To become or not to become French: Conscription, naturalization, and labor market integration[*]

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Abstract

We examine the effect of changing naturalization costs on the choice of second-generation migrants to become French, and the labor market effects of citizenship acquisition. We exploit the 1997 reform that abolished compulsory conscription for men born after 1978. This constitutes a drop in naturalization costs because after the reform, obtaining French citizenship was no longer tied to doing military service. Using a difference-in-differences approach, we find that this sudden cost reduction induced a jump in naturalization rates. This effect is entirely driven by European Union citizens, for whom the military service cost is binding. We exploit this shock in a synthetic difference-in-differences setting and find that it raised their probability to be in employment by 2 percentage points, mainly through a reduction in inactivity rather than unemployment. We provide suggestive evidence that this effect is mainly driven by an increase in public-sector employment and a reduction in self-employment, and is associated with an enhanced sense of belonging and a reduction in perceived discrimination.

JEL classification: J1, J21, J24, J61

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1 Introduction

The challenges posed by the significant migration inflows in host countries in the last decades have ignited heated debates on the most adapted migration policies to implement. Migrant-receiving countries are increasingly tightening regulations governing the acquisition of various forms of residence and employment permits, including asylum applications, work permits, family reunification permits, permanent residence, and citizenship. Naturalization, which represents the final legal step in the integration process for migrants, has consistently been a focal point of this debate. On the one hand, naturalization is viewed as a tool for fostering integration, while on the other hand, it is perceived as a reward for the successful integration of foreign nationals. Those who advocate for the latter also push for more stringent conditions in order to screen the best-integrated migrants. However, there is limited empirical evidence on how migrants respond to changes in the cost of naturalization, and on the impact of naturalization on their economic integration.

We rely on two aspects of the French context to study these matters. First, individuals born in France to foreign parents automatically acquire French citizenship at the age of 18, with the possibility to officially renounce it if they do not wish to acquire it. Second, during the 1990s, compulsory conscription for male citizens made naturalization a costly choice for foreign men. Altogether, these two features induced a salient trade-off at the age of 18 between doing military service and renouncing French citizenship. In this paper, we leverage the abolition of compulsory conscription in 1997 for men born after 1978 as an exogenous shock in the costs of acquiring French citizenship for second-generation male immigrants using various administrative and survey data.

Our results show that the abolition of compulsory conscription induced a jump in naturalization rates for males relative to females. This effect is entirely driven by European Union citizens, the group of second-generation immigrants for whom acquiring French citizenship is a priori the least beneficial. Yet, we show that this surge in naturalization induced a significant and large increase in employment for this group. We show that these results can be explained by an expanded access to public sector jobs and a departure from self-employment. We also provide suggestive evidence that it is associated with a reduction in discrimination and an increased sense of belonging. These results extend the existing literature by providing quasi-experimental evidence on how changes in the costs of naturalization translate into naturalization decisions, and on the causal effect of naturalization on the labor market outcomes of second-generation immigrants.

To rationalize the naturalization decision with respect to the abolition of compulsory conscription, we introduce a simple theoretical framework rooted in rational choice theory. The decision to naturalize depends on the expected benefits and costs involved. On the one hand, the benefits include the right to reside and work in France, as well as social, economic, and political integration (Hainmueller et al., 2015, 2017; Govind, 2021). On the

other hand, military service constitutes a significant cost to naturalization. Other costs for those born in France are negligible given the automatic citizenship acquisition rule. If the cost of military service was high enough to induce refusals of French citizenship, its abolition should generate a jump in naturalization rates.

Our model incorporates two likely dimensions of heterogeneity in the naturalization decision process: education level and birth nationality group. We hypothesize that the cost of conscription decreases with education, as lower-educated individuals were typically assigned more strenuous positions within the military service (Maurin and Xenogiani, 2007) and are more likely to face liquidity constraints. We thus expect that they would refuse French citizenship more frequently under compulsory conscription, and that they would react to its abolition to a greater extent. We also expect birth nationality groups to matter, as European Union (EU) citizens can freely work and reside in France, unlike individuals from other birth nationalities. The cost of military service is thus more likely to be binding for EU citizens, particularly when compared to individuals from nationalities that are typically discriminated against on the labor market.

To test these hypotheses empirically, we exploit the fact that women were exempt from compulsory conscription and therefore were unaffected by the abolition of military service. Using a Difference-in-Differences approach, we compare the naturalization rate of foreign men born in France before and after December 31$^{\text{st}}$, 1978 to that of their female counterparts. We find that at the abolition of compulsory conscription, the naturalization rate of males increased from 67% to 79%, while the rate for females remained stable at approximately 84 to 87%. This suggests that a quarter of citizenship refusals by young males were due to compulsory conscription and that its abolition halved the gap with women.

Consistent with our theoretical framework, results show that this effect is entirely driven by European Union citizens at birth, for whom the benefits of acquiring French citizenship are lower. Within this group, naturalization rates increased by 12 percentage points. No significant effect is observed for other birth nationalities, for which the cost of military service is therefore not binding. Among EU citizens, we find that the increase in naturalization rates is 50% larger for low-educated individuals compared to high-educated individuals, supporting the hypothesis that the cost of military service is lower for the latter.

We then take advantage of the fact that the cost of military service was not binding for most groups, to study its effect on labor market outcomes using a Synthetic Difference-in-Differences approach. This method, introduced by Arkhangelsky et al. (2021), allows us to weight the trends in labor market outcomes of females from each birth nationality group and of males from birth nationality groups other than the European Union to capture best how the outcomes of the treated group would have evolved absent the abolition of compulsory conscription. The synthetic control group closely mirrors the trend in the

employment rate of male European-Union citizens, until the reform, when the employment rate for the treated group diverged from its path with a 2 percentage-point increase. Given that this effect is driven by 12% of the treated group, it constitutes a 16 percentage-point increase for compliers. We show that this increase in employment is primarily attributable to a decrease in inactivity rather than in unemployment.

We provide evidence for three potential mechanisms explaining these results. First, we observe a significant increase in the probability of being employed in the public sector and a decrease in self-employment resulting from the reform. This is in line with the idea that citizenship acquisition expands the set of labor market opportunities for naturalized individuals. Second, our results suggest that the increase in naturalization rates induced a decrease in self-reported discrimination for male European Union citizens as compared to untreated individuals. This is suggestive evidence that part of the positive effect of naturalization on employment can be due to a decrease in discrimination. Finally, we find that the sense of belonging, which is a potential driver of socio-economic integration, increased among male European Union citizens in comparison to individuals unaffected by the reform.

We conduct sensitivity checks showing that our results are robust to the set of control groups considered in our Synthetic Difference-in-Differences setting, to anticipation effects, and differential attrition. The attribution of the entirety of the estimated effect to the increase in naturalization rates relies on the assumption that conscription has no direct effects on labor market outcomes. Mouganie (2020) documents that, in the case of France, military service had either no effect or positive effects on labor market outcomes, implying that, if anything, our study may underestimate the actual labor market impact of naturalization.[1] Moreover, our results do not support the hypothesis that military service had an impact on second-generation immigrants' education level.

This paper relates and contributes to three different strands of the literature. First, it sheds light on the effects of acquiring permanent residence or citizenship on economic integration. This literature has largely established a positive correlation between naturalization and labor market outcomes, starting with the work of Chiswick (1978). A more recent strand of this literature has explored the causal link between the two (Gathmann and Keller, 2018; Hainmueller et al., 2019; Govind, 2021), focusing on first-generation immigrants. We add to this literature by focusing on second-generation immigrants, touching upon the literature on birthright citizenship (Felfe et al., 2020; Dahl et al., 2022). We provide evidence on the causal effect of naturalization for the offspring of immigrants using a novel methodology, the Synthetic Difference-in-Differences approach proposed by

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[1]Mouganie (2020) shows that men from low socio-economic backgrounds do not adjust on the educational margin, and conscription has no labor market effects for that group. In the case of individuals from high socio-economic backgrounds, the two plausible scenarios resulting from their conceptual framework are that conscription has either no or positive direct effects on employment and earnings.

3

Arkhangelsky et al. (2021), which found immediate empirical applications as it limits the risk of violation of the parallel trends assumption (Barwick et al., 2019; Brown et al., 2021; Campbell, 2023; Lang et al., 2023). Our findings demonstrate that even populations who might have less to gain from naturalization, here second-generation Europeans, experience improved economic integration from naturalization.

