstars: Evidence from the European football market." *American Economic Review* 103 (5): 1892–1924.

Kleven, Henrik J., Camille Landais, Emmanuel Saez, and Esben Schultz. 2014. "Migration and wage effects of taxing top earners: Evidence from the foreigners' tax scheme in Denmark." *The Quarterly Journal of Economics* 129 (1): 333–378.

Lehmann, Etienne, Laurent Simula, and Alain Trannoy. 2014. "Tax me if you can! Optimal nonlinear income tax between competing governments." *The Quarterly Journal of Economics* 129 (4): 1995–2030.

Liebig, Thomas, Patrick A. Puhani, and Alfonso Sousa-Poza. 2007. "Taxation and internal migration - evidence from the Swiss Census using community-level variation in income tax rates." *Journal of Regional Science* 447(4):807–836.

Martínez, Isabel Z. 2022. "Mobility responses to the establishment of a residential tax haven: Evidence from Switzerland." *Journal of Urban Economics* 129:103441.

MEF. 2017. "Statistiche sulle dichiarazioni fiscali - Analisi dei dati IRPEF anno di imposta 2016." Direzione Studi e Ricerche Economico-Fiscali, Ministero dell'Economia e delle Finanze.

Moretti, Enrico. 2004. "Workers' Education, Spillovers, and Productivity: Evidence from Plant-Level Production Functions." *American Economic Review* 94 (3): 656–690.

Moretti, Enrico, and Daniel J. Wilson. 2017. "The effect of state taxes on the geographical location of top earners: evidence from star scientists." *American Economic Review* 107(7):1858–1903.

Muñoz, Mathilde. 2023. "Do European Top Earners React to Labour Taxation Through Migration?" Working Paper.

OECD. 2011. "Taxing Wages 2010." OECD Publishing. [URL].

———. 2017. "Taxing Wages 2017." OECD Publishing. [URL].

Ortega, Francesc, and Giovanni Peri. 2013. "The effect of income and immigration policies on international migration." *Migration Studies* 1 (1): 47–74.

Schmidheiny, Kurt. 2006. "Income segregation and local progressive taxation: Empirical evidence from Switzerland." *Journal of Public Economics* 90 (3): 429–458.

Schmidheiny, Kurt, and Michaela Slotwinski. 2018. "Tax-induced mobility: Evidence from a foreigners' tax scheme in Switzerland." *Journal of Public Economics* 167:293–324.

Timm, Lisa Marie, Massimo Giuliodori, and Paul Muller. 2022. "Tax incentives for high skilled migrants: evidence from a preferential tax scheme in the Netherlands." Tinbergen Institute Discussion Paper.

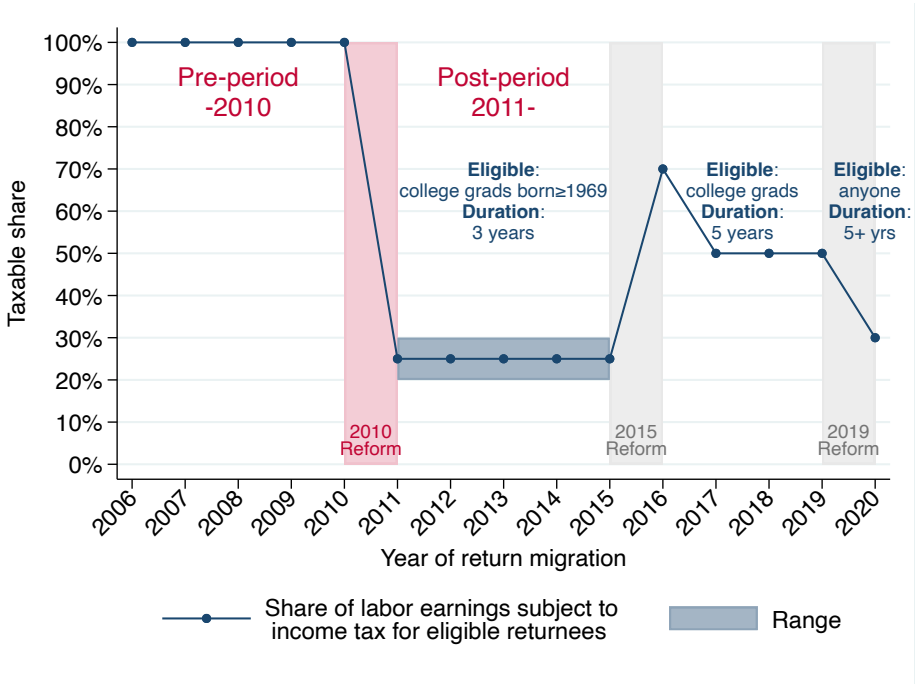
Winters, John V. 2014. "STEM graduates, human capital externalities, and wages in the U.S." *Regional Science and Urban Economics* 48 (C): 190–198.

Young, Cristobal, and Charles Varner. 2011. "Millionaire Migration and State Taxation of Top Incomes: Evidence from a Natural Experiment." *National Tax Journal* 64 (2): 255–284.

Young, Cristobal, Charles Varner, Ithai Z Lurie, and Richard Prisinzano. 2016. "Millionaire migration and taxation of the elite: Evidence from administrative data." *American Sociological Review* 81 (3): 421–446.

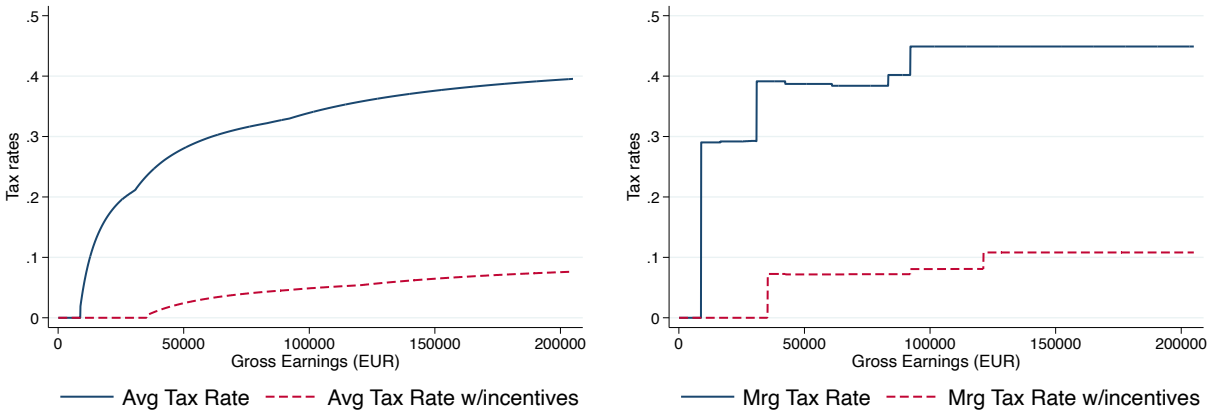
Figures

Figure 1: Taxable income share under returnees' tax schemes, by year of return migration



Notes: The graph shows the share of labor income subject to income tax for return migrants eligible for the different tax schemes, depending on the year of return to Italy (on the horizontal axis). Section 2.2 and Appendix A provide additional details.

Figure 2: Income tax rates reduction under the 2010 tax scheme, by gross earnings

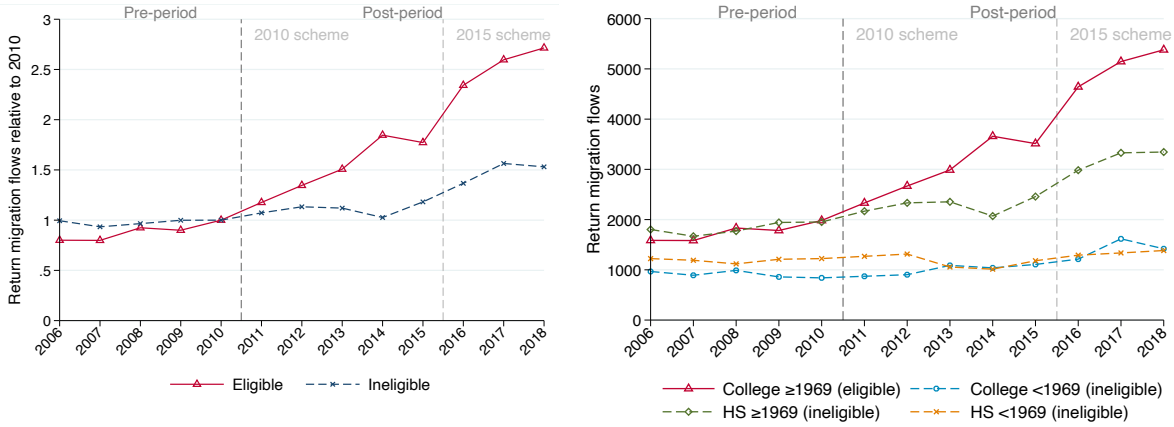


(a) average tax rates

(b) marginal tax rates

Notes: The figures plot the average (a) and marginal (b) income tax rates based on the 2010 Italian tax schedule for an individual with no dependents. Source: OECD Taxing Wages 2010 (OECD 2011). The fiscal incentive used is a 25% share of taxable income (Law 238/2010), i.e. an average between 20% (women) and 30% (men). For the tax rates with the tax incentives, gross earnings are assumed to be entirely deriving from employee labor income, self-employed labor income and/or business income.

