The effects of the Brexit referendum on intra-EU migration outflows from Italy

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Abstract

In this paper, we evaluate the causal impact of the uncertainty generated by the Brexit referendum on intra-European Union (EU) migration, focusing on outflows from Italy over the period 2012-2019. In other words, we assess from the perspective of a country of origin whether the referendum outcome has changed the relative attractiveness of the UK and other EU countries. To this end, we adopt a triple-difference approach, where EU citizens migrating from Italy represent the treatment group, and all non-EU citizens emigrating from the same country constitute the control group. The results provide evidence of *migration diversion* for Italian citizens, especially low-skilled migrants.

Keywords: Uncertainty, migration policy, Brexit, Italy, European Union

JEL codes: F22, J48, J61

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1. Introduction

A wide range of research has examined the effect of anti-immigration policies, typically favored by less-educated voters who fear competition in the labor market from low-skilled immigrants (Beine et al., 2016; Beine et al., 2019; Czaika and De Haas, 2013; Hatton, 2014; Mayda, 2010; Ortega and Peri, 2013). Less evidence is provided on the effect of skill-selective immigration policies, usually aimed at increasing the proportion of qualified migrants with a high level of education and specific professional qualifications. An example of this strategy is represented by the point-based immigration system adopted by the UK in 2021 at the end of the Brexit process that started after the Referendum in June 2016 (Sumption, 2022).

Albeit it is too early to evaluate the impact of this new UK migration strategy, the Brexit referendum offers a unique opportunity to examine the effect of (policy) uncertainty on migration. In the immediate post-referendum period, it was unclear what migration policy the UK would have adopted. Therefore, from 2016 to 2019, a period of great uncertainty affected the behavior of EU foreigners residing in the UK and potential EU emigrants to that country.

The relationship between migration and uncertainty is well known as uncertainty is an integral part of migration decision-making (Hall et al., 2022; Williams and Balaz, 2012). Nonetheless, only a few studies have focused on the migration impact of Brexit-induced uncertainty, using Eurostat/OECD migration data in particular (Di Iaso and Whaba, 2022; Auer and Tetlow, 2022). These studies focus on the migration effects of Brexit from the perspective of receiving country, the UK. This country has played a key role in increasing intra-EU migration. It has been a major destination for EU citizens encouraged to migrate by the freedom of movement first enshrined in the Maastricht Treaty (1992) and strengthened by the Lisbon Treaty (2009). Not surprisingly, these studies provide evidence of (*i*) increased immigration of UK citizens to other EU countries, (*ii*) reduced immigration of EU citizens to the UK, and (*iii*) increased emigration of EU citizens from the UK.

However, these studies do not evaluate the effect of uncertainty on the skill composition of migrants, as Eurostat/OECD migration data do not provide information on the educational attainment of migrants. This shortcoming motivates studies that look at the effect of the uncertainty generated by the referendum from the perspective of a country of origin, such as Italy, which traditionally supplies the UK with significant amounts of skilled workforce. Unlike those from the Eurostat/OECD, the data on emigration flows from Italy drawn from the Italian population register make it possible to evaluate the effect of Brexit on high, medium, and low-educated migrants. It is also worth noting that Italy is one of the leading countries of origin for the UK and, since 2015, the UK has become the top destination for migration from Italy (Istat, 2019). A large share of skilled migrants with a high level of education also characterizes the strict bond between the two countries and the migration flow from Italy to the UK. Therefore, it is relevant for Italy and the UK to investigate how Brexit has affected the migration choices of Italian citizens. Although the effects on overall migration intensity may be limited, the skills and the educational level of migrants may be substantially different.

Using a triple-difference approach, where Italian and other EU migrants from Italy represent the treatment group, while all non-EU migrants from the same country constitute the control

group,[1] this study evaluates the causal impact of the Brexit referendum on migration outflows from Italy over the period 2012-2019. In particular, it assesses whether the uncertainty due to the outcome of the Brexit vote in 2016 has reduced the attractiveness of the UK and reoriented the flows toward other EU countries where the freedom of movement is still allowed ("*migration diversion*" hypothesis).

Our study improves on previous research by using individual information on migration flows, such as citizenship, age, and educational attainment, distinguishing Italians at birth from Italians by the acquisition of citizenship.[2] In particular, we evaluate the effect of Brexit on high, medium, and low-educated native Italian emigrants, and our results are as expected. There is a more substantial effect in migration diversion for low-skilled migrants, for whom job opportunities in the UK are reduced and are attracted to alternative destinations. On the other hand, there is a lower, but still significant, effect for medium and highly-educated migrants for whom the chances should remain unchanged. The results also show that the UK referendum and the consequential uncertainty have not significantly reduced the overall attractiveness of the UK for Italian citizens.

Findings from this study provide the first glimpse into how political and economic instability and the resulting uncertainty of the migration policy might affect the intensity of migration and the choices of migrants with different characteristics from the perspective of a developed country of origin.

The rest of the paper is organized as follows. Section 2 briefly describes the outcome of the Brexit referendum and its implications regarding uncertainty for the migrants. Section 3 provides some descriptive analysis of Italian emigration to the UK and other EU countries over the sample period. In Section 4, we describe the methodology used to test our hypotheses. Section 5 reports the econometric results. Section 6 concludes.

2 The Brexit referendum and its effects on migration

2.1 From the freedom of movement to the Brexit

The conservative premier David Cameron promoted the Referendum for the UK's exit from the EU, although he has always favored Remain. According to Ivan Rogers, the UK's permanent delegate to the UE, the premier's decision to hold the vote was motivated by worsening the relations between the EU and the UK in 2011 after the global economic and financial crisis. As a result, dissent toward the EU has crept into Conservative Party members and Cameron wanted the vote to consolidate his power and strengthen consensus. The outcome of the Referendum in June 2016, therefore, forced the premier to resign.

Over 33 million UK citizens voted in the Referendum. The Leave party won 51.9% against 48.1% for the Remain party. The results show a strong polarisation: among the Leavers, a substantial contribution was made by British citizens over 65 years old (64%) and with a low-

[1] The Brexit referendum and resulting uncertainty in immigration policies and migrant rights only affected EU migrants but did not impact non-EU.

[2] As widely discussed in the literature, the migratory behavior of naturalized Italians is very different from that of Italian citizens at birth (Strozza et al., 2021; Bonifazi et al., 2021).

medium level of education (70%); among the Remainers, the majority was young people aged 18 to 24 years (71%) and graduates (68%) who live in big cities.