Second, this paper contributes literature examining the naturalization decisions of foreigners. Among the main determinants of naturalization, the literature identifies the political conditions and urban concentration of the host country (Yang, 1994), educational attainment and age at migration (Chiswick and Miller, 2009), and gender.[2] Costs such as civic knowledge requirements, naturalization fees, and dual citizenship rules, have been shown to directly affect take-up, especially of low-educated or EU citizens (Vink et al., 2021; Yasenov et al., 2019; Peters and Vink, 2021). The French context offers an ideal case study since individuals born to foreign parents can automatically naturalize at the age of 18, hence minimizing almost any other cost generally associated with the naturalization decision.

Third, we contribute to the literature on the effects of military service. Existing research has mainly focused on the impact of conscription on citizens' education, earnings, political behavior, and criminal activity (e.g., Angrist 1990; Card and Cardoso 2012; Hjalmarsson and Lindquist 2019; Bingley et al. 2020, and more specifically on France: Maurin and Xenogiani 2007; Fize and Louis-Sidois 2020a; Mouganie 2020). In general, conscription is shown to have either no impact or a positive impact on educational outcomes, in line with draft avoidance behaviors (Maurin and Xenogiani, 2007; Mouganie, 2020; Savcic et al., 2023). On the labor market side, peacetime conscription is shown to have a negative effect on earnings in the Netherlands and in Denmark (Hubers and Webbink, 2015; Bingley et al., 2020), and either no effect or positive effects in Germany, Portugal, and France (Bauer et al., 2012; Card and Cardoso, 2012; Mouganie, 2020). To the best of our knowledge, we are the first to investigate the effects of military service on non-citizens, and specifically its implications for their naturalization decisions.

The remainder of this paper is structured as follows. Section 2 provides background information on military service in France, the 1997 reform, and the relevant naturalization process. Section 3 presents the data sources. Section 4 outlines our theoretical and empirical framework for studying naturalization take-up, and presents the results of the effect of the military service reform on naturalization rates. Section 5 describes the empirical approach used to study the impact of naturalization on labor market outcomes, presents the results, and explores potential underlying mechanisms. Section 6 provides various robustness analyses, and Section 7 concludes.

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[2]See Gathmann and Garbers (2023) for a detailed review of this literature.

4

2 Context of the reform

2.1 Military service

France has had an organized military service system since the end of the 18th century. All French men were obliged to enroll in military service at the age of majority, with a possibility to postpone conscription up to the age of 22. As from the 1970s, women could also participate in military service on a voluntary basis. In the case of dual citizenship, the country in which a person was required to fulfill his military service obligation could vary depending on the existence or absence of bilateral agreements between France and the country of origin. Thirteen countries (Germany, Austria, Belgium, Denmark, Spain, France, Ireland, Italy, Luxembourg, Netherlands, Norway, the United Kingdom, and Sweden) signed a convention on the May 6th, 1963 stating that individuals with dual nationalities from these countries were required to fulfill their military obligations in the country of usual residence. Other special conventions were also ratified bilaterally with Israel, Switzerland, Algeria, and Tunisia, among others. For instance, the Franco-Algerian convention allowed bi-nationals to choose the country in which they would like to complete their military service, irrespective of their place of residence.

With a decline in military needs, the length of conscription has frequently been shortened over time and lasted for 10 months in the 1990s. In February 1996, Jacques Chirac, the president of France at the time, declared his intention to abolish the military service in order to professionalize it. The French government began discussing the reform of the military service in November 1996 and voted and passed a law in October 1997. It aimed at progressively suspending compulsory military service, seeking to end it completely by 2003. During this transition period, the former regulations on military duty continued to apply to men born before 1979, while those born after December 31st, 1978 were exempt from compulsory conscription. A decree published in June 2001 officially marked the end of mandatory military service for all in France.

2.2 Naturalization

Unlike the U.S., most migrant receiving countries do not generally follow an unconditional *jus soli* principle (right of soil). In France, children born on the French territory to two foreign parents can obtain French citizenship prior to reaching the age of 18 upon request, or automatically at the age of 18 years old.[3,4] Those who do not wish to acquire French

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[3]The majority of children obtain citizenship at 18 years but they can obtain it as early as 13 years of age if the child is born and resided in France since the age of 8 and the parents requested it. Above the age of 16, children can apply for French citizenship if they have resided in France for at least 5 years since the age of 11.

[4]The law of the 26th of June 1889 established the automatic attribution of French citizenship to children of foreign parents born in France at the age of 18 for military and demographic reasons (Massot (1985), pg.14). The rules were changed between the period 1993 and 1997, and required children born

citizenship at 18 years old can refuse the automatic naturalization through the "voluntary loss of nationality". To do so, individuals must complete specific administrative procedures by submitting the required documents to the Court of Justice between the ages of 17 and a half, and 19. If they choose to renounce their French citizenship, they cannot be reinstated due to the unfulfillment of military obligations (Spire and Thave, 1999). This implied that they would be subject to the more stringent requirements as other foreigners if they subsequently wished to acquire French citizenship.Around 10 - 15% of young adults refused citizenship in the 1980s (Massot, 1985).

The naturalization process and military service were closely linked. The timing of the choice to (refuse to) naturalize coincides with the enrollment for military service, making the latter salient in the naturalization decision. In 1993, 1,611 young adults refused citizenship, of which around 90% were men (Weil, 2002). The lower naturalization take-up among men in those years may indicate that men considered military service as a cost of naturalization.

3 Data

3.1 French Population Census

We conduct the main analysis on the French Population Census (Recensement de la Population - RP), collected by the French National Institute for Statistics and Economic Studies (INSEE). Until 1999, it was exhaustive and collected every 6 to 9 years. Since 2004, it is exhaustive for municipalities under 10,000 inhabitants and covers 40% of dwellings in municipalities that exceed this threshold. We thus weight all computations using the survey weights provided by INSEE. Under this new data collection procedure, 20% of individuals are surveyed each year such that each period of 5 consecutive yearly census surveys (Enquêtes Annuelles de Recensement - EAR) constitutes a complete survey wave.

We rely specifically on the 2014 survey wave, which gathers forms collected from 2012 to 2016, such that individuals born around January 1st 1979 are surveyed at age 35 on average. French citizenship acquisition is thus observed relatively early in adulthood, and labor market outcomes are observed sufficiently late for individuals in the post-treatment cohorts to have completed their education. Note that the collection process of a complete survey wave over 5 years allows to control for age variation within birth cohort.

The census notably documents individuals' age, gender, educational and labor market outcomes, marital and nationality status. Both the current nationality and the birth

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in France to foreign parents to explicitly apply for French citizenship. This reform should not affect our setting for two reasons. First, upon the reversal of the reform in 1997, the affected cohorts (those born between 1975 to 1980) were ex-post automatically naturalized. Second, it is not problematic for our setting since this reform should not affect men and women differently. We show that there are no apparent effects on women born before and after 1975.

nationality are observed for French citizens, which allows to distinguish individuals who acquired the French citizenship from those who were born French. For non-French citizens, current nationality is observed.[5] Also, the census does not contain information on dual nationalities.[6]

More complex information such as family links between censused individuals are only available for a 40% subset of the population. Hereinafter, we refer to this subsample as the "complementary census sample", while we refer to the full sample as the "main census sample".

Our sample of interest consists in second-generation immigrants, i.e., individuals born in France without French citizenship. They represent 1.3% of the population among individuals born ± 10 years around the threshold, i.e., from 1969 to 1988. Table 1 shows the descriptive statistics of this population using the main census sample.

Table 1: Descriptive statistics of the main sample

	Male	Female	All
Age	35.05	34.59	34.81
Citizenship acquisition	72.18%	84.22%	78.37%
High school	55.12%	68.96%	62.24%
Higher education	35.34%	46.6%	41.13%
Birth nationality:			
European Union	50.73%	46.15%	48.37%
Other Europe	12.37%	12.58%	12.48%
Africa	31.00%	35.09%	33.11%
Other	5.90%	6.18%	6.04%
Observations	65,347	67,722	133,069

Notes: This table provides the average demographic characteristics of our sample of interest: individuals born in France without French citizenship from 1969 to 1988. Source: French Population Census, wave 2014, INSEE.

Our sample of interest comprises about 7,000 individuals per birth cohort, with about as many males as females. Individuals are observed at age 35 on average, and 78% of

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[5]For these individuals, we must assume their birth nationality to be identical to their current nationality. We test this assumption using the Permanent Demographic Sample, described in Section 3.2, which follows a sample of the population across census waves. In this sub-population, 96% of the foreigners born ±10 years around the cutoff, i.e., from 1969 to 1998, and observed in both the 2014 census and in the 1990 census, have the same nationality in the two census waves.