Figure 3: Gross returns migration flows over time, by eligibility for 2010 scheme

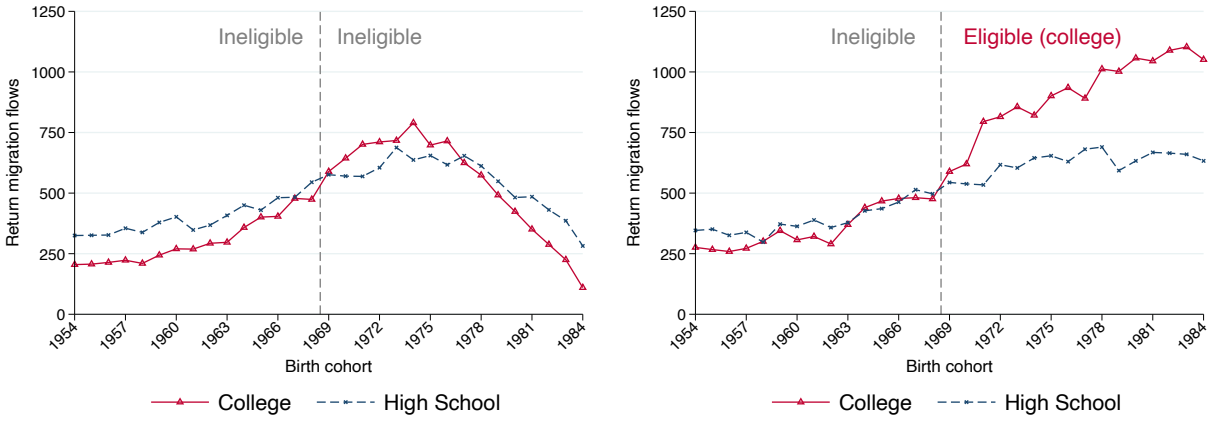


(a) eligible vs ineligible*

(b) eligible vs ineligible, breakdown

Notes: The figures plot the gross return migration flows of Italian citizens, born in Italy, 23-64 years old, with at least high school diploma, by eligibility status. Eligible: college graduates born 1969 or later; ineligible: high school graduates and college graduates born before 1969. Source: authors' elaboration on Istat data. (*) In Figure (a), the ineligible series is standardized to match the eligible in 2010, while in Figure (b) none of the series is standardized.

Figure 4: Return migration by birth cohort and education, pre- and post-2010 scheme

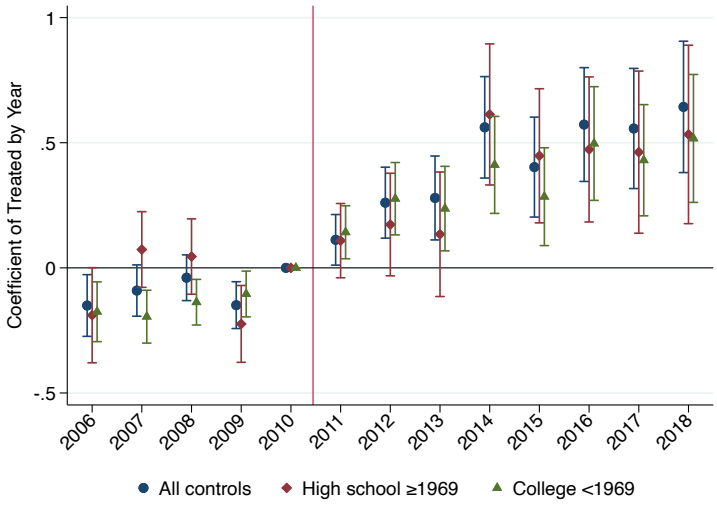


(a) pre-2010 scheme

(b) post-2010 scheme

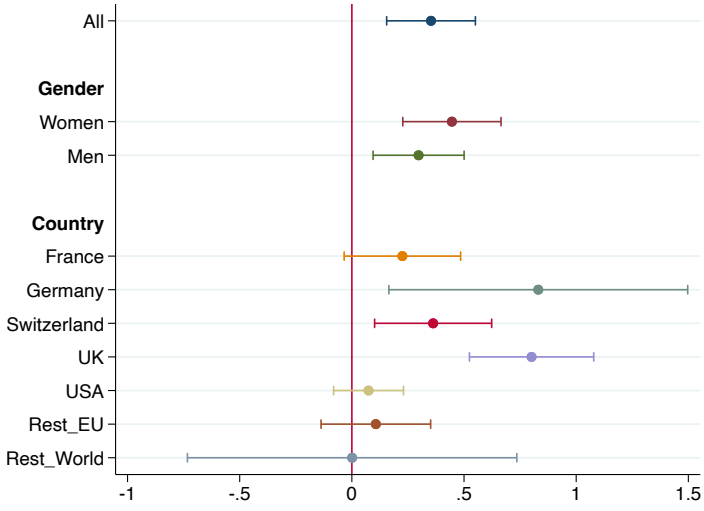
Notes: The figures plot the total number of Italian expatriates, born in Italy and migrated abroad, returning to Italy between 2006-2010 (a) and between 2012-2016 (b) by birth cohort (x-axis), separately for college graduates and high school graduates. Source: authors' elaboration on Istat data.

Figure 5: Year-to-year effect of eligibility for tax scheme on return migration rates



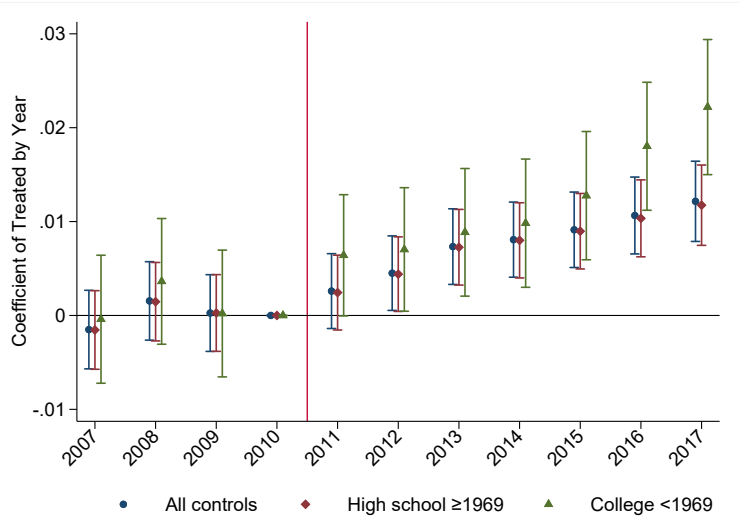
Notes: The figure plots the estimated coefficients β_τ (and 95% C.I.) of the interactions between the treated dummy and year dummies in Equation 4, either on the i) full sample (blue circles), ii) born on or after 1969 sample (red diamonds) or iii) college educated sample (green triangles). Observations: birth cohort c by education e by country of origin o by sex s by year of migration t. The dependent variable is the number of Italian citizens, born in Italy between 1954 and 1983 and with at least a high school diploma, moving to Italy from abroad in year t (Istat data), divided by the stock of Italian expatriates as of 2010 (OECD DIOC data). The regression includes year fixed effects as well as group fixed effects, defined by all combinations of cohort, education, sex and origin countries. Observations are weighted by the stock of Italian expatriates in each cohort-education-gender-origin country cell as of 2010, based on the OECD DIOC data. Standard errors (in parenthesis) are clustered at the cohort-education-gender-origin country level.

Figure 6: Effect of eligibility on return migration, by gender and country (Triple DiD)



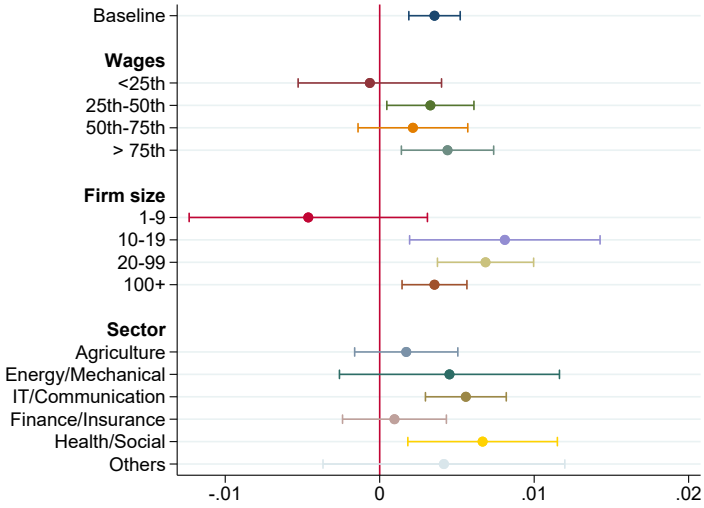
Notes: The graph plots the point estimate and the 95% C.I. of the Triple DiD coefficient (Table 3 Column 2) for different subgroups of returnees by gender and foreign country of origin. Observations: education (high school and college) by birth cohort (6 five-year groups from 1954 to 1983) by by year (2006-2018) cells. Sample is all Italian citizens, born in Italy between 1954-1983 and with at least a high school diploma, moving from abroad to Italy between 2006 and 2018 (Istat data).