At the time of the Referendum, there was confusion about what Leavers wanted on freedom of movement. Under free movement, EU citizens could work in any job without meeting skill criteria and were overrepresented in low-wage positions where non-EU citizens were not eligible for visas (Sumption and Fernandez Reino, 2018). In January 2021, the free movement of EU citizens ended and the Government introduced an employer-driven work permit system, which would treat EU and non-EU migrants equally. The political intention of the new system was not to reduce migration but to better manage and control it by making it more spread on the territory and more selective about the qualification of migrants. This point-based selection system grants work visas only to those workers with medium and high-skill jobs who are believed to be able to cope with a shortage in the UK labor market. Workers are classified and rated according to their skills. Workers in low-skilled jobs are mostly ineligible for work visas, except for a program for seasonal agricultural workers. However, there are restrictions on even the most highly-skilled workers if they have no employers applying on their behalf.

According to the new system, all work migrants (EU and non-EU) must have a job offer that meets skill and salary requirements.[3] In particular, for high-skill migrants, the system emphasizes shortage measures to decide the salary threshold for work visas. However, according to Sumption (2020), prioritizing labor migration in 'shortage occupations to attract' highly-skilled workers, albeit politically appealing, is problematic in practice, as shortages are difficult to measure. If the shortage list does not accurately reflect what is happening in the labor market, this type of immigration policy may even exacerbate mismatches between labor demand and labor supply. Therefore, the end of free movement should generate shortages, at least in the medium term, before the labor market and the sectoral composition of the economy can adjust.

The situation is different at the low-skilled level, as migrants coming to work in lower-skilled and paid occupations are, in principle, no longer able to gain entry. However, it is worth distinguishing between EU and non-UE migrants. For the first group, it is widely believed that the new system significantly reduces options for the legal migration of low-skill workers (Sumption, 2020). For non-EU migrants, the new requirements are lower than those under the pre-2021 immigration rules.

While it is too early to assess the impact of this new UK immigration system, a relevant question is the effect of the referendum's outcome on migration in the run-up to 2021. The new system follows some years of debate (from June 2016 when the Brexit vote occurred) about what should replace free movement (Portes, 2016, 2018, 2019, 2020, 2021, 2022a,b). This debate generated economic and political instability with uncertainty regarding the status of EU migrants already residing in the UK, the would-be migrants, and how future migration flows between the UK and the EU would be regulated (D'angelo and Kofman, 2017). The UK has used migration as a potential bargaining chip for negotiations with the EU.

[3] With some exceptions, new migrants should be coming to work in a job paying more than £25,600 or the lower quartile of the average salary, whichever is higher, and in an occupation requiring skills equivalent to at least A-levels.

Therefore, the uncertainty about the degree of restriction of the new migration policies depended on the effective implementation of Brexit and the outcome of the trade and financial agreements between the UK and the EU.

Between the Referendum vote in June 2016 and the UK withdrawal from the EU in January 2020 (followed by a transition period, formally ending on 31 December 2020, in which the UK was still bound to the EU rules), there were four years in which the freedom of movement of EU citizens to the UK (and vice versa) still existed. However, these citizens were uncertain about the post-Brexit migration policy and their rights to stay and work in the UK. Uncertainty affected their decision to stay or to leave until 31 January 2020, when the UK officially left the EU. On the one hand, this uncertainty may have discouraged potential new EU migrants, especially the low-skilled ones, from choosing the UK as their destination (and ultimately preferring alternative EU destinations) due to the difficulty of making plans for themselves and their families. On the other hand, this uncertainty may have prompted potential EU immigrants to move to the UK before any change in migration policy. The overall impact of the Brexit referendum on migration flows can go both ways and is, therefore, an empirical question.

It should also be considered that many EU citizens may be living in the UK without having registered on the British population registers. However, at the end of the transition period (31 January 2021), in order to be eligible for the new immigration system, an immigrant must have a settled (or pre-settled) status to remain in the UK after the actual Brexit. As the orientation of the new British migration policy became clearer, especially towards the low-skilled, many unregistered immigrants have fast-tracked their registration in the UK to avoid the adverse effects of the end of the free movement policy. This also applies to Italian emigrants who have lived permanently in the UK before the Brexit.

According to the official AIRE data (*Anagrafe Italiani residenti all'estero*, i.e. the register of Italian residing abroad), approximately 439 thousand Italians were living in the UK in December 2021. However, as of June 2022, more than 509 thousand[4] Italians applied for the EU Settlement Scheme. Although this figure has several limitations (excludes Italians who entered the UK on a visa after Brexit; includes Italians who have already left the UK; excludes Italian citizens who also hold British citizenship and did not need to register for the EU Settlement Scheme), it provides a gross estimate of the actual Italian presence in the UK.

Moreover, registration in AIRE is a fundamental support for certifying the permanence in the UK required by the EU Settlement Scheme. For this reason, the increase in AIRE registrations over the past five years (from 283 thousand in 2016 to 439 thousand in 2021) reflects more a later compliance with the legal requirement than the actual increase in migration flows towards the UK.

2.2 Previous studies

While the literature on the impact of the uncertainty due to the Brexit referendum on trade and other economic outcomes is extensive (e.g., Graziano et al., 2021), a few studies have tried to assess its effect on migration. Using a regression approach (specifically a gravity

[4] https://www.gov.uk/government/statistics/eu-settlement-scheme-quarterly-statistics-june-2022/eu-settlement-scheme-quarterly-statistics-june-2022.

regression model), some of these studies predict a sizeable negative impact of Brexit on trade and migration flows between the EU and the UK and a negative macroeconomic impact (on UK GDP) of Brexit through trade and migration channels (Berthou et al., 2020; Campos and Timini, 2019; Portes, 2022a). Other studies have focused on how the choices of migrants living in the UK would change (Jancewicz, Kloc-Nowak, and Pszczółkowska, 2020). However, the most relevant references from our point of view are Auer and Tetlow (2020) and Di Iasio and Wahba (2022).

Auer and Tetlow (2020) exploit the 23 June 2016 Brexit referendum and its subsequent period of political negotiation as a turning point that altered people's perceptions of a future life in the UK. This shift in perception has increased uncertainty (incomplete information) about the UK's future economic performance and social cohesion. Therefore, they analyze the effect of this heightened uncertainty on the migration patterns of UK citizens. Using Eurostat aggregate annual immigration data by nationality for the period 2008-2019, they show that the Brexit referendum has led to an excessive increase in immigration of UK citizens to other EU countries by around 16% in the post-referendum period (2016-2019), compared to movements of non-UK EU/EFTA citizens towards EU countries in the same period. The authors also show that the referendum has increased the number of naturalizations of British citizens in other EU Member States. Finally, to corroborate these conclusions, they also report the results of a qualitative analysis based on 46 interviews with British citizens who emigrated to Germany between 2007 and 2019. These latest findings suggest that uncertainty about future bilateral relations, gloomy economic prospects, and perceived negative social consequences in the UK were the key drivers of migration after the referendum, while personal motivations dominated before the vote.