[6]As long as an individual was born French, no information on other potential nationalities is available. For those who acquired French citizenship, a single birth nationality can be reported, and for those who are not French at the time of the census, a single current nationality can be reported regardless of their number of nationalities.

them acquired French citizenship. Females tend to be more educated than males, and they refuse French citizenship less often. Almost half of the sample has a birth nationality that pertains to the European Union, and African birth nationalities represent a third of the sample. The shares of the most represented birth nationalities in our sample are presented in Appendix Table B.1.

3.2 Additional datasets

3.2.1 Permanent Demographic Sample - EDP

The INSEE produces a panelized version of the census data, the Permanent Demographic Sample (Échantillon Démographique Permanent - EDP), for a subset of individuals born on specific dates during the year. The EDP initially comprised individuals born on one of the first 4 days of October. The sample selection criteria then progressively widened to include individuals born during the first 4 days of April and July, and from the 2nd to the 5th of January. The most recent EDP information thus covers about 4% of the population.

This longitudinal dataset has the advantage to provide some panel dimension, but it also has limitations. Individuals are observed at variable ages and calendar years due to the rotating yearly collection procedure of the French population census. Also, the sample size is rather scant as it comprises only 5,535 individuals born in France without French citizenship ± 10 years around the threshold, compared to 133,069 individuals in our main dataset.

3.2.2 Trajectories and Origins - TeO

Besides its absence of the panel dimension, the French population census does not contain much information related to individuals' ethnic origins in general. The Trajectories and Origins survey (Trajectoires et Origines - TeO) jointly conducted by the INSEE and the French Institute for Demographic Studies (INED) was precisely created to palliate this problem. Its large number of questions about individuals' origins and its over-representation of minority groups allows us to study in great depth ethnicity-related issues.

This additional dataset is thus of particular interest to provide complementary insights on this matter but is also rather limited in its sample size. We exploit two waves of TeO that were conducted in 2008 and 2019, as repeated cross-sectional data. With around 1,450 individuals born in France without French citizenship ± 10 years around the threshold, it represents 1% of our main sample. Nevertheless, it allows us to explore some mechanisms.

4 Compulsory conscription and naturalization

4.1 Theoretical framework

As described in Section 2, children born in France to foreign parents are automatically granted French citizenship at the age of 18 unless they opt-out. In the 1980s, 10 to 15% of these latent acquisitions were actually declined each year (Massot, 1985). Indeed, even though naturalization is automatic, the associated duties such as military service can incentivize the offspring of immigrants to refuse French citizenship. We model this decision process with Equation 1.

$$
\text{Refusal}_i = \mathbb{1}\Big\{ B_1 + B_2\big(\underset{(+)}{\mathbb{1}\{\text{Birth nat}_i \notin \text{European Union}\}},
$$
$$
\underset{(+)}{\mathbb{1}\{\text{Birth nat}_i \in \text{Discriminated}\}}\big) + \eta_i < C_1 + \underset{(-)}{C_2(\text{Edu}_i)} \Big\} \quad (1)
$$

For individual i, the binary variable Refusal_i takes the value 1 if the total cost of acquiring French citizenship exceeds the associated benefits.

We denote B_1 the homogeneous benefits of acquiring French citizenship, including electoral rights, access to public sector jobs restricted to the French population, and a signal potentially valued by employers on the labor market.

Yet, part of the benefits of acquiring French citizenship may not be homogeneous, especially with respect to individuals' birth nationality. In particular, we let the benefits depend on whether birth nationality pertains to the European Union (EU). We make this distinction because since 1958, the Treaty of Rome allows EU citizens to freely reside and work in any country of the European Union regardless of their specific nationality. Individuals with a birth nationality that does not pertain to the European Union would thus have higher benefits to obtaining French citizenship in terms of residence permits and labor market access. On top of that, individuals whose birth nationality is typically discriminated against in the labor market, such as African nationalities (Duguet et al., 2010; Adida et al., 2016), would benefit even more from French citizenship as a signal to employers. These mechanisms are captured by the term B_2.

We also include exogenous and normally distributed individual preferences for acquiring French citizenship, η_i, to allow for individual variations.

Because until the abolition of compulsory conscription naturalization was tied to doing military service, benefits for males born during the pre-period also include positive aspects of compulsory conscription such as exposition to social diversity, or the possibility to obtain a driver's license for free (Avrillier et al., 2010). For simplicity, we neglect these aspects in our theoretical framework but we discuss them in Section 6.2.

On the costs side, C_1 denotes the common administrative costs associated with natu-

ralization. As it only consists in sending supporting documents, it is assumed to be small and identical for all individuals.

However, the cost of military service, represented by C_2, is likely to be relatively large and to vary with education. Indeed, less strenuous positions were typically assigned to more educated conscripts (Maurin and Xenogiani, 2007). In addition, the lower-educated may be more liquidity constrained as they likely come from lower socio-economic backgrounds. Those who did not complete high school can even already be on the labor market by age 18. We thus expect the cost of military service to be decreasing in the level of education.[7]

Note that the cost of the military service C_2 only applies to males born before the abolition of compulsory conscription. The total cost for females amounts to C_1 irrespective of the period. For males, it drops from C_1+C_2 in the pre-period to C_1 in the post-period. This drop in the costs should thus entail a drop in the share of refusals of French citizenship for males. However depending on the relative size of the different costs and benefits, the military service would not necessarily constitute a binding cost to citizenship acquisition for all groups.

Figure 1 proposes a graphical representation of this theoretical framework. The cumulative stacked areas B_{EU} $B_{Non\ EU}$ and B_{Africa} represent the average level of total benefits from citizenship acquisition for the three groups of birth nationality identified in the theoretical framework. Within birth-nationality groups, total benefits vary individually with individual preferences η_i whose distribution is represented on the right panel but does not depend on education.

The horizontal line C_1 represents the small administrative cost associated with the automatic acquisition process. It constitutes the total cost for females irrespective of the period and for males who were not subject to compulsory conscription. It is assumed to be below each birth-nationality group's average total benefit.

For males subject to compulsory conscription, the total cost is assumed to decrease with education through C_2, as motivated above. The larger the cost of the military service C_2, the higher the share of males for whom it would be binding and who would consequently refuse the acquisition of French citizenship. We illustrate this mechanism with three potential C_2 levels, which added to C_1 give the total costs C, C', and C''.

With a relatively low cost of military service such as in total cost C, only males for whom the cost is the highest, i.e., the lower-educated, and for whom the total benefit is the lowest, i.e, those born citizens of the European Union, would refuse French citizenship.

With an intermediate value of C_2 such as in C', the cost of the military service could be binding all along the education distribution for the nationality group with the lowest

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[7]The fact that higher-educated individuals would typically have higher forgone expected earnings increases the relative cost of military service at the top of the education distribution, but we do not expect this effect to be strong enough to reverse the sign of the relationship.