Figure 7: Effect of eligibility on the probability of leaving Germany



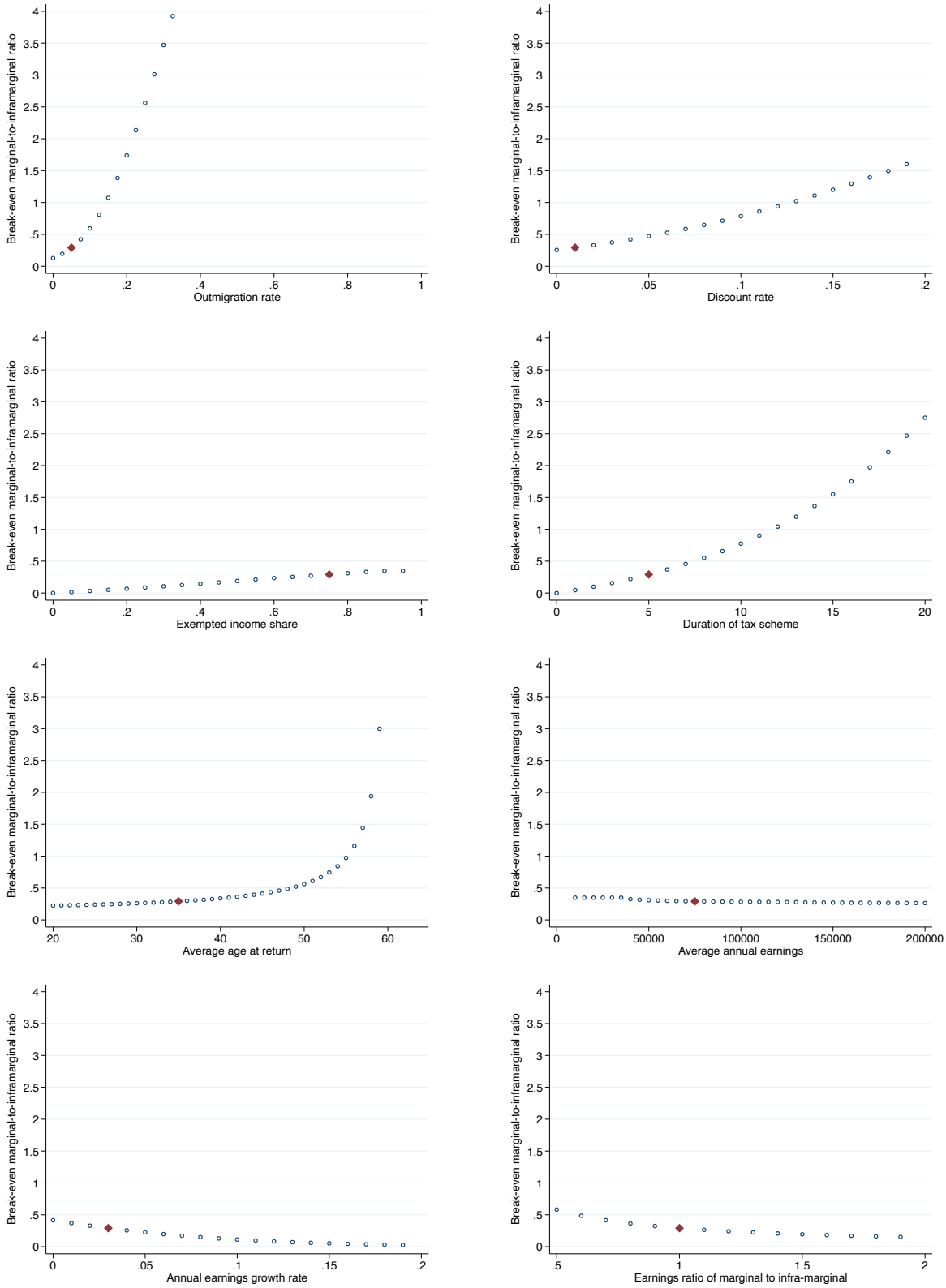
Notes: The figure plots the estimated coefficients β_τ (and 95% C.I.) of the interactions between the treated dummy and year dummies in Equation 7, either on the i) full sample (blue circles), ii) born on or after 1969 sample (red diamonds) or iii) college educated sample (green triangles). Observations: individuals by year, IEB data. The dependent variable is the probability of leaving the register in year t compared to being still in the register in $t-1$. Sample is Italian citizens born between 1954-1983, with at least high school diploma, and at least one employment spell in Germany between 2006-2017. "Treated" is a dummy equal to 1 if birth year is equal or greater than 1969 and education level is college. Controls include education, gender, age at entry in the register, birth cohort and year fixed effects. Standard errors are clustered at the individual level.

Figure 8: Heterogeneous effects of tax incentives on returns from Germany



Notes: the figure displays the point estimates and 95% confidence intervals of the DiD coefficient (*Treat* $*$ *Post*) in Equation 5, for the baseline estimate and separately for subgroups of Italians, breakdown by quartiles of the earnings distribution of Italians in Germany (separately for treated and control group), by firm size (1-9, 10-19, 20-99 and 100+ employees) and by sector (IEB data). Controls include education, gender, age at entry in the register, birth cohort and year fixed effects. Sample is Italian citizens born between 1954-1983, with at least high school diploma, and at least one employment spell in Germany between 2006-2017.

Figure 9: Sensitivity of break-even marginal-to-inframarginal ratio to parameter values



Notes: the graph shows the break-even value of the M/I ratio that solves Equation 8, for different values of the parameters. In each graph, the dark red point is the baseline value of that parameter used in Section 6, and all points are computed by keeping fixed the other parameters at their baseline values.

Tables

Table 1: Characteristics of Italians in the German Social Security Data

	Pre-period (2006-2010)			Post-period (2011-2016)		
	College ≥1969	High school ≥1969	College <1969	College ≥1969	High school ≥1969	College <1969
Female	0.44	0.40	0.41	0.43	0.39	0.42
Age	31.36	31.29	46.04	34.73	35.76	50.95
Age at entry	22.35	18.26	25.83	24.57	18.85	27.02
Years in the register	8.16	12.15	19.38	9.30	16.02	23.09
Leavers	0.025	0.009	0.016	0.037	0.013	0.017
Mean daily wage	104.33	67.80	149.80	123.57	75.93	155.11
Firm size						
1-9	0.15	0.25	0.18	0.13	0.22	0.17
10-19	0.09	0.12	0.09	0.09	0.13	0.09
20-99	0.23	0.26	0.22	0.23	0.26	0.23
100+	0.52	0.37	0.51	0.55	0.39	0.50
Sector						
Agriculture	0.17	0.23	0.21	0.16	0.22	0.20
Energy and Mechanical	0.02	0.07	0.04	0.02	0.07	0.04
IT and Communication	0.33	0.41	0.28	0.30	0.40	0.28
Finance and Insurance	0.26	0.16	0.19	0.28	0.16	0.20
Health and Social	0.17	0.09	0.21	0.19	0.10	0.22
Other sectors	0.05	0.06	0.06	0.05	0.05	0.06
Observations	60,260	347,030	26,088	140,809	600,130	41,642

Notes: the table displays the average characteristics of Italian citizens, born between 1954-1988 and with at least one employment spell in Germany, separately for the pre- (2006-2010) and post-period (2011-2016) and by treatment status: college graduates born in 1969 or after (eligible), high school graduates born in 1969 or after (ineligible), and college graduates born before 1969 (ineligible). Daily wages are expressed in 2018 euros. Source: authors' elaboration on IEB data.

Table 2: DiD effect of eligibility for tax schemes on return migration, by control groups

	Outcome: Return Migration Rates		
	(1)	(2)	(3)
	Control: All	Coll<1969	HS≥1969
Treated ∗ Post	0.694***	0.621***	0.574***
	(0.116)	(0.098)	(0.109)
Observations	26	26	26
R-squared	0.959	0.978	0.935
Avg Outcome Pre	1.283	1.283	1.283
M/I	0.500	0.425	0.381
Year FE	Yes	Yes	Yes
Treated dummy	Yes	Yes	Yes

Notes: Observations: treatment status by year (2006-2018). The dependent variable is the return migration rate of Italians abroad, and is equal to the count of Italian citizens, born in Italy between 1949-1983 and with at least a high school diploma, moving to Italy from abroad in year t (Istat data), divided by the stock of Italian expatriates as of 2010 (OECD DIOC data). "Treated" is a dummy equal to 1 if birth year is equal or greater than 1969 and education level is college and "Post" is a dummy equal to 1 for the post period years (2011 and after). The control group includes both high school graduates and college graduates born before 1969 in Column 1, college graduates born before 1969 in Column 2 and high school graduates born on or after 1969 in Column 3. "Average Outcome Pre" refers to the treated group in the pre-period. M/I is the implied marginal-to-inframarginal ratio, obtained by dividing the $Treat * Post$ coefficient by the mean outcome for the treated in the pre-period and the change in the mean outcome for the untreated. Robust standard errors in parenthesis. * p < 0.10 ** p < 0.05 *** p < 0.01.

Table 3: Effect of eligibility on return migration, across cohorts-education groups

	Outcome: Return Migration Rates	
	(1)	(2)
	DiD	Triple DiD
Treated $*$ Post	0.669***	0.353***
	(0.162)	(0.099)
Observations	156	156
R-squared	0.870	0.986
Avg Outcome Pre	1.272	1.272
M/I	0.467	0.246
Year FE	Yes	Yes
Cohort by Educ FE	Yes	Yes
Year by {C,E} FE		Yes

Notes: Observations: education (high school and college) by birth cohort (6 five-year groups from 1954 to 1983) by by year (2006-2018) cells. The dependent variable is the return migration rate of Italians abroad, and is equal to the count of Italian citizens, born in Italy between 1954-1983 and with at least a high school diploma, moving to Italy from abroad in year t (Istat data), divided by the stock of Italian expatriates as of 2010 (OECD DIOC data). "Treated" is a dummy equal to 1 if birth year is equal or greater than 1969 and education level is college and "Post" is a dummy equal to 1 for the post period years (2011 and after). In Column 1 (DiD model) we include cohort by education fixed effects, while in Column 2 (Triple DiD) we fully saturate the model by including year by cohort and year by education fixed effects. "Average Outcome Pre" refers to the treated group in the pre-period. M/I is the implied marginal-to-inframarginal ratio, obtained by dividing the *Treat* $*$ *Post* coefficient by the mean outcome for the treated in the pre-period and the change in the mean outcome for the untreated. Robust standard errors in parenthesis. * p < 0.10 ** p < 0.05 *** p < 0.01.

Table 4: Effect of eligibility on return migration, host country variation

	Outcome: Return Migration Rates		
	(1)	(2)	(3)
	DiD	Triple DiD	Triple DiD
Eligible $*$ Post	0.533***	0.326***	0.254***
	(0.099)	(0.074)	(0.067)
Observations	10,023	10,023	10,023
R-squared	0.593	0.688	0.777
Avg Outcome Pre	0.948	0.948	0.948
M/I	0.552	0.338	0.264
Year FE	Yes	Yes	Yes
Cohort by Educ by Orig by Sex FE	Yes	Yes	Yes
Year by {C,E,O,S} FE		Yes	Yes
Year by Orig by {C,E} FE			Yes

Notes: Observations: birth cohort c by education e by country of origin o by sex s by year of migration t cells. The dependent variable is the number of Italian citizens, born in Italy between 1954 and 1983 and with at least a high school diploma, moving to Italy from abroad in year t (Istat data), divided by the stock of Italian expatriates as of 2010 (OECD DIOC data). All columns include year fixed effects as well as group fixed effects, defined by all combinations of cohort, education, sex and origin countries. Columns 2 and 3 are Triple DiD specifications as we include year by cohort, year by education, year by gender and year by origin countries fixed effects (in both columns) as well as all year by origin by cohort and year by origin by education fixed effects (Column 3). Observations are weighted by the stock of Italian expatriates in each cohort-education-gender-origin country cell as of 2010, based on the OECD DIOC data. "Average Outcome Pre" refers to the treated group in the pre-period. M/I is the implied marginal-to-inframarginal ratio, obtained by dividing the *Treat* $*$ *Post* coefficient by the mean outcome for the treated in the pre-period and the change in the mean outcome for the untreated. Standard errors (in parenthesis) are clustered at the cohort-education-gender-origin country level. * p < 0.10 ** p < 0.05 *** p < 0.01.