A critical issue of the quantitative counterfactual analysis conducted by Auer and Tetlow (2020) concerns their choice of considering UK citizens as the treatment group and non-UK EU along with EFTA migrants as a control group, i.e. non-affected migrants. The referendum only affects the freedom of movement of EU citizens within the EU. Thus, it naturally provides a treatment group (EU immigrants) and a control group (non-EU immigrants). During the period after the referendum, non-EU migration policies or practices in the UK remained unchanged and the freedom of movement remained unaltered; what has changed is only the climate of uncertainty on migration regulations between the EU and the UK. Our counterfactual analysis considers all EU citizens migrating from Italy as a treated group, while non-EU citizens make up the control group.

Our strategy is more in line with the one adopted by Di Iasio and Wahba (2022), who analyze the impact of the 2016 UK referendum and expect Brexit on migration flows and net migration in the UK as well as on the attractiveness of other EU countries as destinations (migration diversion) over the period 2016-2019. Their identification strategy assumes that the Brexit referendum and resulting uncertainty in immigration policies and migrant rights only affected EU migrants but had no impact on non-EU, whose immigration policies and rights are considered separately. There were no changes or uncertainty regarding non-EU migrants. Therefore, they classify flows of migrants into two groups: EU citizens, considered the treated group, and non-EU citizens, considered the control group. Then, using a difference-in-differences strategy, they compare EU migration to non-EU migration before and immediately after the Brexit referendum of June 2016. Their findings show that

migration policy uncertainty and expectations (*i*) reduced migration inflows from the EU to the UK, (*ii*) increased the emigration of EU citizens from the UK, and (*iii*) reduced net migration flows from EU countries to the UK. In particular, the estimate suggests that net EU migration was 75% lower than non-EU migration after the referendum. Instead, based on the use of the OECD International Migration database, they do not find any significant impact of Brexit on migration diversion for all EU citizens. However, this last result may represent an average outcome around which there could be considerable heterogeneity across countries of origin of the flows. Moreover, and most interestingly, OECD data do not provide information on the educational attainment of migrants. Consequently, they do not allow us to assess the effect of Brexit on the skill composition of migrants. In this paper, we try to overcome this limitation: the availability of individual and detailed data on migration outflows from Italy to the UK allows us to switch to a longitudinal approach where even migrants' characteristics, behaviors, and choices take on a central role.

3 Italian emigration: some stylized facts

Italy has a long history of emigration and a very short experience of immigration. Like other Southern Europe countries (Greece, Portugal, and Spain), after the Second World War, Italy experienced a long period of high emigration to the growing Western and Northern Europe economies, particularly towards Belgium and France, combined with limited foreign immigration (King, 2000; Peixet et al., 2012). The creation in 1957 of the European Economic Community (EEC), aimed at fostering European economic integration, stimulated these outflows. From 1946 to 1975, statistical sources estimate 7.3 million Italian emigrants, with a population loss of 3.1 million. The energy crisis in the mid-1970s and the host countries' anti-immigration policies significantly reduced massive emigration and generated a period of repatriation (Glytsos, 1997).

Over the same period, Italy has also gradually transformed into a country of immigration. Thanks to the substantial contribution of immigrants coming first from North Africa, then from the Balkan routes and, more recently, from the Middle-Eastern routes, the migratory balance with foreign countries has been positive since 1970. Despite this, the departures of Italians abroad have never stopped, creating a new kind of emigration. The new emigration is significant not so much for the consistency of the movements (much lower than in the past) but substantially for the different characteristics of those who emigrate. The heterogeneity of the new emigrants from Italy can be appreciated in terms of training and skills (high-skilled versus low-skilled) and citizenship (natives versus foreigners and naturalized people).

The creation of the European Union with the Maastricht treaty in 1993 represented another milestone whose effects on Italian migration are still evident. The free movement of EU citizens has significantly impacted migratory dynamics within European borders, allowing millions of EU citizens to move and reside in one of the member states. The UK has played a key role in increasing intra-EU migration, as it has been a major destination for EU citizens. Italy is one of the leading countries of origin of these flows and, since 2015, the UK has become the first destination for migration from Italy.

According to official data, in the sample period (2012-2019), over 809 thousand Italians emigrated, with a growing trend: in 2012, there were around 68 thousand emigrants, while in

2019, they were over 122 thousand (+79%). The acquisition of citizenship by foreign residents was also important, growing from 65 thousand in 2012 to 127 thousand in 2019 (Table 1). As of 1 January 2020, around 1,517 thousand foreigners had acquired Italian citizenship. The amount of this population is relevant not only for interpreting the substantial stability of the foreign population in recent years but also for understanding the various demographic phenomena. In particular, in the Italian outflows, the share of "new Italians" is increasingly significant and reflects profoundly different migratory behavior between natives and naturalized, especially in terms of propensity to move (Bonifazi et al., 2021). This point is highly relevant to the present analysis. Identifying the naturalized citizens is functional to isolate the component of the natives on which to focus the impact analysis discussed below.

Insert Table 1 about here

The most common reasons for moving among all age groups are job, housing, or family related. Many of these movements are made in working age, an age group marked by various life course transitions, including getting a job, going to college, getting married, or having children. Young and adult people aged 25-64 represent the majority of emigrants (about 68%) and have the highest migration rate compared with other age groups. Italian emigrants aged 25-64 mainly head to European countries, and one in three choose the UK or Germany as their favorite destination.

The flows of Italian citizens moving to the UK are increasingly numerous and go to feed the already substantial stock of Italian population residing in England and Wales (about 439 thousand in January 2022, according to AIRE data): it doubled in the past decade, and nearly 40% more than in 2016, the Brexit referendum year. About half live in London, where Italians have become the first foreign community, ahead of Indians and Polish.

The dynamics of native flows to the UK show a more variable trend than flows to other EU countries, which follow an almost linear pattern. This different trend could be associated with the uncertainty due to Brexit, as we will analyze later. In both cases, the emigration propensity of the high-skilled is, on average, double that of the low and medium-skilled.

Insert Figure 1-2 about here

If, at the beginning of the century, the Italian presence in the UK was characterized by schooled young people belonging to the middle class (Conti, 2011), the profile and composition of the flows changed in the following decade. The traditionally high-skilled component of the migratory movement was joined by flows of young and less skilled workers, rejected by the Italian labor market (D'Onofrio, xxxx). In addition, in our sample period, flows are characterized by a massive presence of emigrants with an educational qualification equal to or lower than a secondary school diploma. A key factor affecting recent Italian outflows is the high UK demand for foreign labor from sectors characterized by ample contractual flexibility, low demand for professional qualifications, low wages, and high turnover (the so-called *social dumping*). From the mid-2000s, this demand was increasingly satisfied by intra-European immigration, which was preferred to extra-European immigration because it was easier to manage from an administrative point of view. Employer preferences also emerge for specific nationalities deemed more suitable to cover certain functions (MacKenzie and Forde, 2009). These dynamics help interpret the mobility of

young Italians with low levels of education towards specific sectors, such as catering, but also that of young people with a medium-high level of education.