Figure 1: Costs and benefits of citizenship acquisition
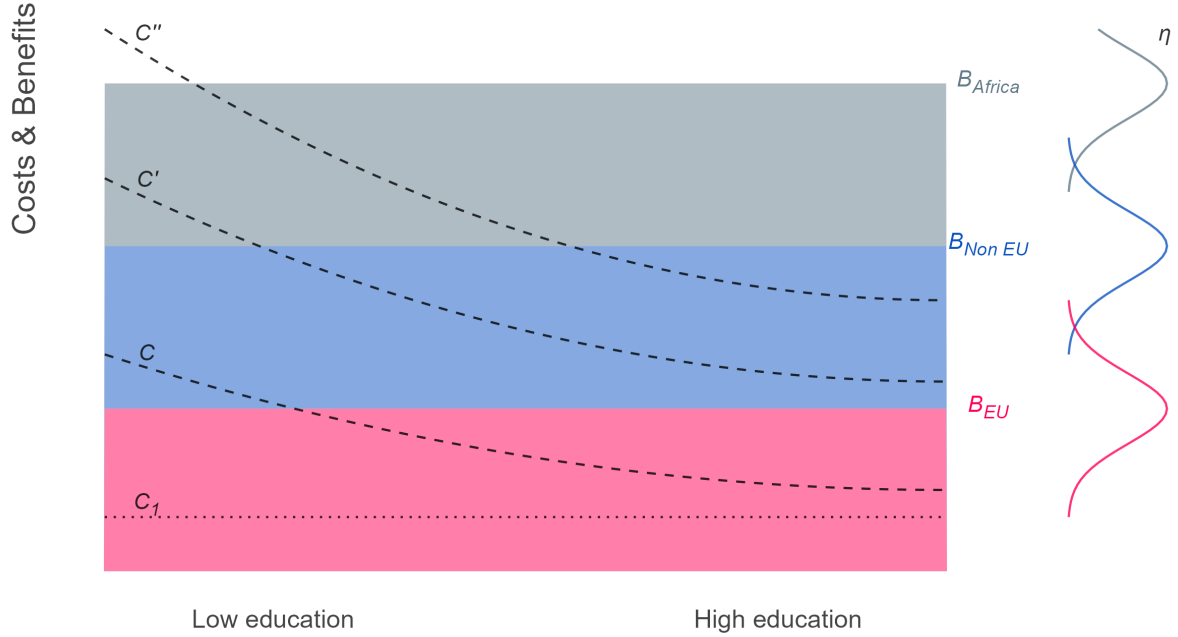
Notes: This figure proposes a schematic depiction of the costs and benefits associated with acquiring French citizenship for individuals born in France without French citizenship. The underlying theoretical framework is formalized in Equation 1. The amount of benefits derived from the acquisition of French citizenship varies between European-Union citizens at birth (red), individuals born with a European nationality that does not pertain to the EU (blue), and those born with an African nationality (gray). The average benefits within each group are represented by the upper border of the stacked areas. Benefits vary individually within each group according to the corresponding η distributions. On the costs side, the horizontal dotted line C_1 represents the small administrative cost associated with the automatic acquisition process. The dashed curves C, C', and C'' represent the total cost associated with citizenship acquisition for a low, a medium, and a high cost of military service respectively. The cost of military service is given by the difference between the corresponding dashed curve and C_1. It is assumed to be decreasing with education along the x-axis, and applies only to males born before the abolition of compulsory conscription. For females and for males born after the reforms, the total cost of acquiring French citizenship amounts to C_1.

benefits, i.e., European Union citizens at birth, and for the lowest educated among the next nationality group in terms of benefits.

With a relatively high cost of military service such as in C'', even some individuals from the nationality group that benefits the most from French citizenship would refuse it, especially the lowest educated for whom the cost of the military service is particularly high.

After the abolition of compulsory conscription, the cost of citizenship acquisition falls down to C_1, which is expected not to be binding for any group, individual preferences aside. Note that a given magnitude of η can still result in a negative net benefit, implying that the share of citizenship acquisition would not necessarily reach 1 for males after the abolition of compulsory conscription, nor for females in both periods.

We can draw three main hypotheses from this theoretical framework. First, for indi-

viduals born in France to foreign parents, with a sufficiently large cost of military service, the share of males who became French by acquisition should increase with its abolition, while that of females should remain constant.

Second, the increase in the share of acquisition of French citizenship should be higher for less educated males. Indeed, for these individuals the cost of the military service is expected to be larger, and is thus more likely to be binding.

Third, the increase in the share of acquisition of French citizenship should be higher for males who were born citizens of the European Union than for males born with other nationalities. Indeed, for them the benefits of acquiring French citizenship are lower as they are already entitled to work on the French territory. The cost of the military service is thus more likely to be binding for them as well, especially relative to individuals born with nationalities that are typically discriminated against and for whom the French citizenship could constitute a particularly valuable signal on the labor market.

4.2 Empirical framework

We expect the abolition of compulsory conscription to reduce the incentive for males to refuse the automatic acquisition of French citizenship at age 18. To test this hypothesis we exploit the fact that women were not subject to compulsory conscription. Specifically, we compare the difference in male naturalization rates after and before the reform to the difference in female naturalization rates in a difference-in-differences setting. Equation 2 displays the corresponding specification.

$$\text{Naturalization}_i = \alpha + \beta \text{Male}_i + \delta \text{Post}_i + \gamma(\text{Male}_i \times \text{Post}_i) + \varepsilon_i \qquad (2)$$

Naturalization$_i$ is a dummy variable taking the value 1 if the individual acquired French citizenship and 0 otherwise, Male$_i$ is a dummy variable taking the value 1 for males and 0 for females, and Post$_i$ is a dummy variable taking the value 1 if the individual was born after 1978 and 0 otherwise since only males born until 1978 were subject to compulsory conscription.

Our main coefficient of interest is γ, which quantifies the difference in the naturalization rates before and after the reform for men, net of the difference in the naturalization rates of women. For γ to capture the causal effect of the abolition of compulsory conscription on naturalization rates, the difference in female naturalization rates between the two periods must be equal to the difference that would have been observed for males absent the abolition of compulsory conscription. The parallel trend assumption must hold, and female naturalization rates must not be affected by the reform directly, nor through their spouse. We provide evidence supporting these two assumptions in Section 4.3. According to the theoretical framework developed in Section 1, we expect γ to be positive.

4.3 Results

Figure 2 shows the naturalization rates of individuals born in France without French citizenship by birth cohort and separately for females and males. Given that for males born before 1979 the trade-off between doing the military service and refusing the automatic acquisition of French citizenship is faced at age 18, birth cohorts are labeled according to the year of 18th birthday on the x-axis. The vertical dashed line represents the moment of the abolition of compulsory conscription. The corresponding difference-in-differences regression results for a window of ± 5 years around the threshold are displayed in Appendix Table B.2.

Figure 2: Naturalization rates of second-generation immigrants
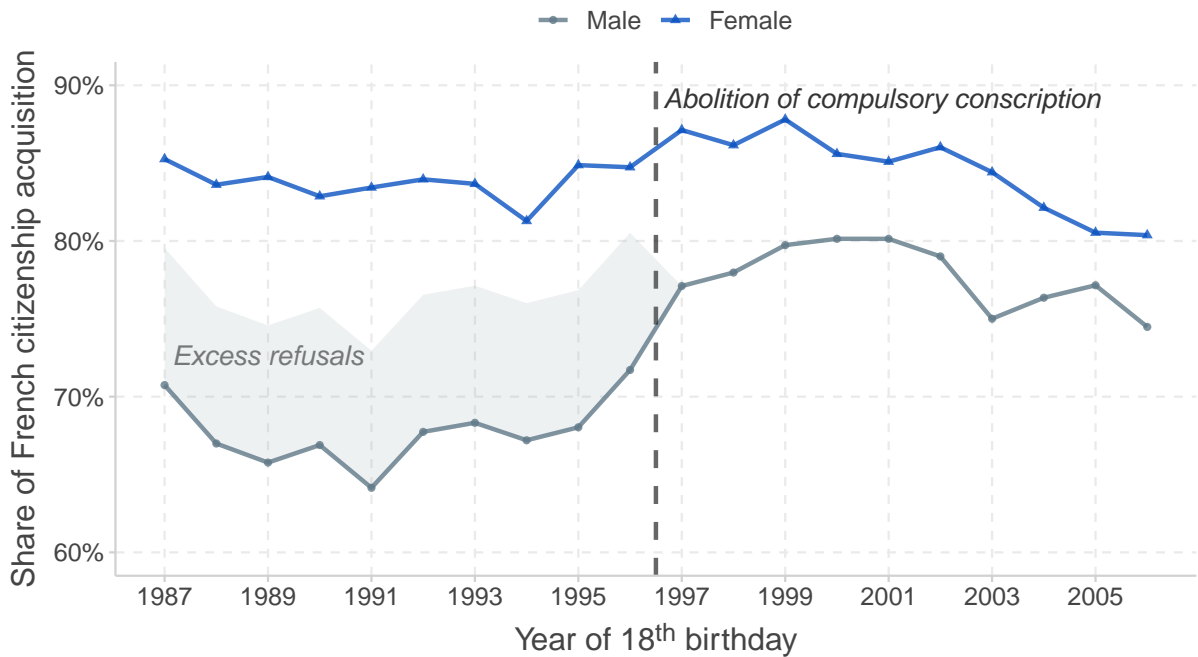
Notes: This figure represents the share of acquisition of French citizenship among individuals born in France without French citizenship, separately for males (gray) and females (blue) and for birth cohorts from 1969 to 1988. The x-axis is labeled according to the year of 18th birthday, which is when males born before 1979 must decide whether to do military service or to refuse French citizenship. The vertical dashed line represents the abolition of compulsory conscription. For males, after this point, citizenship acquisition is not tied to doing the military service anymore. The shaded area represents the fraction of refusals of French citizenship by young males that were induced by compulsory conscription. The height of the area is obtained from a difference-in-differences regression between males and females born 5 years before and after 1979, as specified in Equation 2. The corresponding regression results are shown in Appendix Table B.2. Source: French Population Census, wave 2014, INSEE.