Table 5: DiD effect of eligibility on the probability of leaving Germany

	(1) Control: All	(2) Coll<1969	(3) HS≥1969
Treated ∗ Post	0.535***	0.514***	0.942***
	(0.082)	(0.082)	(0.133)
Observations	1,917,180	1,849,644	267,525
Individuals	279,840	270,183	49,129
R-squared	0.017	0.017	0.025
Avg Outcome Pre	2.553	2.553	2.553
Year FE	Yes	Yes	Yes
Controls	Yes	Yes	Yes

Notes: Observations: individuals by years (2006-2016), IEB data. The dependent variable is the probability of leaving the register in year t compared to being still in the register in $t-1$, multiplied by 100 so that the coefficients are in percentage points. Sample is Italian citizens born between 1954-1983, with at least high school diploma, and at least one employment spell in Germany between 2006-2017. "Treated" is a dummy equal to 1 if birth year is equal or greater than 1969 and education level is college and "Post" is a dummy equal to 1 for the post period years (2011 and after). In Columns 1 we include both high school graduates and college graduates born before 1969 in the control group, while in Columns 2 and 3 we only include college graduates born before 1969 and high school graduates born on or after 1969 respectively. Controls include education, gender, age at entry in the register, birth cohort and year fixed effects. Standard errors are clustered at the individual level. * p < 0.10 ** p < 0.05 *** p < 0.01.

Table 6: DiD effect of eligibility on leaving Germany, Italians vs Spaniards

	Eligible only (1) DiD	1:1 match (2) Triple DiD	Placebo (3) DiD
Ita ∗ Post	0.483***	0.178***	
	(0.156)	(0.045)	
Ita ∗ Treated ∗ Post		0.608***	
		(0.179)	
Treated ∗ Post		0.109	0.087
		(0.140)	(0.141)
Observations	322,538	1,285,296	442,572
Individuals	68,268	187,030	76,275
R-squared	0.023	0.023	0.033
Avg Outcome Pre	3.039	3.095	4.009
Year FE	Yes	Yes	Yes
Controls	Yes	Yes	Yes

Notes: Observations: individuals by years (2006-2016), IEB data. The dependent variable is the probability of leaving the register in year t compared to being still in the register in $t-1$, multiplied by 100 so that the coefficients are in percentage points. "Ita" is a dummy equal to 1 for Italian citizens, "Treated" is a dummy equal to 1 if birth year is equal or greater than 1969 and education level is college and "Post" is a dummy equal to 1 for the post period years (2011 and after). In Column 1, sample is Italian and Spanish citizens, born between 1969-1983, with college education, and at least one employment spell in Germany between 2006-2017. In Column 2, sample is a 1:1 matched sample of Italian and Spanish citizens, born between 1954-1983, with at least high school diploma, and at least one employment spell in Germany between 2006-2017, based on the following matching variables: education, age, gender, age at entry, sector, occupation. In Columns 3, sample is Spanish citizens, born between 1954-1983, with at least high school diploma, and at least one employment spell in Germany between 2006-2017. Controls include education, gender, age at entry in the register, birth cohort and year fixed effects. Standard errors are clustered at the individual level. * p < 0.10 ** p < 0.05 *** p < 0.01.

Appendix

A Details on returnees tax schemes

In this Appendix we describe the preferential tax schemes for return migrants implemented in the 2010 decade, including detailed eligibility criteria and legislative changes.

A.1 The 2010 scheme "*Controesodo*"

On December 30, 2010, the Italian Parliament approved Law 238/2010 *"Controesodo"* ("counter-exodus").[50] The 2010 scheme was the first major set of tax incentives not restricted to a specific occupation (a dedicated scheme for researchers and professors is in place since 2003). The stated goal of the 2010 reform was "to contribute to the country economic growth by rewarding the human, cultural and professional experiences gained by EU citizens who resided in Italy [..], study, work or graduated abroad, and who decide to move back to Italy" (Law 238/2010).

The main eligibility requirements of the 2010 scheme are two: 1) holding a college degree (at least a 3-year degree), and 2) being born on or after January 1st, 1969.[51] In addition, there are additional requirements: holding a EU citizenship, having resided in Italy for at least 2 years prior to moving abroad, and having spent at least 2 years abroad prior to moving to Italy. While all EU citizens were potentially eligible, the pre-residency requirement implied that most non-Italian citizens (or foreign born Italians) were likely ineligible. Last, Law 238 explicitly excludes workers who are continuously hired (*tempo indeterminato*) by an Italian firm (or in the public sector) who go abroad under a contract with such a firm and then return, but it allows workers to go abroad to study while employed, as long as they were not on payroll (*aspettativa non retribuita*).

The 2010 tax scheme grants a large exemption from income taxation: eligible individuals only pay income taxes on a subset of their gross labor earnings, either 20% (for women) or 30% (for men). At the time it was approved in late 2010, Law 238/2010 stated

[50] Law 238/2010 was a rare instance of a Law initiated by a group of members of Parliament, rather than by the government, and specifically a bipartisan group.

[51] While the original draft of Law 238/2010 states that the college degree had to obtained by "January 20, 2009", a subsequent change in early 2012 (Law 14/2012) added that the college degree could also be obtained "in the two years before returning", as clarified on May 4, 2012 with the *Circolare n. 14/E* from the Italian Revenue Agency (*Agenzia delle Entrate*).

that the tax incentives were to be in place until December 31, 2013. This date was the original deadline in the first draft of Law Controesodo discussed in the Parliament (on January 20, 2009), implying that the policymaker had originally designed tax incentives for a duration of 5 fiscal years. As the entire legislative process took almost two years, the original deadline would have implied a rather short duration of the incentives. For this reason, in late 2011, the expiration date was postponed until December 31, 2015, by the government decree D.L. 216/2011 (Article 29), converted in Law on February 24, 2012 (Law 14/2012).[52] Similarly, in late 2014 the expiration date was further extended to December 31, 2017 by another decree (D.L. 192/2014). However, the latter provision eventually applied only to those who returned to Italy by the end of 2015, as those who returned afterwards were subject to the 2015 scheme (D.Lgs. 147/2015), which we discuss below.

This sequence of adjustments implies that the effective duration of the scheme was quite uncertain (especially until early 2012), and eventually ended up being heterogeneous based on the actual year of return migration. Figure A.1 displays the ex-ante expected duration, i.e. the duration individuals were anticipating at the time they made their return migration decision, and the ex-post effective duration, i.e. after all the legislative changes took place, as a function of the year of return migration (vertical axis). The expected duration was between 2-4 years, with the shortest being for those who returned in the first half of 2014 (2 years) and the longest for those who returned in 2012 (4 years). A simple average across years 2011-2015 yields an average expected duration of 3 years. The effective duration ranged instead between 3-7 years, i.e. from the year of return until 2017, implying that it was the longest for earlier returnees. A simple average across years 2011-2015 yields an average effective duration of 5 years, which we use in our cost-benefit analysis.

A.2 The 2015 scheme "*Impatriati*"

In late 2015, the tax scheme was replaced by a new scheme (the "2015 scheme") by Legislative Decree (D.Lgs.) 147/2015 (Article 16) *"Impatriati"* ("back to homeland"). Returnees who moved back to Italy starting from 2016 are subject to this new scheme. The 2015 reform makes three main changes to the preferential tax scheme: i) the taxable

[52]The latter decree is also known as the "Milleproroghe" ("a thousands extensions"), a yearly decree issued at the end of each calendar year, which extends the deadline of several public programs.

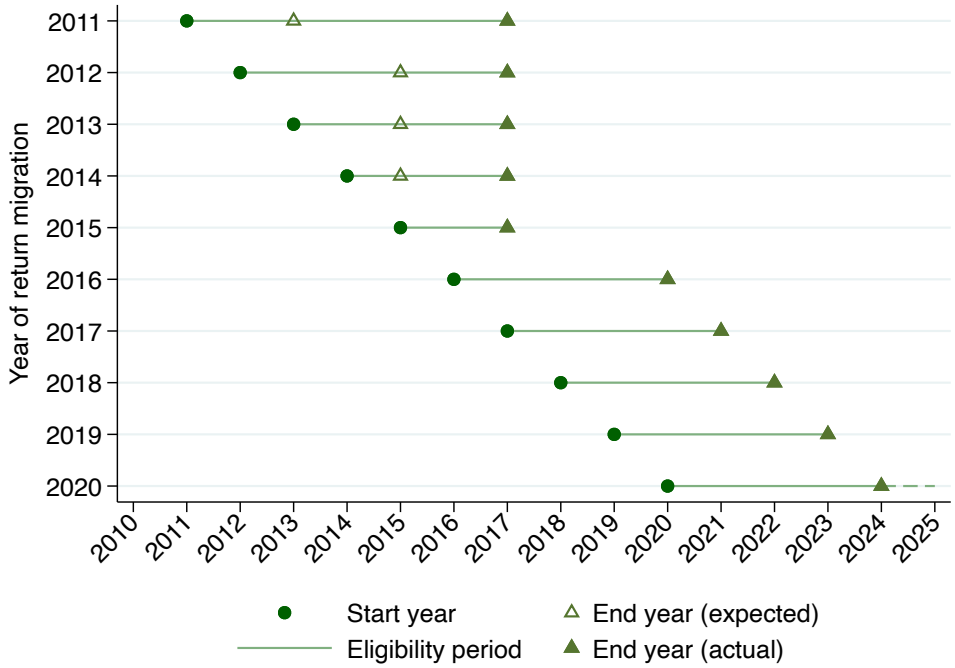
income share is initially increased to 70% (up from the 20-30% of the 2010 scheme), and then reduced again to 50% in 2016 with an amendment to the law; ii) the duration is set to 5 fiscal years from the year of return, in contrast to the uncertain duration under the 2010 scheme; iii) the birth cohort and the pre-residency requirements are abolished. Overall, relative to the 2010 scheme, the 2015 scheme is less generous in terms of taxable share of income (50%) but more generous and certain in terms of duration. Further, it slightly expands the eligible pool by removing the birth cohort requirement and by relaxing the pre-residency requirement (thus making non-Italian EU citizens likely eligible), although it also required enrollment in AIRE as an additional condition to prove the 2 years of residence abroad (unlike the 2010 scheme).