4. Hypotheses and methodology

To assess the effect of the Brexit referendum on migration flows from Italy, we adopt a triple-difference (DDD) strategy. In the first step of the analysis, all EU citizens migrating from Italy to EU countries (including the UK) represent the treatment group. In contrast, all non-EU citizens migrating to the same countries make up the control group. The Brexit referendum and the subsequent uncertainty about immigration policies and migrants' rights hit the first group. Therefore, they may have decided to anticipate changes in these policies (during the period 2016-2019) by reducing their migration towards the UK ("*hypothesis of the reduced relative attractiveness of the UK"*) and choosing to move to other EU countries ("*migration diversion hypothesis"*). The Brexit referendum had no impact on non-EU citizens. The UK has not signed the Schengen agreement; therefore, they have always treated non-EU citizens differently from the EU.

To illustrate the empirical strategy for identifying the causal impact of Brexit, let us start with the more straightforward case of excluding the UK as a destination country from the analysis. In this case, migration flows (per thousands of population) of different nationalities from Italy towards EU countries further from the UK represent the outcome variable. In other words, we start by considering only the migration diversion hypothesis. Even in this case, we cannot draw causal conclusions about Brexit simply by looking at the before-and-after changes in the migration of EU citizens (the treated group), as factors other than Brexit can influence the outcome over time. The standard double-difference (DD) approach solves this problem by comparing the before-and-after changes in outcomes for treatment and control groups. Therefore, the causal impact of the referendum is computed as the difference in outcome between the two groups after the referendum minus the difference in outcome between the two groups before the referendum. In this way, the method "cleans up" all time-varying factors. The validity of the DD approach relies on the parallel trends assumption, i.e. that there are no time-varying differences between the treatment and control groups (Angrist and Pischke, 2008). This hypothesis can be assessed by repeatedly comparing outcome changes for the treatment and control groups before the treatment. If the outcome trend moved in parallel before the treatment, it would likely have continued to move in tandem in the absence of treatment.

The period of the analysis goes from 2012 to 2019. Therefore, it includes a similar number of years in the pre and post-referendum period. Over the sample period, the UK did not implement any significant change in immigration policy for both UE and non-EU citizens. In a multi-period context, the DD equation is specified as a two-way fixed effects (TWFE) model:

$$y_{idt} = \alpha_{id} + \gamma_t + \tau^{DD} D_{it} + X'_{dt}\beta_k + \varepsilon_{idt} \qquad (1)$$

where y_{idt} is the outcome variable, that is the log of migration outflows of people of nationality *i* (per thousands of population) to destination area *d* (aggregations of EU27

countries[5]) in year t (excluding the 2016 year).[6] Emigrants with British nationality are excluded from the sample. The country of origin is always Italy. The classes of nationality i considered are 13.[7] The dummy variable D_{it}, taking the value of 1 if the nationality is EU (classes 1-5) and $t > 2016$, is the main variable of interest as its coefficient (τ^{DD}) captures the so-called average treatment effect on the treated (ATT, see Goodman-Bacon, 2018). X_{dt} is a matrix including destination-specific variables, such as the log of GDP per capita, the unemployment rate, and the log of healthy life years in absolute value at birth. Finally, α_{id} are fixed effects for the combination of nationality and countries of destination; γ_t are time-fixed effects; and ε_{idt} is an error term assumed to be identically and independently distributed.[8]

To provide a test of the parallel trends assumption inherent in equation (1), we also adapt equation (1) into the following event-study specification:

$$y_{idt} = \alpha_{id} + \gamma_t + \tau_t^{DD} D_{it} + X'_{dt}\beta_k + \varepsilon_{idt} \qquad (2)$$

where the τ_t^{DD} coefficients are permitted to vary over time. Then, we provide a Wald test for the null hypothesis of a joint lack of significance of the τ_t^{DD} coefficients for the pre-referendum period.

We distinguish between Italians and Other EU citizens in a multiple-treatment version of the model. For the Italians, we also distinguish between natives and those that acquired Italian citizenship. Finally, for the natives, we also differentiate by education level (low, medium, and high, i.e., up to the primary, secondary, and tertiary levels, respectively).

Now, we can illustrate the extension of the model to examine the referendum's effect on the relative UK attractiveness. The simplest way to assess the impact of Brexit on the emigration of Italians to the UK would be to estimate a separate DD coefficient (say θ^{DD}) on a sample where the only destination country is the UK. Equivalently, we can estimate the following triple-difference (DDD) model (Gruber, 1994; Imbens and Wooldridge, 2007) on the pooled sample (i.e., the sample with both UK and other EU countries as destinations) by including interactions between the dummy UK_d (taking value one if the country of destination is the UK and zero otherwise) and all variables from equation (1):

$$y_{idt} = \alpha_{id} + \gamma_t + \tau^{DD} D_{it} + X'_{dt}\beta_k + \gamma_t UK_d + \tau^{DDD} D_{it} UK_d + X'_{dt} UK_d \rho_k + \varepsilon_{idt} \qquad (3)$$

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[5] Destination countries have been aggregated in nine geographically homogeneous areas: 1) Belgium, Netherlands, and Luxembourg; 2) Denmark, Finland, and Sweden, 3) Spain and Portugal, 4) Malta, Greece, and Cyprus, 5) Bulgaria and Romania, 6) Germany and Austria, 7) France, 8) Ireland, 9) Poland, Hungary, Estonia, Latvia, Lithuania, Croatia, Slovenia, Slovakia, Czech Republic.

[6] We used the Italian population for Italian migrants and the total foreign population for the other citizens.

[7] They are: 1-3) Native Italians (by skill level: medium, low and high), 4) Naturalized (or acquired) Italians, 5) EU13 including western EU citizens from Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Luxembourg, Netherlands, Portugal, Spain, Sweden, 6) EU11 including eastern EU citizens from Croatia, Czech Republic, Estonia, Latvia, Lithuania, Hungary, Poland, Slovakia, Slovenia, plus Cyprus and Malta, 7) EU2 including citizens from Bulgaria and Romania, 8) Other European countries including citizens from EFTA and countries that geographically belong to Europe but are not part of the European Union, 9) citizens from Asia, 10) citizens from North Africa, 11) citizens from Other Africa, 12) citizens from North America and Oceania, and 13) citizens from Central and South America.