The naturalization rate of females remains stable at around 85% over the period. The fact that it never reaches 100% even though females were not subject to compulsory conscription could be explained by exclusive dual nationalities, identities and belongingness, individual preferences, or the intention not to stay in France. The naturalization rate of males however does increase markedly at the threshold. This is in line with the fact that

suddenly the automatic acquisition of French citizenship is not tied to the cost of doing military service anymore, which induces fewer refusals.

The overall share of compliers is given by the difference between male naturalization rates after and before the reform, net of the difference observed for females. As can be seen from Appendix Table B.2, which shows the results of Equation 2, it amounts to 8.8% and is represented graphically by the shaded area. Thus, the abolition of compulsory conscription virtually halved the initial gap of 17.1% in naturalization rates between males and females. As the refusal rate for males born before 1979 amounts to about one-third, results suggest that compulsory conscription was responsible for about a quarter of refusals of French citizenship by young males before its abolition. In absolute terms, around 5,000 young males born in France refused French citizenship because of compulsory conscription during the decade leading to its abolition.

Yet, this result can only be interpreted as causal if the trend in the naturalization rate of females is a valid counterfactual for that of males. The fact that the two trends are parallel in the pre-period supports the validity of this assumption. The p-value associated with the 5-year pre-trend amounts to .39.

In addition, the naturalization rate of females must not have been affected by the reform. Even though females are not directly concerned by the abolition of compulsory conscription, they could be indirectly affected by the effect of the reform on the citizenship of their potential husbands. We test this hypothesis by plotting the naturalization rate of females against the birth cohort of their husbands instead of their own. Because these computations require identifying the family links between censused individuals, we rely on the complementary sample of the population census instead of the main sample. Results are displayed in Appendix Figure A.2. We distinguish females whose husband was born French from females whose husband was born foreigner. In both cases, no discontinuity or kink is observed around the threshold. This suggests that in addition to not being affected directly by the reform, females are not affected indirectly through their spouses either.

We then investigate the heterogeneity of this effect according to the two major dimensions of the incentive scheme drawn in Section 4.1: education and group of birth nationality. We distinguish individuals who studied up to high school from those who pursued higher education. We also distinguish individuals whose birth nationality pertains to the European Union from other European nationalities, and from African nationalities.[8] The remaining nationalities are very heterogeneous and would form a too small group for their

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[8]We consider European Union as in 1996, i.e., Austria, Belgium, Denmark, Finland, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, and Sweden. Other European countries are grouped into the non-EU category. Because Austria, Finland, and Sweden entered the EU only two years prior to the reform, we provide robustness checks without these three countries in Appendix Figure A.1 and Appendix Table B.4. Results remain virtually unaffected by the exclusion of these countries.

naturalization rates to be reliably computed by gender and birth cohort.

Figure 3 shows the evolution of naturalization rates for each of the 6 resulting groups, for males and females separately. Corresponding regression results are shown in Appendix Table B.3. Female naturalization rates are relatively stable over the period irrespective of the education level or group of birth nationality. For males, however, the picture varies with respect to the group of birth nationality. Males born with an African nationality, or a European nationality outside the EU, have lower naturalization rates than females but follow a very similar trend. For individuals born citizens of the European Union, however, there is a sudden increase in naturalization rates at the moment of the reform. The impact of the abolition of compulsory conscription thus appears to entirely come from EU citizens. This is in line with the incentive scheme described in Section 4.1, as this group is the one for whom the benefits of acquiring French citizenship are expected to be the lowest. The cost of military service is not binding for the two other nationality groups for whom the benefits of acquiring French citizenship are too high.

Figure 3: Naturalization rates by education and birth nationality groups
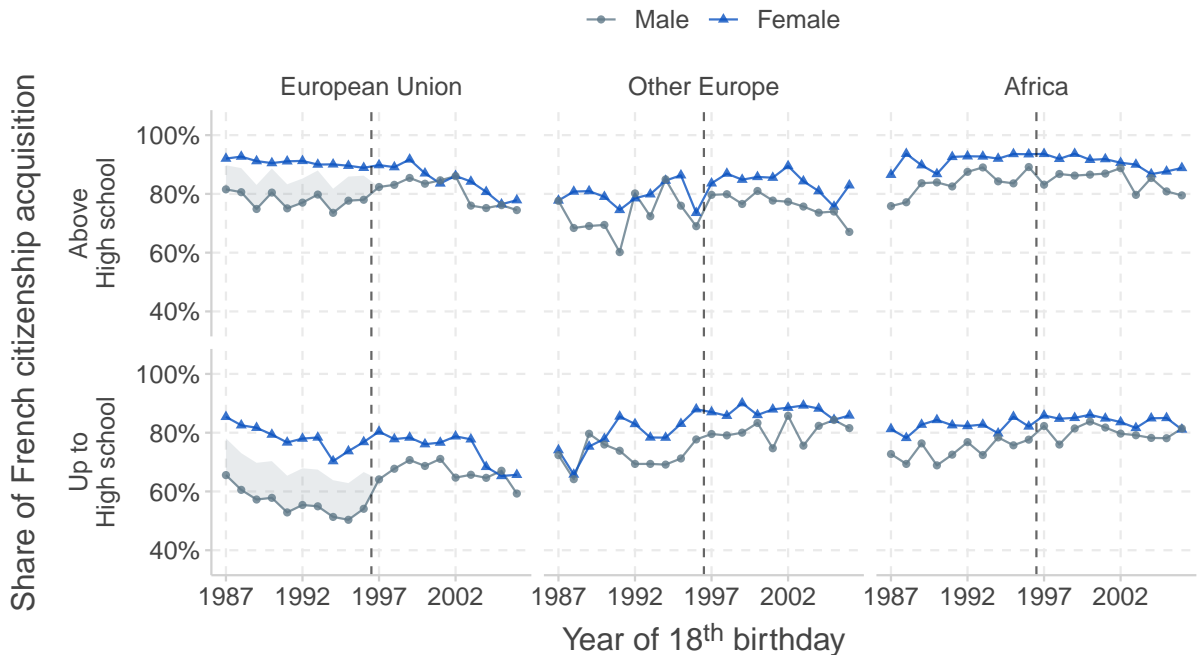
Notes: This figure represents the share of acquisition of French citizenship among individuals born in France without French citizenship for 6 subgroups defined by birth nationality (European Union, Other Europe, and Africa) and education (up to high school and above high school). In each of the 6 corresponding panels, shares of citizenship acquisition are represented separately for males (gray) and females (blue) and for birth cohorts from 1969 to 1988. The x-axis is labeled according to the year of 18th birthday, which is when males born before 1979 must decide whether to do military service or to refuse French citizenship. Shaded areas represent the fraction of refusals of French citizenship by young males that were induced by compulsory conscription. The height of the area is obtained from a difference-in-differences regression between males and females born 5 years before and after 1979, estimated on the corresponding subgroup as specified in Equation 2. The corresponding regression results are shown in Appendix Table B.3. A significant effect is found only for individuals born citizens of the European Union. Source: French Population Census, wave 2014, INSEE.

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Overall, naturalization rates tend to be higher for the most educated on average. Also, within European Union citizens at birth, we observe that the effect is 50% larger for the lower educated (12pp., against 8pp. for the higher educated), those for whom the cost of the military service is expected to be larger, and thus more likely binding.

Rates of acquisition of French citizenship tend to be higher among individuals whose birth nationality is an African one. This is coherent with the fact that this group is the most likely to be discriminated against on the labor market, and thus the one that would benefit the most from French citizenship as a signal to employers.

5 Naturalization and labor market outcomes

5.1 Empirical framework

We exploit the sudden increase in male naturalization among citizens of the European Union born in France without French citizenship, induced by the abolition of compulsory conscription, to estimate the causal impact of naturalization on labor market outcomes.

Given that the cost of military service was binding only for males born citizens of the European Union, several potential control groups can be considered. Indeed, their naturalization rate is the only one to react, while other groups of birth nationalities remain unaffected by the reform, for both males and females. Females born citizens of the European Union have the advantage of being of the same birth nationalities as the treated group. Males born with a nationality outside the EU, either other European nationalities or African nationalities, have the same gender.

This multiplicity of potential control groups makes our empirical setting suited to the use of a Synthetic Difference-in-Differences strategy, recently proposed by Arkhangelsky et al. (2021). This approach extends the Synthetic Control approach introduced by Abadie and Gardeazabal (2003) in two ways.