A.3 The 2019 scheme "*Decreto Crescita*"

While beyond our period of analysis, it is worth mentioning another major change in mid 2019 with Law 58/2019 "*Decreto Crescita*" ("decree for growth"). The 2019 reform expanded dramatically the plethora of eligible individuals by removing the college degree requirement. As a result, any Italian or EU citizen who resided abroad for at least 2 years is now eligible for reduced income taxes on labor earnings, regardless of their age and education level. It also increased the generosity, by lowering the taxable share to 30% and by granting a more generous exemption (10% for the first 5 years) to individuals who move their residence to the Southern regions of Italy.[53] While the standard duration remains 5 fiscal years, this can increase up to 13 years if individuals meet some criteria related to their "ties" to Italy, such as having one or more children or buying a house designated as their primary residence in Italy.

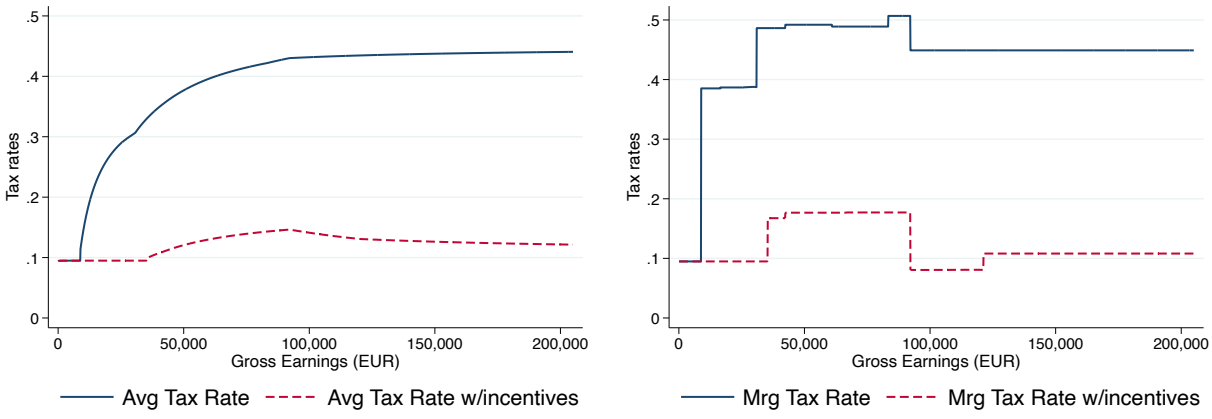
[53] A subsequent change limited the exempted share to 50% for professional soccer players.

Figure A.1: Duration of tax incentives for high-skilled returnees



Notes: The graph shows the start and the end year (as well as the expected end year, if different), depending on the year of return to Italy (on the vertical axis).

Figure A.2: Income tax rates (including payroll taxes) under the 2010 tax scheme

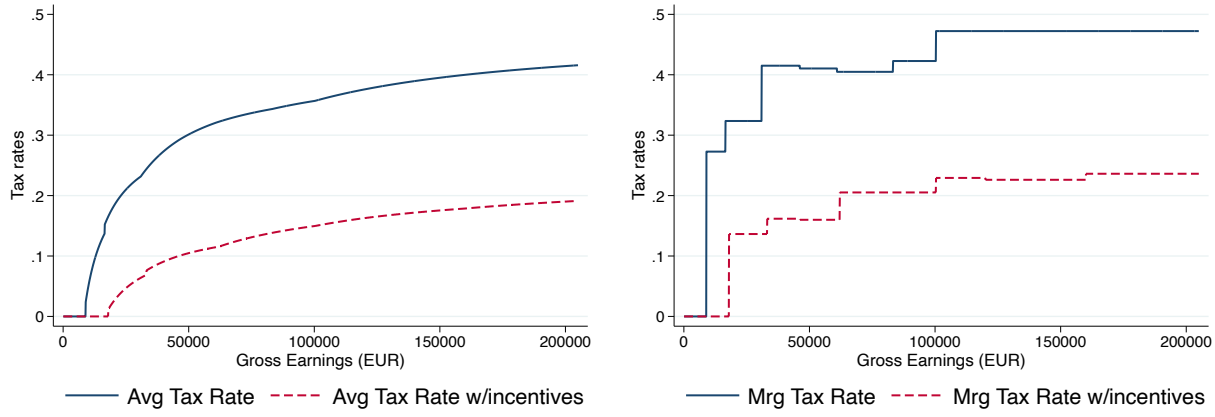


(a) average tax rates

(b) marginal tax rates

Notes: The figures plot the average (a) and marginal (b) income tax rates, including compulsory social security contributions (payroll taxes) paid by employees, based on the 2010 Italian tax schedule for an individual with no dependents. Source: OECD Taxing Wages 2010 (OECD 2011). The fiscal incentive used is a 25% share of taxable income (Law 238/2010), i.e. an average between 20% (women) and 30% (men). For the tax rates with the tax incentives, gross earnings are assumed to be entirely from employee labor income, self-employed labor income and/or business income.

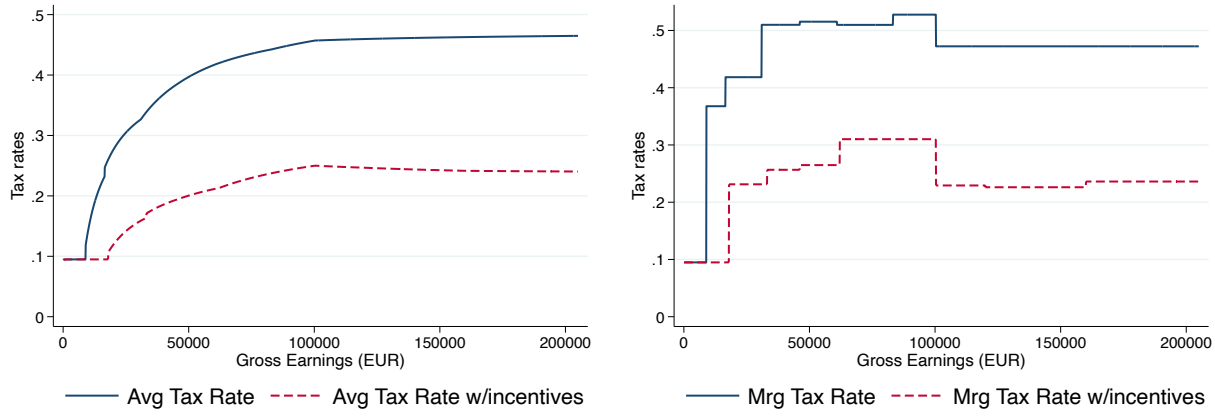
Figure A.3: Income tax rates reduction under the 2015 tax scheme, by gross earnings



(a) average tax rates (b) marginal tax rates

Notes: The figures plot the average (a) and marginal (b) income tax rates based on the 2017 Italian tax schedule for an individual with no dependents (source: OECD Taxing Wages 2017). The fiscal incentive used is a 50% share of taxable income (D.Lgs. 147/2015). For the tax rates with the tax incentives, gross earnings are assumed to be entirely deriving from employee labor income, self-employed labor income and/or business income.

Figure A.4: Income tax rates (including payroll taxes) under the 2015 tax scheme



(a) average tax rates (b) marginal tax rates

Notes: The figures plot the average (a) and marginal (b) income tax rates, including compulsory social security contributions (payroll taxes) paid by employees, based on the 2017 Italian tax schedule for an individual with no dependents (source: OECD Taxing Wages 2017). The fiscal incentive used is a 50% share of taxable income (D.Lgs. 147/2015). For the tax rates with the tax incentives, gross earnings are assumed to be entirely from employee labor income, self-employed labor income and/or business income.

B Additional details on data sources

In this Appendix we provide additional details on the data sources used in this paper.

B.1 Italian migration data (Istat-AIRE)

Our main data source is the Italian migration data, which we obtained from Istat, the Italian National Statistical Institute. The Istat data is based on the enrollment and dis-enrollment from the *Anagrafe degli Italiani Residenti all'Estero* (AIRE; Registry of Italians Residing Abroad). Italian citizens are required by law to enroll in the AIRE whenever they migrate abroad for more than 6 months. The main benefit of enrolling is that foreign income is not subject to income taxation in Italy, in addition to access to voting from abroad and consular services., while the main drawback of enrolling is the loss of non-emergency health coverage in Italy (e.g. the primary care physician).

Despite the substantial benefits to enroll in the registry, there is evidence that a large fraction of Italians do not enroll when they move abroad (Anelli et al. 2023), and, consequently, they do not appear in the return migration data. While this is an important limitation, it does not constitute a problem for our identification strategy as long as it is not differential between eligible and non-eligible individuals pre- and post-2010. Importantly, registration in AIRE was not required in order to be eligible for the 2010 scheme, as long as beneficiaries were able to document proofs of residence abroad (e.g. pay stubs, lease) to the tax authority in case of an audit.[54] Therefore, we should not expect any change in reporting incentives before-after 2010. This is indeed what we find by comparing the Italian with the German data: in Figure B.1b, we show that the share of eligible among returnees is similar between the two data source - and, importantly, is symmetric before and after 2010 - which provides reassurance that our results are not driven by any change in reporting incentives.