[8] The DID approach, and more generally the policy evaluation approach, is based on the assumption of independence in the errors of the TWFE model (Rubin, 1974, Lolak and Anselin, 2020). We can test this assumption by using the Pesaran's CD test of no cross-sectional correlation in the residuals.

where the parameter τ^{DD} captures the impact of the Brexit referendum on migration flows of the treated group (EU citizens) towards EU countries different from UK (i.e. when the dummy UK is zero), while τ^{DDD} gives the impact of the referendum on migration flows of the treated group towards the UK relative to the alternative EU destinations; in other words, τ^{DDD} equals the difference between the sub-sample coefficients ($\theta^{DD} - \tau^{DD}$). The ATT will be equal to τ^{DD} when UK_d is equal to zero and to $\tau^{DD} + \tau^{DDD}$ when UK_d is equal to one. The first ATT is a measure of the impact of the referendum on migration diversion, while the second ATT is a measure of the impact of the referendum on the relative attractiveness of the UK.

5 Estimation results

In this section, we report the results of the counterfactual analysis to evaluate the impact of the EU Referendum in 2016 on migration (see **Tables 2-5**). The outcome variable is the log of the out-migration rate (from Italy to EU countries, including the UK). Out-migration flows are computed for groups of citizens and EU destinations defined in Section 4. The population at risk is the Italian population aged 25-64 for Italian citizens and the overall foreign population aged 25-64 for the different groups of foreign citizens. The panel data used for the analysis is unbalanced: the number of cross-sectional units is 129 (combinations of citizenship and destination), the number of years per cross-sectional unit ranges between 3 and 7, and the total number of observations is 873.

Insert Tables 2-5 about here

We start by estimating equation (3), using as a treatment group all EU citizens migrating from Italy to EU countries, including the UK (see **Table 2 column** "**Model 1**"). For this group of treated migrants, the estimation results of a TWFE regression model confirm the hypothesis that the policy uncertainty due to the Brexit has generated migration diversion. The coefficient of the double-difference, τ^{DD}, associated to the dummy D_{it} reported in the table is indeed positive and significant. The inference is based on robust (against heteroskedasticity across groups) covariance-matrix estimators according to the White method for panel models (Arellano, 1987). Observations are also clustered by "group" to account for within-group serial correlation. This coefficient must be interpreted as a semi-elasticity, i.e. as the percentage change in the migration rate for a change in the dummy D_{it} (in equation 1) from 0 to 1: a coefficient equal to 0.226 means that the migration rate of EU citizens from Italy to EU countries (other than the UK) increases of around 25% compared to the migration rate of non-EU citizens due to the EU Referendum. In other words, these results show that periods of uncertainty in migration policy due to the EU Referendum encouraged potential migrants from Italy to locate in alternative EU countries. This finding contrasts with that reported by Di Iasio and Wahba (2021), who do not find evidence of spillover impacts or changes in the relative attractiveness of other EU countries as destinations. However, their result, based on the use of the OECD International Immigration database, must be interpreted as an average outcome for all OECD countries around which there could be some cross-country heterogeneity. Moreover, the dependent

variable in their case is computed in terms of the log of the gross immigration flow rather than in terms of the log of the migration rate.

The coefficient of the triple-difference, τ^{DDD}, associated to the interaction term $D_{it}UK_d$, is not significant, suggesting that the referendum did not have a significant impact on the relative attractiveness of the UK as possible destination for EU emigrants from Italy. However, this result must be evaluated with some caution. As already pointed out in section 2.1, many EU citizens already present in the UK at the time of the referendum may have accelerated the process of registering in the UK population registers to avoid the negative consequences of the end of the free movement policy. This may explain, in part, the lack of a significant negative effect of Brexit on the attractiveness of the UK.

It is worth noticing that the Pesaran (2007) CD test on the residuals of Model 1 reported in Table 2 does not reject the null hypothesis of the absence of cross-sectional dependence. This result is essential since the DD approach is based on the assumption of independence in the errors of the TWFE model, as pointed out, for example, by Lolak and Anselin (2020). We also provide a placebo test using previous periods to test for the validity of our identification strategy. The Wald test for the joint significance of the ATT coefficients for the years before the treatment reported in Table 2 provides evidence in favor of the parallel trend assumption.

A novelty of our analysis, which also justifies using a single source-country migration dataset, is to assess whether the heterogeneous citizenship of the migrants matters for the impact of Brexit on migration behavior. The estimation of **Model 2** reported in Table 2 confirms this hypothesis. When we distinguish EU citizens into two treatment groups, namely Italians and Other EU citizens, it turns out that only the behavior of the first group is significantly affected (in terms of migration diversion) by the shock of the Referendum outcome. The semi-elasticity of the treatment for the Italians indicates an increase of around 55% in the migration rate of EU citizens relative to non-EU citizens. It is significant at the 1% level, while the ATT coefficient for the Other EU citizens is slightly negative but not statistically significant. The coefficients of the triple difference are never significant. At the same time, the hypotheses of cross-sectional independence of the residuals and the parallel trends are also satisfied in the case of model 2.

Table 3 reports the estimation results of a TWFE model where we remove migration flows of Other EU citizens (given the evidence of a non-significant ATT parameter associated with Other EU in Table 2) and further distinguish the treated group of Italians in two sub-groups: naturalized citizens and native Italians (**Model 3**). Both of them have been significantly affected by Brexit regarding migration diversion decisions. Again, no significant evidence emerges for the triple-difference parameter. However, the event study results suggest that the parallel trend assumption is not satisfied for the treatment group composed of naturalized Italians.

Finally, after having excluded the flows of naturalized Italians from the sample units, we estimate **Model 4,** where we distinguish native Italians into three groups: the highly-educated, the medium-educated, and the low-educated citizens (**Table 5**). As expected, low-educated Italians are more affected by the Referendum than medium and highly-educated Italians, choosing more intensively EU destinations different from the UK than without this

shock. However, the effect of Brexit on the migration diversion of medium and highly-educated Italians is significant, notwithstanding the signs that the new British migration policy was going toward a point-system strategy to attract highly qualified workers. The hypotheses of cross-sectional independence of the residuals and parallel trends are satisfied. Finally, the parameters of the triple difference (the interaction term) confirm the lack of a significant impact of Brexit on the relative attractiveness of the UK as a possible destination for both high, medium, and low-educated Italian citizens. For this last model, we also provide graphical evidence of the marginal effects of the treatment (i.e. the ATT) when the destination country is the UK ($\tau^{DD} + \tau^{DDD}$) or any other EU country (τ^{DD}) (Figure 2).