First, the inclusion of a group fixed effect allows us to weight control groups based on their demeaned trend instead of their absolute trend such that a control group that is more distant from the treated group in absolute terms but whose time variations are similar can be attributed a higher weight.

Second, the Synthetic Difference-in-Differences approach introduces time weights for pre-treatment years in addition to group weights.[9] Time weights are computed to give more importance to time units for which the outcome levels of control groups are closer to their average in the post-period. This typically favors the fit for recent time units to prevent potential discrepancies right before the event from contaminating the estimated treatment effect.

The estimated model is as follows.

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[9]Note that group weights and time weights are computed independently from one another.

$$(\hat{\tau}, \hat{\mu}, \hat{\alpha}, \hat{\beta}) = \arg\min_{\tau, \mu, \alpha, \beta} \left\{ \sum_{i=1}^{N} \sum_{t=1}^{T} (Y_{it} - \mu - \alpha_i - \beta_t - W_{it}\tau)^2 \hat{\omega}_i \hat{\lambda}_t \right\}, \tag{3}$$

where the N groups are indexed by i, and the T birth cohorts are indexed by t. Y_{it} denotes the average of a given labor market outcome among individuals from group i and birth cohort t. μ is a constant term, α_i a group fixed effect, and β_t is a time fixed effect. W_{it} is a binary variable taking the value 1 for the treated group in years post-reform, and the value 0 otherwise. $\hat{\omega}_i$ and $\hat{\lambda}_t$ are the vectors of group and time weights, computed as described in Arkhangelsky et al. (2021). Note that with a single control group, omitting these two vectors of weights gives the standard Difference-in-Differences specification. The standard Synthetic Control specification can be retrieved by discarding the group fixed effect α_i and the vector of time weights $\hat{\lambda}_t$.

Our set of control groups includes all female birth nationality groups, i.e., females born EU citizens, females born with a non-EU European nationality, and females born with an African nationality. It also includes male birth nationality groups for whom the cost of the military service was not binding, i.e., males born with a non-EU European nationality, and males born with an African nationality. In addition, we also consider both females and males born abroad with nationality outside the EU and who arrived in France early during childhood.[10] In particular, for comparability with individuals born in France from foreign parents, we consider children who arrived in France by age 6 to ensure they were schooled in France from the beginning of primary school. We also exclude EU citizens from the group of individuals born abroad because even though they are not subject to the automatic acquisition of citizenship, the military service cost may enter their decision to apply for citizenship.

The identification of the parameter of interest τ with Synthetic Difference-in-Differences relies on the same type of assumptions as the standard Difference-in-Differences. Absent the shock in naturalization rates induced the abolition of compulsory conscription, the trend that the treated group would have followed must be the same as the trend followed by the synthetic control group, i.e., by the weighted average of the different control groups considered. Thus the parallel trend between the treated and the synthetic control group must hold, and none of the individual control groups must be impacted by the reform, neither directly nor indirectly. We provide support for the validity of these assumptions in Section 5.3.

Under these assumptions, the parameter τ identifies an intention-to-treat (ITT) impact. Indeed, it captures the average effect on the whole treated group regardless of

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[10]In practice, low sample size prevents us from breaking down these two groups even further by groups of birth nationalities. We do not consider individuals born French as potential control groups because of the direct effect of compulsory conscription on education identified by Maurin and Xenogiani (2007). This issue is discussed in more detail in Section 6.2.

compliance status. The average treatment effect on the compliers population, i.e., the local average treatment effect (LATE), can then be obtained by dividing the ITT τ by the share of compliers. The share of compliers corresponds to the baseline Difference-in-Differences coefficient γ in Equation 2, estimated on EU citizens at birth. Regression results for cohorts $\pm$ 5 years around the reform are presented with and without controls for age and education in Appendix Table B.5. The share of compliers amounts to 12%. Yearly Difference-in-Differences coefficients are shown in Figure A.3.

5.2 Results

We show the effect of the increase in naturalization rates induced by the abolition of compulsory conscription on the probability of employment, unemployment, and inactivity, estimated with the Synthetic Difference-in-Differences approach as specified in Equation 3, in Figure 4 and Appendix Figures A.5 and A.4 respectively.

Figure 4: Synthetic Difference-in-Differences - Employment
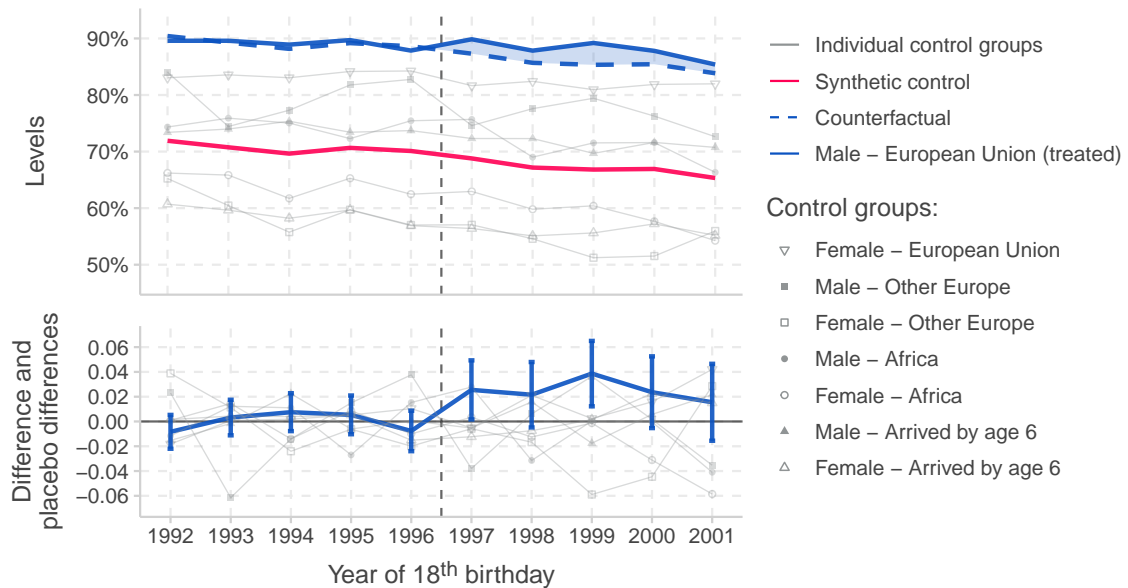
Notes: The upper panel of this figure shows the share of individuals in employment by birth cohort within each of the groups used in our synthetic difference-in-differences identification strategy. That of the treated group, males born European Union citizens in France, is represented as a solid blue line. That of each of the individual control groups is represented with gray lines, whose marker indicate the corresponding group. The red line shows the trend of the synthetic control group. The dashed blue line represents the counterfactual trend of the treated group. It corresponds to the trend of the synthetic control group shifted by the average difference between the trend of the treatment group and that of the synthetic control group in the pre-period. The bottom panel displays the difference between the treated group and the synthetic control group with a solid blue line, centered at the pre-treatment average difference. Vertical lines shows the corresponding bootstrapped 95% confidence intervals. The gray lines are placebo effects, obtained from the same calculations except that the treatment status is fictitiously attributed to the corresponding control group. Source: French Population Census, wave 2014, INSEE.

The top panel displays the average share of employed individuals by birth cohort separately for each group. The solid blue line corresponds to the evolution of the outcome of the treated group. The solid red line shows the evolution of the outcome for the synthetic control group. The vertical dashed line represents the implementation of the reform. Before the reform, the synthetic control group and the treated group share the same slightly decreasing but steady trend in employment. While the synthetic control group remains on the same path after the reform, a jump in employment is observed for the treated group.

The individual trends underlying that of the synthetic control group are reported in gray for each control group separately. Over the whole period, males born citizens of the European Union are the ones with the most favorable employment outcomes. Females born citizens of the European Union do also have good employment outcomes relative to other groups. This highlights the importance of relying on the Synthetic Difference-in-Differences approach instead of the standard Synthetic Control. Indeed, while the latter would give virtually all the weight to EU females despite slightly converging trends, the former abstracts from the proximity in levels and it weights groups based on their demeaned trend. The resulting synthetic trend closely follows that of the treated group, with more stability than any other individual trend. This makes Synthetic Difference-in-differences also more suited than standard Difference-in-differences in our setting.

The dashed blue line represents the counterfactual evolution of the treated group absent the reform. It is obtained by shifting the synthetic trend by the average difference between the trend of the treatment group and that of the synthetic control group in the pre-period.