B.2 Database on Immigrants in OECD and non-OECD countries (DIOC)

While the Istat data measures international migration flows of Italians (both outflows and inflows), studying return migration requires information on the stock of migrants

[54] While registration was required to be eligible for the 2015 scheme, our results are robust to excluding the post-2015 years from the sample.

abroad, which is the population at risk of returning to their home country. For this reason, we complement the Istat data with the OECD "Database on Immigrants in OECD and non-OECD countries" (henceforth DIOC), a comprehensive database with the stocks of migrants by country of residence, country of origin, age, and, importantly, education level, compiled based on destination countries decennial censuses (see Arslan et al. (2015) for a description for OECD countries). Specifically, we use the DIOC data to measure of the stock of Italians resident in each destination country as of 2010, by age, education and sex, which we match to the Istat data. We use the 2010/11 release, which is based on the 2010 wave of foreign countries censuses.[55]

We identify Italians based on their country of birth, as opposed to citizenship which is unavailable or incomplete for several countries. While this is a different definition than in the Istat data, which cover Italian citizens, in our analysis we exclude foreign-born Italian citizens from the Istat data, which makes the two sources comparable.[56]

Education is defined as in the Istat data, based on the International Standard Classification of Education (ISCED) definition. We keep individuals with at least high school education, resulting in two education groups, high school and college, with the latter group being eligible for tax incentives (if born in 1969 or later).

Age is classified in 10-year bins (e.g. 25-34, 35-44, 45-54, 55-64). We limit the analysis to individuals in working age (25-64). As eligibility is based on birth cohorts, we match these age bins to the 5-year birth cohort intervals in the Istat data by apportioning each age group to the corresponding birth cohort bins based on age as of 2010, using the Istat data on emigration between 2006-2010, disaggregated in exact birth cohorts, to construct weights. For example, consider the age group 35-44, composed of individuals born in 1966-1975, as of 2010. Based on the estimated weights, we assign about a half of this group to the 1969-1973 cohort, and about a quarter to each of the 1964-1968 and 1974-1978 cohorts respectively. This leaves us with 6 five-year birth cohort intervals, 3 eligible (1969-1973, 1974-1978, 1979-1983) and 3 ineligible (1964-1968, 1959-1963, 1594-1958).

Once the DIOC and the Istat data are matched, we construct return migration rates by dividing the yearly return migration flows in our sample period (2006-2018) from the Istat data by the stock of Italians in 2010 from the DIOC data, by destination country,

[55]The full methodology for the 2010/11 release is available at https://www.oecd.org/els/mig/DIOC-E-2010-11-methodology.pdf.

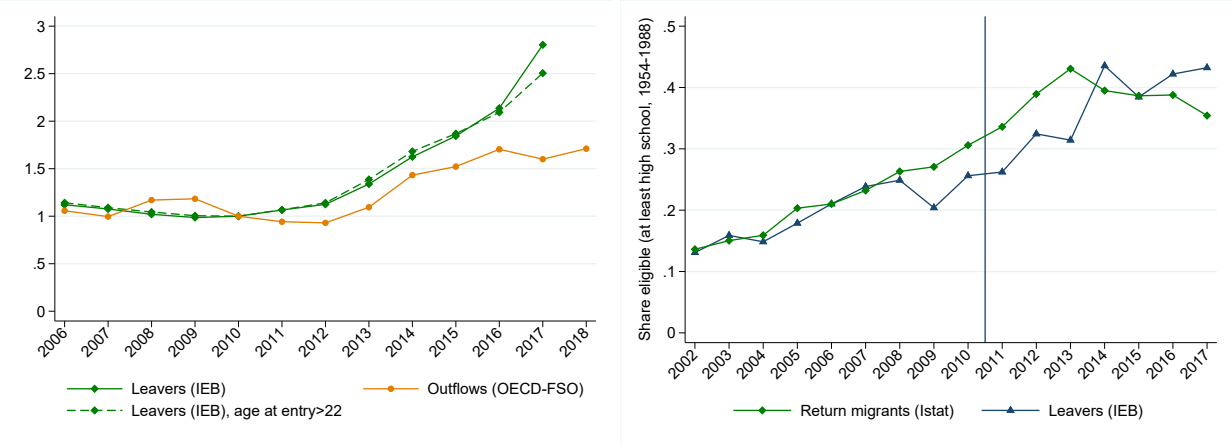
[56]As Italy does not grant birthright citizenship, the DIOC data includes Italy-born individuals who are not Italian citizens, but these should be a negligible fraction relative to Italian citizens.

birth cohort, education and sex. The final dataset covers 36 OECD countries.

B.3 German social security data (IEB)

In this section, we validate our measure of return migration in the German social security data ("leavers") by comparing it with actual migration flows of Italian citizens from Germany to Italy from the OECD International Migration Database, which are based on data from the German migration data (Destatis).[57] The comparison, displayed in Figure B.1a, is reassuring: the evolution (changes) of leaver and return migration flows is very similar in the two data sources throughout our sample period (2006-2016).[58] In addition, Figure B.1b shows that the share of eligible returnees in the IEB and in the Italian data is remarkably similar throughout the period, suggesting that measurement error is unlikely to be differential across groups over time.

Figure B.1: Return migration flows from Germany to Italy by data source



(a) return migration flows (IEB vs OECD) (b) share eligible among returnees (IEB vs Istat)

Notes: Figure (a): The green lines show the number of Italian citizens leaving the German IEB data - relative to 2010 -, as measured by one year since last spell in the data; the solid line include all Italians, while the dotted line only Italians who first appeared in the data after the age of 22, thus presumably born in Italy. The orange line shows the outmigration flows of Italian citizens from Germany to Italy - relative to 2010 -, as measured in the OECD International Migration Data, which are based on data from the German Federal Statistical Office. Figure (b): The two lines show the share of eligible (college graduates born on or after 1969) returnees among eligible plus ineligible (college graduates born before 1969 and high school graduates) returnees, by data source.

[57] Unfortunately there is no information on education in the OECD-Destatis migration data. Therefore, we compare total leavers (IEB) and migration flows (OECD) flows regardless of education level.

[58] 2016 is the last year in our analysis since we condition on having an employment spell the year before leaving, and 2017 is the last year for which we can construct the proxy for leavers.

C Emigration and return migration around the 2010 scheme

In this Appendix we describe the evolution of emigration flows from Italy around the 2010 reform, and we discuss the implications for estimating and interpreting the effect of tax incentives on return migration.

The twin recession experienced by Southern European countries induced high emigration rates from Italy, particularly among younger and highly educated individuals (Anelli and Peri 2017; Anelli et al. 2023). As the 2010 scheme takes effect in 2011, the contemporaneous increase in emigration may complicate the interpretation of return migration flows. Specifically, one may worry that a simple before-after 2010 comparison between eligible and ineligible returnees may capture a "mechanical" increase in return flows due to the higher propensity of the former to emigrate after 2010.

Ultimately, the importance of emigration to interpret the estimated effects of the tax scheme on return migration depends on the question we are interested in. If we are interested in the *causal* effect of eligibility on return migration, we need to credibly partial out the effect of post-2010 differential emigration from the return migration flows.[59] In contrast, for a policymaker interested in boosting return migration to increase net high-skilled immigration, the relevant elasticity is the one that includes post-2010 emigrants as well. This is especially true in light of the evidence on the benefits of circular migration for the diffusion of knowledge (e.g. Fackler, Giesing, and Laurentsyeva 2020).

Furthermore, even if we completely rule out the confounding effect of recession-induced emigration, the overall effect of eligibility on *net* immigration (return migration minus emigration) is not clear a priori. One the one hand, the tax schemes plausibly induce return migration of those expatriates on the margin, increasing net inflows among the eligible relative to the ineligible. On the other hand, the prospect of lower taxes may induce Italian residents in the eligible group, who would have not left the country absent the tax scheme, to emigrate in order to benefit from lower taxes upon return.[60]

[59] Unfortunately we do not observe the year of emigration of returnees, therefore we cannot limit the analysis to returnees who were abroad as of 2010. In the next section, we explain in detail how we use several group-by-year to absorb changes in emigration flows specific to young and high-skilled Italians.

[60] This is a similar mechanism as in the *brain gain* literature (Beine, Docquier, and Rapoport 2001): as highly educated workers benefit from increased migration opportunities due to selective immigration policies (e.g. points systems), the prospect of emigration induces individuals in developing countries to invest more in their education to increase their chances of getting a visa; as not everyone ends up emigrating, this results in higher education levels at home (brain gain). In our case the hypothesized mechanism is the opposite: tax schemes may induce more individuals to leave with the prospect of lower

While we cannot empirically disentangle recession-induced emigration from the tax-induced unintended emigration, we can nonetheless compare the evolution of net immigration for the eligible and ineligible groups: intuitively, if we see that net immigration *worsens* among the eligible relative to the ineligible, this would suggest that the tax schemes were ineffective in mitigating brain drain. This is what we do in Figure C.4a, where we plot the net immigration flows among Italian citizens (return migration minus emigration), for the eligible group as well as for the ineligible individuals breakdown based on birth cohort and education. The graph shows the severity of brain drain we discussed earlier in the paper: net immigration is negative throughout the period, stable before 2010 and suddenly worsening after 2011, particularly among young individuals (born after 1969) who were the most likely to emigrate during the twin recession. However, the post-period negative net inflows are noticeable larger among young high school graduates relative to young college graduates, consistent with the timing and eligibility for tax incentives.