Insert Figure 2 about here

6 Conclusions

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Table 1 - Emigrations from Italy in the years from 2012 to 2019

Years	Total Emigrations	Italians	of which: Italians Naturalized	% of Naturalized on Emigrations
2012	106.216	67.998	3.314	3,1
2013	125.735	82.095	5.540	4,4
2014	136.328	88.859	8.457	6,2
2015	146.955	102.259	13.696	9,3
2016	157.065	114.512	19.837	12,6
2017	155.110	114.559	23.336	15,0
2018	156.960	116.732	27.274	17,4
2019	179.505	122.020	26.326	14,7

Table 2 – TWFE estimates (Equation 3). Treatment group: EU citizens

	Model 1: EU Citizens
τ^{DD}	0.226**
	(0.096)
τ^{DDD}	-0.162
	(0.318)
$\tau^{DD} + \tau^{DDD}$	0.064
	(0.304)
CD test (z)	-0.427
	[0.669]
Wald test (Chisq)	3.309
	[0.346]

Notes: Outcome variable: log of the out-migration rate (from Italy to groups of EU countries, as defined in Section 4, including UK). The coefficients indicate the ATT parameters: migration diversion effect of the Brexit Referendum (τ^{DD}) and the relative UK attractiveness (τ^{DDD}). Standard errors in parenthesis. Inference is based on robust (against heteroskedasticity across groups) covariance matrix estimators according to the White method for panel models (Arellano, 1987). Observations are also clustered by "group" to account for within-group serial correlation. The CD test is the Pesaran (2007) test statistics for the cross-sectional dependence in the residuals. The Wald test is the test of parallel trend assumption (joint significance of the ATT coefficient for the years prior to the treatment) (see equation 2). P-value in square brackets. Unbalanced panel: No. of cross-sectional units = 129; No. of years per cross-sectional units = 3-7; Total no. of observations = 873.

Table 3 – TWFE estimates (Equation 3). Treatment groups: Italians and Other EU citizens

	Model 2	
	Italians	Other UE citizens
τ^{DD}	0.441***	-0.062
	(0.114)	(0.100)
τ^{DDD}	-0.146	-0.183
	(0.355)	(0.386)
$\tau^{DD} + \tau^{DDD}$	0.296	-0.245
	(0.337)	(0.373)
CD test (z)	-0.094	
	[0.924]	
Wald test (Chisq)	2.912	2.926
	[0.405]	[0.403]

Notes: See Table 2.

Table 4 – TWFE estimates (Equation 3). Treatment groups: Naturalized Italians and Natives

	Model 3	
	Naturalized	Natives
τ^{DD}	1.064***	0.228***
	(0.260)	(0.082)
τ^{DDD}	0.161	-0.243
	(0.328)	(0.218)
$\tau^{DD} + \tau^{DDD}$	1.225	-0.014
	(0.200)	(0.202)
CD test (z)	-0.622	
	[0.533]	
Wald test (Chisq)	12.175**	3.846
	[0.007]	[0.279]

Notes: See Table 2. Unbalanced panel: No. of cross-sectional units = 99; No. of years per cross-sectional units = 3-7; Total no. of observations = 664.

Table 5 – TWFE estimates (Equation 3). Treatment groups: High-, Medium-, and Low-skilled natives

	Model 4		
	High	Medium	Low
τ^{DD}	0.215**	0.206**	0.285***
	(0.100)	(0.092)	(0.102)
τ^{DDD}	-0.296	-0.215	-0.238
	(0.224)	(0.220)	(0.225)
$\tau^{DD} + \tau^{DDD}$	-0.081	-0.009	0.047
	(0.200)	(0.200)	(0.200)
CD test (z)	-1.048		
	[0.294]		
Wald test (Chisq)	1.693	4.354	0.612
	[0.638]	[0.226]	[0.893]

Notes: See Table 2. Unbalanced panel: No. of cross-sectional units = 89; No. of years per cross-sectional units = 3-7; Total no. of observations = 594.

Figure 1 – Emigration rates of native Italian (aged 25-64) to the UK by education level. Years: 2012-2019

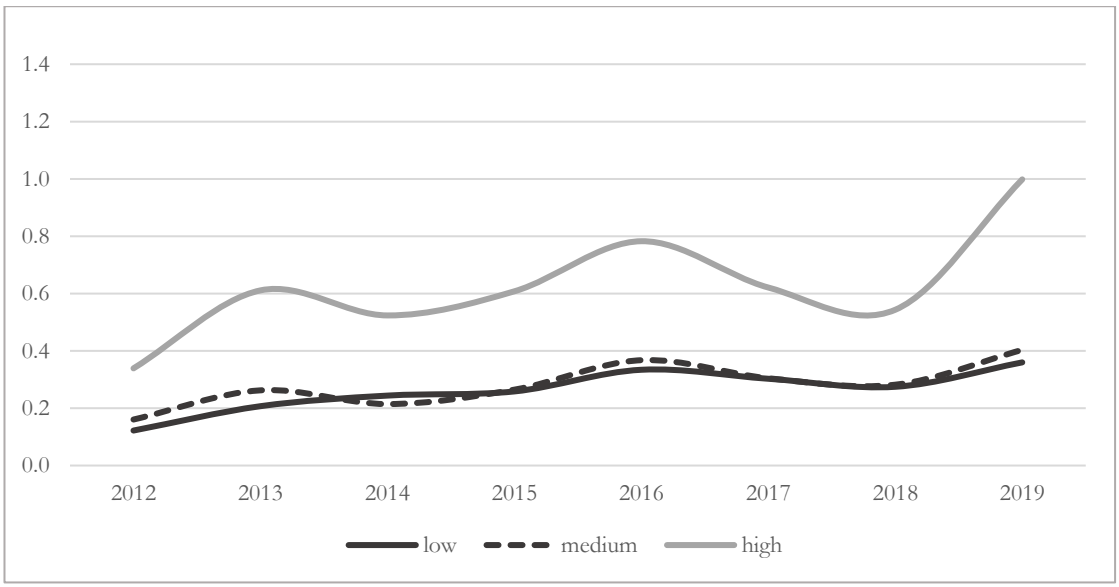


Figure 2 –Emigration rates of native Italian (aged 25-64) to the other countries (except UK) by education level. Years: 2012-2019