The bottom panel displays the difference between the treated group and the synthetic control group with a solid blue line, centered at the pre-treatment average difference. Vertical lines shows the corresponding bootstrapped 95% confidence intervals. The gray lines are placebo effects, obtained from the same calculations except that the treatment status is fictitiously attributed to the corresponding control group. While all placebo differences in trends remain relatively gathered around 0, the actual difference in trends is flat until the reform and then shifts upwards, above placebo differences.

Baseline Synthetic Difference-in-Differences results on employment, unemployment, and inactivity are gathered in Table 2.

The first row of Table 2 shows the effect $\hat{\tau}$ of the increase in naturalization rates induced by the reform on employment status. It corresponds to the ITT, estimated with the Synthetic Difference-in-differences approach as specified in Equation 3, and controlling for age and education. The second row documents the corresponding LATE, computed as the ITT divided by the share of compliers. Bootstrapped standard errors are reported in parentheses.

Results indicate a significantly positive effect of naturalization on the probability of

Table 2: Effect of naturalization on labor market outcomes

	Employment	Unemployment	Inactivity
ITT ($\hat{\tau}$)	0.020**	−0.004	−0.012*
	(0.009)	(0.008)	(0.006)
LATE ($\hat{\tau}/\hat{\gamma}$)	0.163*	−0.035	−0.098*
	(0.084)	(0.069)	(0.057)
Group weights ($\hat{\omega}_i$)			
Female - European Union	0.160	0.172	0.169
Male - Other Europe	0.085	0.092	0.151
Female - Other Europe	0.113	0.100	0.058
Male - Africa	0.153	0.152	0.170
Female - Africa	0.151	0.174	0.147
Male - Arrived by age 6	0.175	0.150	0.171
Female - Arrived by age 6	0.163	0.160	0.134
Time weights ($\hat{\lambda}_t$)			
1992	0	0	0
1993	0	0	0
1994	0.594	0.301	0.777
1995	0.303	0.699	0
1996	0.103	0	0.200
Education	X	X	X
Age	X	X	X
First-stage F-stat.	629***		
Share of compliers ($\hat{\gamma}$)	0.121*** (0.009)		

Notes: This table reports the results of a Synthetic Difference-in-Differences estimating the effect of the increase in the naturalization rates of males born European Union citizens in France induced by the abolition of compulsory conscription on their employment status. Three employment statuses used as binary outcome variables are considered: Employment, Unemployment, and Inactivity. The first row display the Intention-to-treat effect, and the second row shows the Local Average Effect. Bootstrapped standard errors are reported in parentheses, and statistical significance is reported according to the following symbology. *p<0.1; **p<0.05; ***p<0.01. The group and time weights computed following Arkhangelsky et al. (2021) are reported for each specification. Education and age are controlled for in each specification. The F-statistic of the first stage and the share of compliers estimated in Appendix Table B.5 are reported at the bottom of the table. Source: 2014 French Population Census.

employment. The magnitude of the ITT amounts to 2 percentage points, which is substantive given that it is driven by the 12% of the treated group who actually acquired citizenship in response to the abolition of compulsory conscription. Indeed, the LATE indicates that the effect on compliers reaches 16.3 percentage points. Given that the

probability of employment in the treatment group is around 90%, as can be seen from Figure 4, this suggests that European Union male citizens for whom the cost of military service was binding in their naturalization decision are actually a specific subgroup that is more representative of the rest of the second-generation immigrant population regarding their labor market outcomes.

This increase in the probability of employment appears to be mainly related to a reduction in inactivity than in unemployment. Indeed, while the reduction in inactivity reaches almost 10 percentage points for compliers, a non-significant 3.5 percentage point decrease is observed in unemployment.[11]

5.3   Assumptions validity

For the estimated effects to capture the causal effect of naturalization, none of the control groups must have been impacted either directly or indirectly by the reform. Two potential mechanisms could threaten the validity of this assumption.

First, spillover effects could affect females whose spouse pertains to the treatment group. To test this hypothesis, we compare the evolution of females' outcomes according to the birth cohort of their husbands. We do so for females whose husband was born European citizen and for females whose husband was born with another nationality. We use the latter as a control group because only European Union citizens at birth reacted to the reform. Thus, for these women, labor market outcomes must not change with respect to whether their husband was born before or after the reform. For spouses of males in the treated group, however, in case of spillover effects, we would observe a discontinuity at the threshold in females' labor market outcomes with respect to their husbands' birth cohort.

Because these computations require identifying the family links between censused individuals, we rely on the complementary sample of the population census. Results are presented in Appendix Figure A.12. Around the threshold, no differential trend is observed between females whose husband was born with an EU nationality and females whose husband was not. Even though the difference in trends is relatively noisy due to the relatively low sample size, it remains quite stable over the whole period for all the outcomes.

Second, the cost of military service must not be binding for non-EU citizens among individuals born abroad who arrived in France by age 6. Appendix Figure A.9 shows the naturalization rates for males and females born abroad without French citizenship and who arrived in France by age 6 by birth cohort, separately for those born EU citizens and for those born with another nationality. While for EU citizens at birth we do observe a

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[11]Note that while in a standard Difference-in-differences approach, the coefficients associated with the variables Employed, Unemployed, and Inactive would sum to 1, they would not generally do so with the Synthetic Difference-in-differences approach.

similar effect of compulsory conscription to that observed for EU citizens born in France, suggesting that they do account for the cost of doing military service when applying for French citizenship, the trend in naturalization rates remains flat around the threshold for both males and females born abroad with other nationalities. This suggests that the cost of the military service was not binding for these two groups either.

Yet, because the military service is less intensive for older men, we must ensure that the abolition of compulsory conscription did not entail a drop in the age of naturalization for first-generation immigrants, who choose when to apply for citizenship. Because the year of naturalization is not available in the data, we exploit the electoral information of the Permanent Demographic Sample and use the age at registration in electoral lists as a proxy for the age of naturalization. As shown in Appendix Figure A.10, the trends in registration rates in the electoral lists reproduce closely the trends in naturalization rates depicted in Figure 2. We show the evolution of age at registration in electoral lists by birth nationality groups and generation of immigration in Figure A.11. The average age at registration of first-generation immigrants arrived by age 6 follows a stable trend over the period, with no jump observed around the reform.

To complement these tests, we provide in Figure 5 a more comprehensive assessment of the role that the set of control groups used to generate the synthetic control group may have on our results.

Each row of the tile plot on the left panel corresponds to a given estimation. A blue tile indicates that the control group of the corresponding column was included in the computation of the synthetic control group, while a gray tile indicates that it has been excluded. There are 120 rows, one for each of the possible combinations of control groups formed by sets of 2 to 7 control groups.[12] The specification which includes the whole set of 7 control groups is our baseline specification.

Specifications are sorted by the value of the corresponding ITT coefficient reported in a scatter plot on the right panel. The color of each dot indicates the p-value of the pre-trend. To obtain this value, we compute the difference between the average outcome in the treated group and that in the synthetic control group, and regress it on the birth cohort for the years before the reform. The p-value is then computed from a standard two-sided t-test on the slope coefficient. The vertical solid line represents our baseline coefficient, and a vertical dashed line is placed at 0. The kernel density of this distribution of 120 coefficients is shown on the top panel.

There are three main takeaways from this figure. First, we obtain a positive coefficient (even though not necessarily statistically significant) whatever the set of control groups considered to generate the synthetic control group. Second, results obtained with more individual control groups to generate the synthetic control group tend to be centered

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[12] $\sum_{k=2}^{7} !/(7-k)!k! = 120$