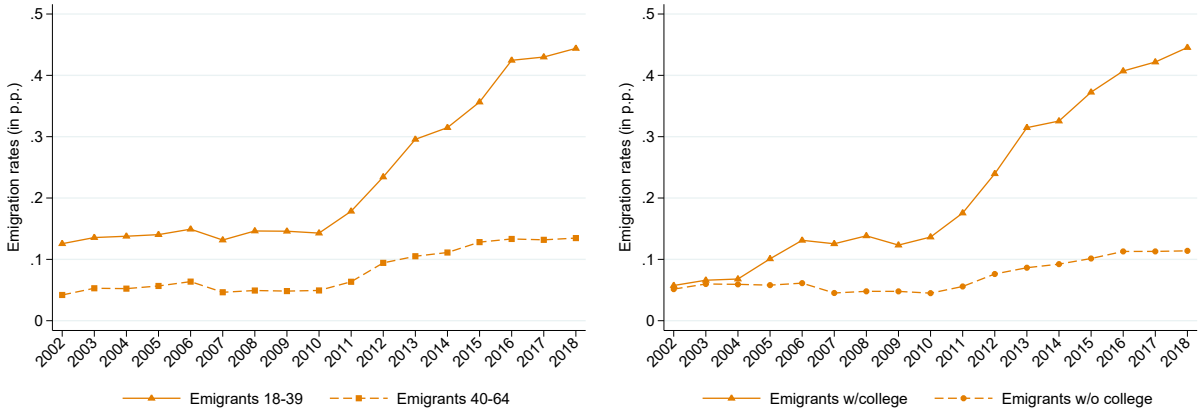
To better understand the dynamics of the inflows and outflows in the previous graph, Figure C.4b overlaps the return migration flows shown in Figure 3a with the contemporaneous emigration flows, in changes relative to 2010. Such as comparison is more informative for our analysis since the DiD effects are identified based on changes, and it reveals two interesting facts. First, while the return migration flows by eligibility start diverging around 2011-2012, likely driven by expatriates who were abroad before 2010, the divergence for emigrants occurs two years later, around 2013-2014. As individuals need at least two years abroad to be eligible for the tax scheme, the effect of the differential increase should manifest no earlier than 2015-2016. Therefore, the elasticity obtained by limiting the analysis to the 2011-2015 post period should be closer to the true elasticity. Second, even if we assume that all the excess emigration in 2013-2014 among the eligible translates in excess return migration two years after, the divergence among returnees is still larger than the divergence among emigrants, suggesting that the divergence in return migration cannot be entirely explained by differential emigration. Finally, in Figures C.5a and C.5b we show the year-of-birth distribution of emigrants by education level, pre- and post-2010. Reassuringly, we do not see any differential changes between college and high school graduates between the pre- and post-period.

Overall, three main conclusions emerge from comparing emigration and return mi-

taxes upon return, but a large share of these extra emigrants may end up staying abroad, thus exacerbating brain drain.

gration flows around 2010. First, while the 2010 decade is characterized by a deteriorating brain drain, with a large and sudden increase in net emigration from Italy, the comparison between eligible and ineligible groups reveal that tax schemes likely contributed to mitigate the increase emigration flows. Second, while we cannot completely rule out that the tax incentives induced some unintended increase in emigration, such an effect is negligible relative to the increase in return migration among the eligible group. Last, differential emigration after 2010 is unlikely to be a major confounder to identify the effect on return migration, as long as we include education and cohort by year fixed effects in the regressions.

Figure C.1: Emigration rates from Italy by age and education, relative to stayers

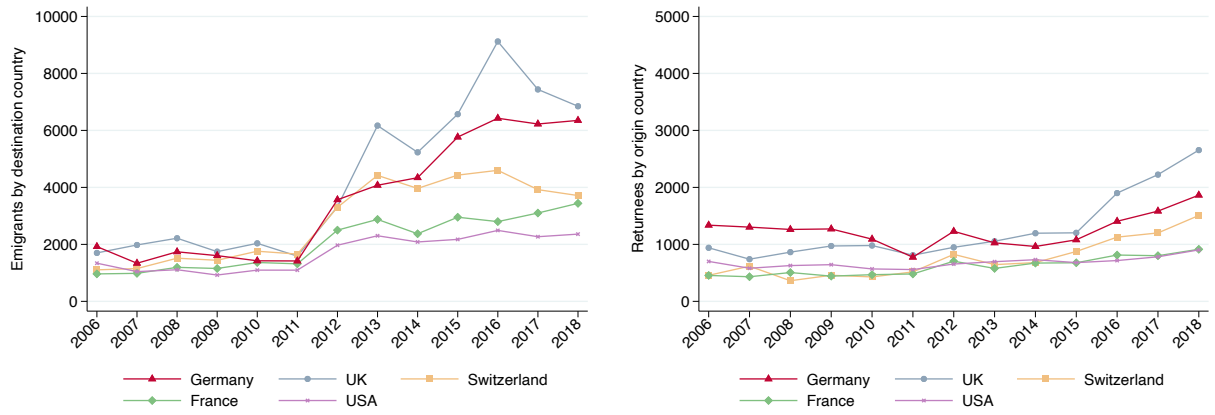


(a) by age

(b) by education

Notes: annual emigration flows of Italian citizens, as a share of the resident population in each age/education group as of 2011 Census and multiplied by 100, therefore in percentage points. Source: authors' elaboration on Istat data and Anelli et al. (2023).

Figure C.2: Emigration and return migration flows of Italians to/from top-5 countries

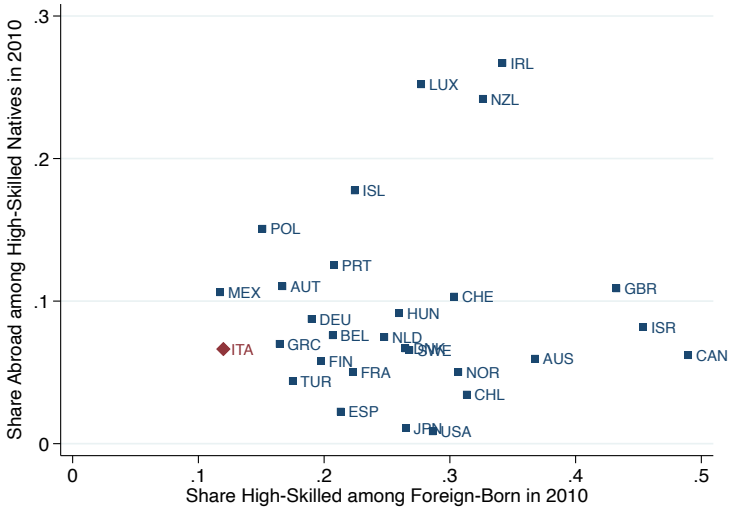


(a) emigration, by destination

(b) return migration, by origin

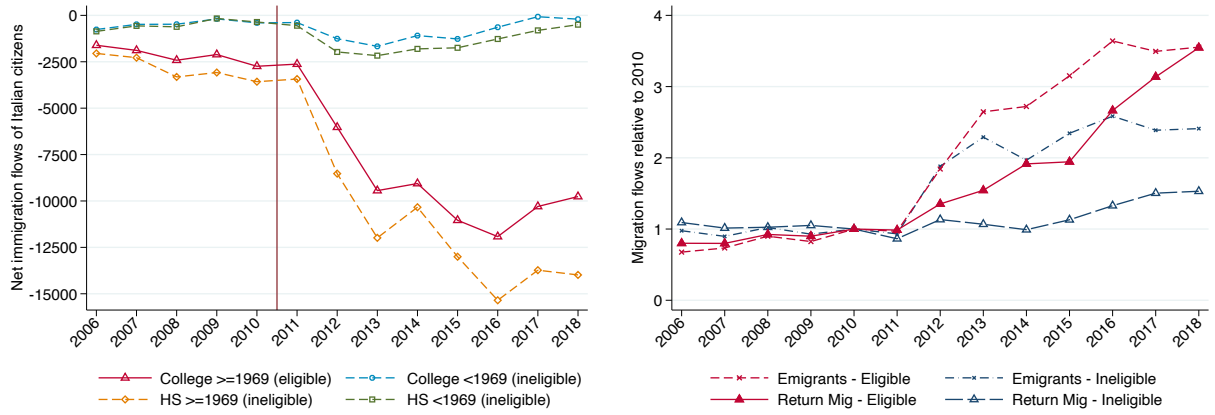
Notes: The figures plot the number of Italian citizens born in Italy, 23-64 years old, with at least high school diploma, migrating to (a) and returning from (b) each of the top-5 foreign countries of destination/origin in each year. Source: authors' elaboration on Istat data.

Figure C.3: High-skilled immigration and emigration among OECD countries



Notes: The x-axis plots the share of tertiary-educated among foreign-born in each country as of 2010, while the y-axis plots the share living abroad among tertiary-educated native-born of each country. High-skilled is defined as tertiary educated (ISCED 5A/5B/6). Source: authors' elaboration on OECD DIOC data.

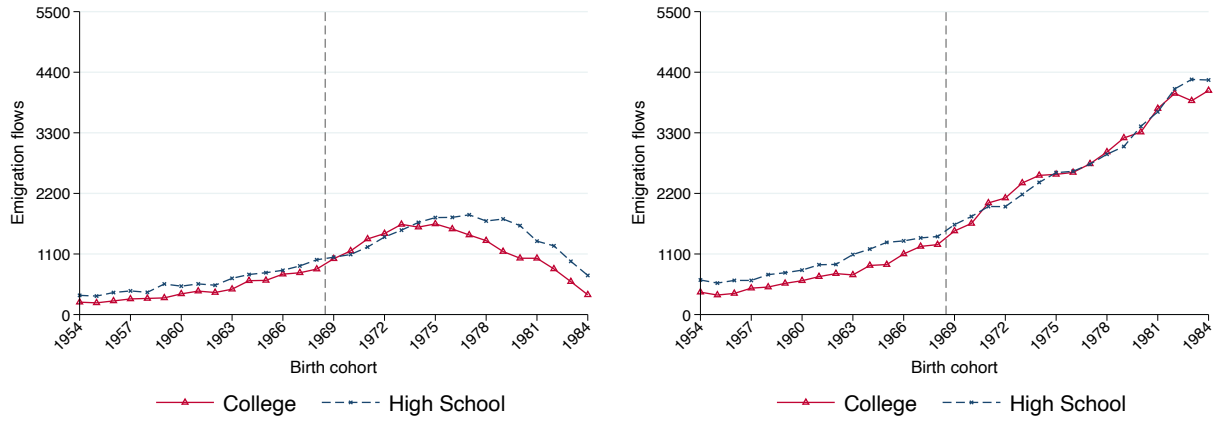
Figure C.4: Net immigration, return and emigration flow by eligibility for 2010 scheme



(a) Net immigration, by education/cohort (b) Return vs emigration flows, by eligibility

Notes: Figure (a): Net immigration flows (return migrants minus emigrants) among Italian citizens in each year, by groups defined by education and birth cohorts. Figure (b): return migration and emigration flows, by eligibility status. Eligible: college born≥1969; ineligible: high-school and college born<1969. Age at migration 23-64, born in Italy only.