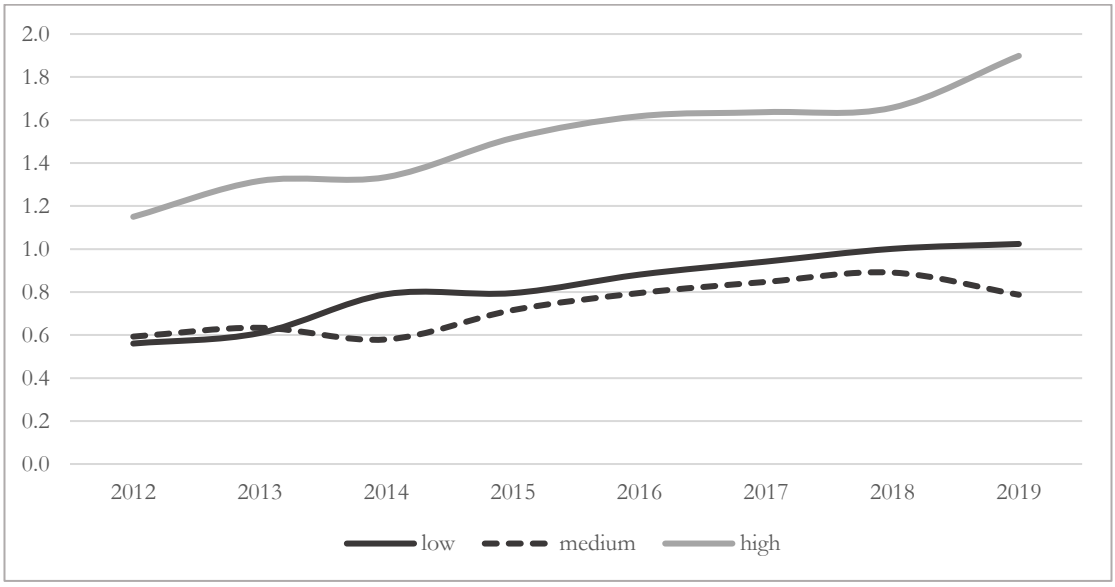
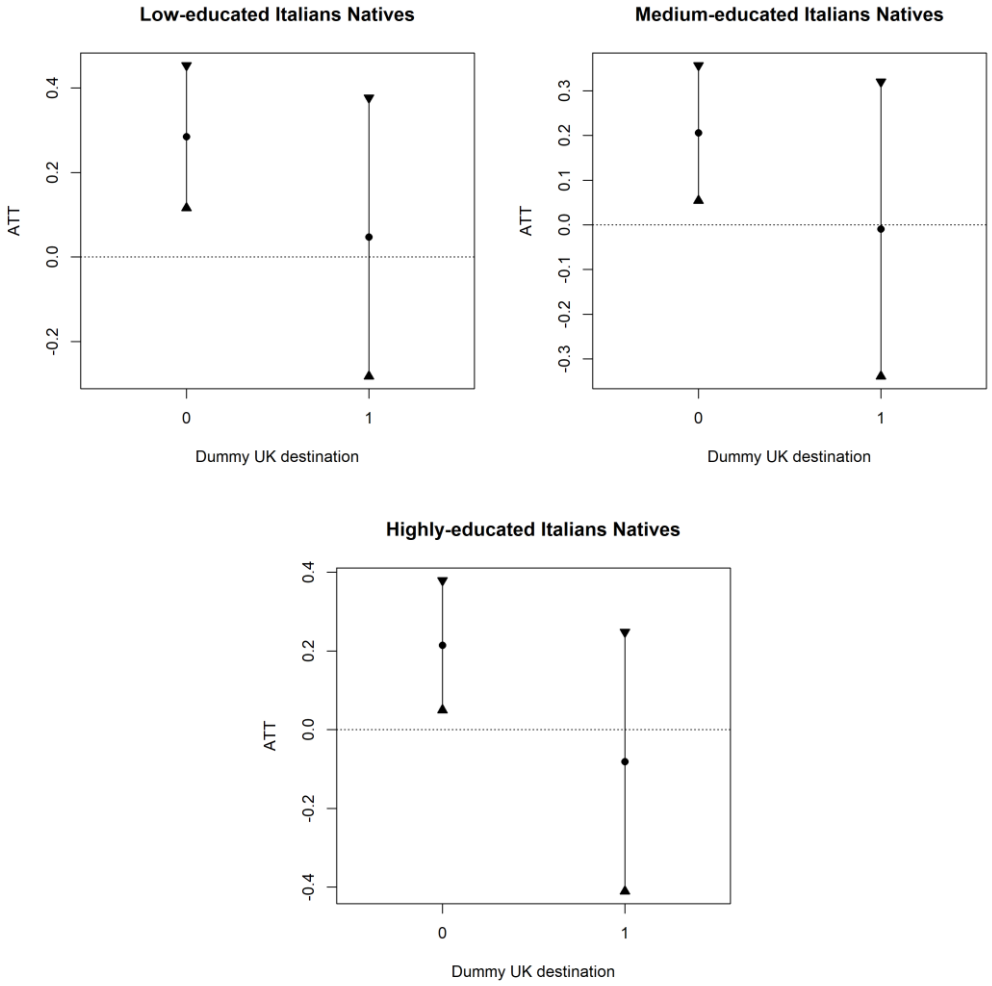


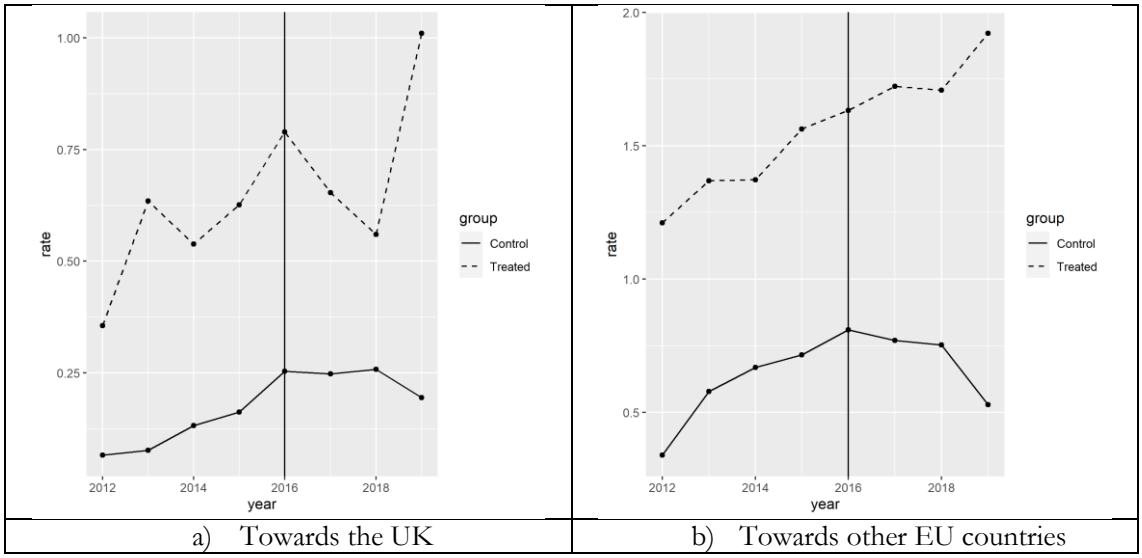
Figure 2 – Model 4. The marginal effect of the treatment (ATT) when the destination is the UK or any other EU country



Notes: The ATT will be equal to τ^{DD} when UK_d is equal to zero and to $\tau^{DD} + \tau^{DDD}$ when UK_d is equal to one.

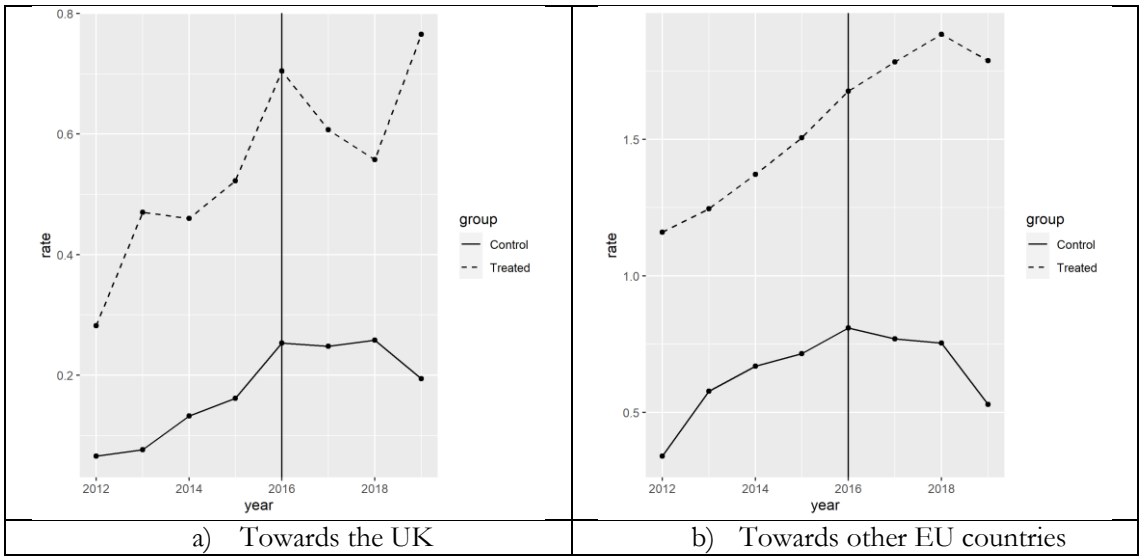
For the online Appendix

Figure A1 - Emigration rates of Italians aged 25-64 with a high level of education (treated group) and non-Eu citizens (control group) from Italy to the UK (panel a) and to other EU countries (panel b)



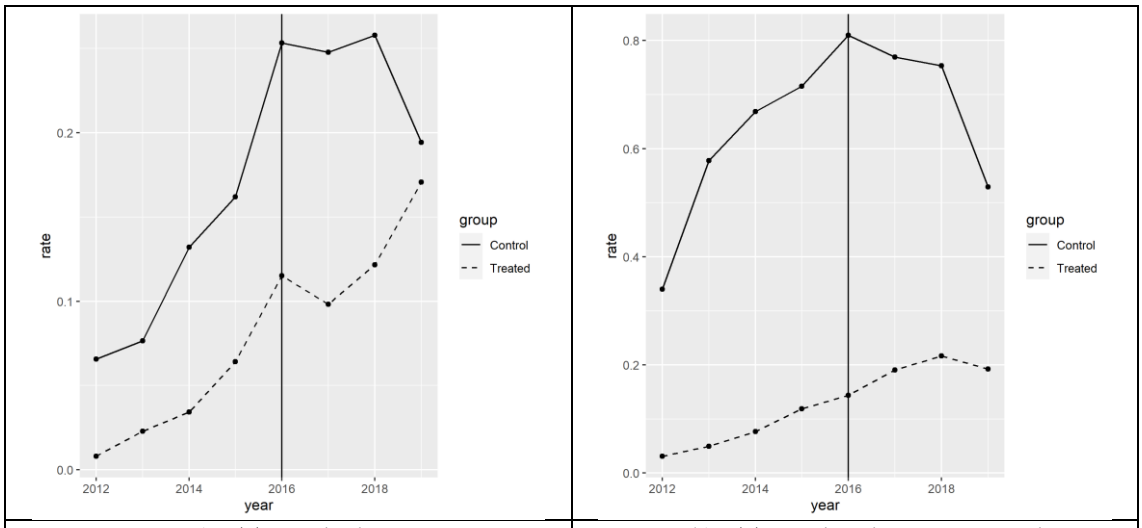
a) Towards the UK | b) Towards other EU countries

Figure A2 - Emigration rates of Italians aged 25-64 with a medium-low level of education (treated group) and non-Eu citizens (control group) from Italy to the UK (panel a) and to other EU countries (panel b)



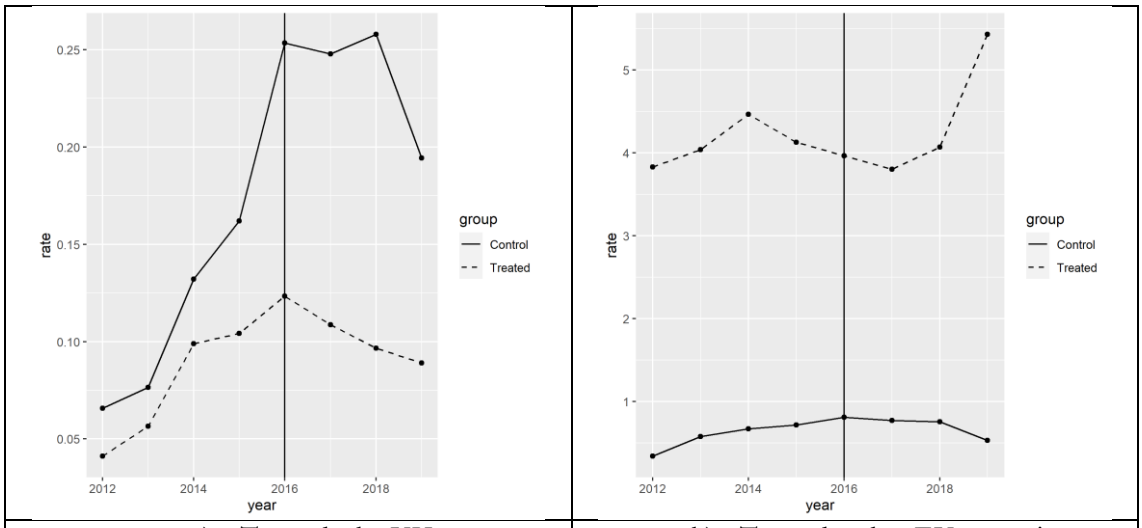
a) Towards the UK | b) Towards other EU countries

Figure A3 - Emigration rates of naturalized Italians aged 25-64 (treated group) and non-Eu citizens (control group) from Italy to the UK (panel a) and to other EU countries (panel b)



a) Towards the UK | b) Towards other EU countries

Figure A4 - Emigration rates of other EU citizens aged 25-64 (treated group) and non-Eu citizens (control group) from Italy to the UK (panel a) and to other EU countries (panel b)



a) Towards the UK | b) Towards other EU countries