Figure C.5: Emigration flows by birth cohort and education, pre- and post-2010 scheme

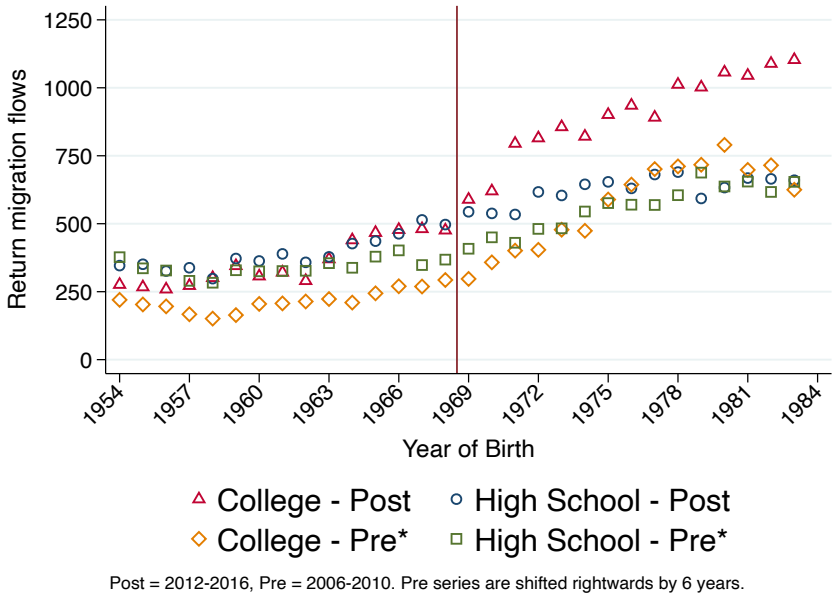


(a) pre-2010 scheme (b) post-2010 scheme

Notes: The figures plot the total number of Italian emigrants (born in Italy) moving abroad between 2006-2010 (a) and between 2012-2016 (b) by year of birth (x-axis), separately for college graduates and high school graduates. Source: authors' elaboration on Istat data.

D Appendix: Additional Figures and Tables

Figure D.1: Return migration by birth cohort and education, pre- and post-2010 scheme



Notes: The figure plots the total number of Italian expatriates, born in Italy and migrated abroad, returning to Italy between 2006-2010 (a) and between 2012-2016 (b) by birth cohort (x-axis), separately for college graduates and high school graduates. Source: authors' elaboration on Istat data.

Table D.1: DiD elasticity of return migration to the average net-of-tax rate

	Outcome: Log Return Migration		
	(1)	(2)	(3)
	Control: All	Coll<1969	HS≥1969
$Log(1-\tau)$	1.050***	0.847***	1.005***
	(0.147)	(0.157)	(0.170)
Observations	26	26	26
R-squared	0.976	0.992	0.934
Avg Outcome Pre	7.236	7.236	7.236
Year FE	Yes	Yes	Yes
Treated dummy	Yes	Yes	Yes

Notes: Observations: treatment status by year (2006-2018) groups. The dependent variable is log of return migration of Italians born in Italy between 1949-1983 and with at least a high school diploma, moving to Italy from abroad in year t (Istat data). $Log(1-\tau)$ is the log of the average net-of-tax rate (Figure 2a) and it is instrumented by the interaction $Treat * Post$, where "Treated" is a dummy equal to 1 if birth year is equal or greater than 1969 and education level is college and "Post" is a dummy equal to 1 for the post period years (2011 and after). In Columns 1 we include both high school graduates and college graduates born before 1969 in the control group, while in Columns 2 and 3 we only include college graduates born before 1969 and high school graduates born on or after 1969 respectively. "Average Outcome Pre" refers to the treated group in the pre-period. M/I is the implied marginal-to-inframarginal ratio, obtained by dividing the $Treat * Post$ coefficient by the mean outcome for the treated in the pre-period and the change in the mean outcome for the untreated. Robust standard errors in parenthesis. * p < 0.10 ** p < 0.05 *** p < 0.01.

Table D.2: Elasticity of return migration to the average net-of-tax rate, across cohorts-education groups

	Outcome: Log Return Migration	
	(1)	(2)
	DiD	Triple DiD
$Log(1-\tau)$	1.128***	0.587**
	(0.293)	(0.250)
Observations	156	156
R-squared	0.858	0.970
Avg Outcome Pre	6.081	6.081
Year FE	Yes	Yes
Cohort by Educ FE	Yes	Yes
Year by {C,E} FE		Yes

Notes: Observations: education (high school and college) by birth cohort (6 five-year groups from 1954 to 1983) by by year (2006-2018) cells. The dependent variable is log of return migration of Italians born in Italy between 1949-1983 and with at least a high school diploma, moving to Italy from abroad in year t (Istat data). $Log(1-\tau)$ is the log of the average net-of-tax rate (Figure 2a) and it is instrumented by the interaction $Treat * Post$, where "Treated" is a dummy equal to 1 if birth year is equal or greater than 1969 and education level is college and "Post" is a dummy equal to 1 for the post period years (2011 and after). In Column 1 (DiD model) we include cohort by education fixed effects, while in Column 2 (Triple DiD) we fully saturate the model by including year by cohort and year by education fixed effects. "Average Outcome Pre" refers to the treated group in the pre-period. M/I is the implied marginal-to-inframarginal ratio, obtained by dividing the $Treat * Post$ coefficient by the mean outcome for the treated in the pre-period and the change in the mean outcome for the untreated. Robust standard errors in parenthesis. * p < 0.10 ** p < 0.05 *** p < 0.01.

Table D.3: Elasticity of return migration to the average net-of-tax rate, host country variation

	Outcome: Log Return Migration		
	(1)	(2)	(3)
	DiD	Triple DiD	Triple DiD
Log $(1-\tau)$	1.239***	0.504***	0.417**
	(0.257)	(0.156)	(0.174)
Observations	6,023	6,023	6,023
R-squared	0.865	0.918	0.947
Avg Outcome Pre	2.927	2.927	2.927
Year FE	Yes	Yes	Yes
Cohort by Educ by Orig by Sex FE	Yes	Yes	Yes
Year by {C,E,O,S} FE		Yes	Yes
Year by Orig by {C,E} FE			Yes

Notes: Observations: birth cohort c by education e by country of origin o by sex s by year of migration t cells. The dependent variable is log of return migration of Italians born in Italy between 1949-1983 and with at least a high school diploma, moving to Italy from abroad in year t (Istat data). $Log(1-\tau)$ is the log of the average net-of-tax rate (Figure 2a) and it is instrumented by the interaction $Treat * Post$, where "Treated" is a dummy equal to 1 if birth year is equal or greater than 1969 and education level is college and "Post" is a dummy equal to 1 for the post period years (2011 and after). All columns include year fixed effects as well as group fixed effects, defined by all combinations of cohort, education, sex and origin countries. Columns 2 and 3 are Triple DiD specifications as we include year by cohort, year by education, year by gender and year by origin countries fixed effects (in both columns) as well as all year by origin by cohort and year by origin by education fixed effects (Column 3). Observations are weighted by the stock of Italian expatriates in each cohort-education-gender-origin country cell as of 2010, based on the OECD DIOC data. "Average Outcome Pre" refers to the treated group in the pre-period. M/I is the implied marginal-to-inframarginal ratio, obtained by dividing the $Treat * Post$ coefficient by the mean outcome for the treated in the pre-period and the change in the mean outcome for the untreated. Standard errors (in parenthesis) are clustered at the cohort-education-gender-origin country level. * p < 0.10 ** p < 0.05 *** p < 0.01.

Table D.4: Robustness: effect of eligibility on return migration, host country variation

	Outcome: Return Migration Rates				
	(1)	(2)	(3)	(4)	(5)
	Baseline	EU + CH only	EU only	No 2016-18	No 2011
Treated * Post	0.326***	0.429***	0.462***	0.298***	0.332***
	(0.074)	(0.093)	(0.103)	(0.069)	(0.079)
Observations	10,023	6,825	6,513	7,710	9,252
R-squared	0.688	0.685	0.674	0.667	0.692
Avg Outcome Pre	0.948	1.003	1.038	0.948	0.948
M/I	0.338	0.424	0.480	0.321	0.338
Year FE	Yes	Yes	Yes	Yes	Yes
Cohort by Educ by Orig by Sex FE	Yes	Yes	Yes	Yes	Yes
Year by {C,E,O,S} FE	Yes	Yes	Yes	Yes	Yes

Notes: Observations: birth cohort c by education e by gender g by country of origin o by year of migration y cells. The dependent variable is the number of Italian citizens, born in Italy between 1954 and 1983 and with at least a high school diploma, moving to Italy from abroad in year t (Istat data), divided by the stock of Italian expatriates as of 2010 (OECD DIOC data). All columns include year, cohort, education, gender and origin countries fixed effects, as well as year by cohort, year by education, year by gender and year by origin countries fixed effects. In Column 2, we only keep migration from European Union countries and Switzerland, and only EU countries in Column 3. In Columns 4-5, we respectively exclude years 2016-2018 and 2011 from the regressions. Observations are weighted by the stock of Italian expatriates in each cohort-education-gender-origin country cell as of 2010, based on the OECD DIOC data. Standard errors are clustered at the cohort-education-gender-origin country level. * p < 0.10 ** p < 0.05 *** p < 0.01.