Figure 5: Employment ITT - Every combination of control groups
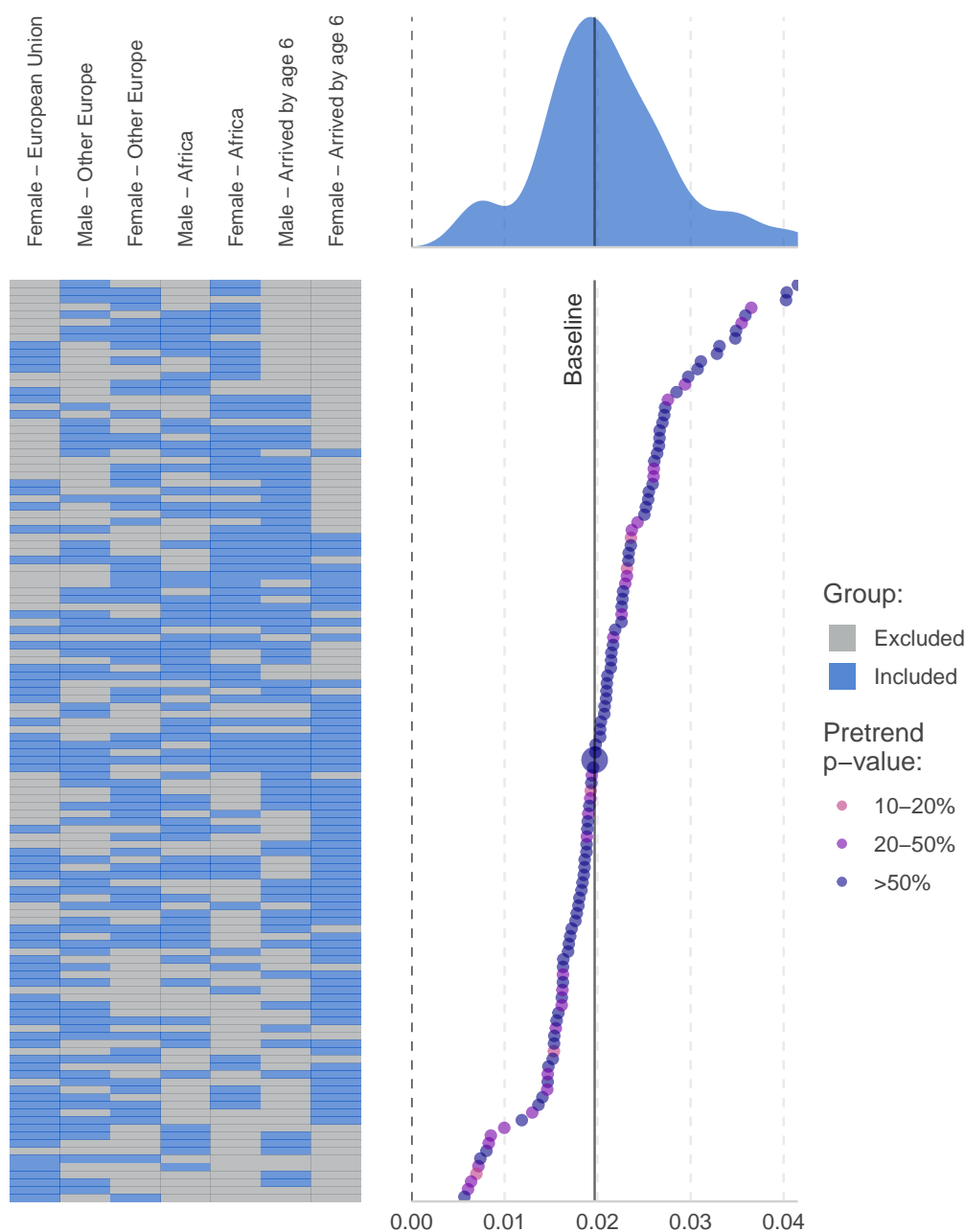
Notes: This figure shows the ITT estimate on the share of individuals in employment for each of the 120 possible combinations formed by sets of 2 to 7 control groups to generate the synthetic control group. Each row of the tile plot corresponds to a given estimation. A blue tile indicates that the control group of the corresponding column was included in the computation of the synthetic control group, while a gray tile indicates that it has been excluded. The specification which includes the whole set of 7 control groups is our baseline specification. Specifications are sorted by the value of the corresponding ITT coefficient reported in the scatter plot. The color of each dot indicates the p-value of the pre-trend. To obtain this value, we compute the difference between the average outcome in the treated group and that in the synthetic control group, and regress it on the birth cohort for the years before the reform. The p-value is then computed from a standard two-sided t-test on the slope coefficient. The vertical solid line represents our baseline coefficient, and a vertical dashed line is placed at 0. The kernel density of this distribution of 120 coefficients is shown on the top panel. Source: French Population Census, wave 2014, INSEE.

around our baseline coefficient, while results obtained from using few control groups tend to be located at the tails of the distribution. Third, pre-trend p-values tend to be higher around the center of the distribution, especially compared to the left tail. The same type of patterns is observed for other for unemployment in Appendix Figure A.14 and inactivity in Appendix Figure A.13.

Just like in the standard Difference-in-differences framework, the synthetic control group must actually capture the trend followed by the treated group in the pre-period. In addition to the p-value of the pre-trend presented in Figure 5 and Appendix Figures A.14 and A.13, the difference in trends between the treated group and the synthetic control group are shown in the bottom panel of Figure 4 and Appendix Figures A.5 and A.4. Each of the corresponding baseline p-values are greater than 0.20.

5.4   Mechanisms

5.4.1   Public jobs

We investigate how the access to public jobs granted by French citizenship contributes to the positive employment effect of naturalization. To do so, we estimate a Synthetic Difference-in-Differences as described in Section 5.1 on the share of individuals working in the public sector. Results are represented graphically in Figure 6. The corresponding regression results are documented in Appendix Table B.6, and the robustness of the ITT to the set of control groups is assessed in Appendix Figure A.17.

Results suggest that the 12 percentage-point increase in the naturalization rates of EU citizens induced a 1.4 percentage-point increase in their probability to be employed in the public sector, in line with the fact that part of the positions in the public sector require to have French citizenship. This corresponds to an 11.9 percentage-point increase for the group of compliers.

The distribution of ITTs resulting from all possible combinations of control groups is tightly gathered around the baseline coefficient. Yet, the decline in the share of EU males in the public sector is particularly steep relative to that of the other control groups in the pre-period. This results in a slightly decreasing pre-trend, which possibly biases our estimate downwards. This suggests that access to public sector jobs accounts for at least half of the employment effect of naturalization.

5.4.2   Discrimination

The correspondence testing literature has highlighted the importance of discrimination on the labor market prospects of individuals with foreign origins. In this context, French citizenship might be an important signal for second-generation immigrants, even for EU citizens, to limit the risk of hiring discrimination.

Figure 6: Synthetic Difference-in-Differences - Public job
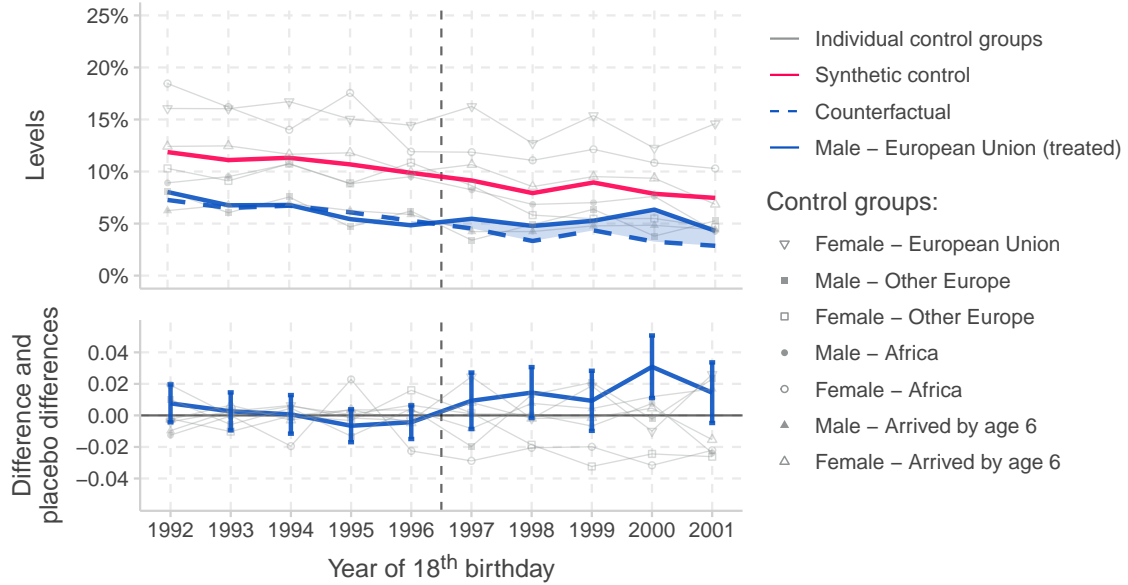
Notes: The upper panel of this figure shows the share of public-sector employees by birth cohort within each of the groups used in our synthetic difference-in-differences identification strategy. That of the treated group, males born European Union citizens in France, is represented as a solid blue line. That of each of the individual control groups is represented with gray lines, whose marker indicate the corresponding group. The red line shows the trend of the synthetic control group. The dashed blue line represents the counterfactual trend of the treated group. It corresponds to the trend of the synthetic control group shifted by the average difference between the trend of the treatment group and that of the synthetic control group in the pre-period. The bottom panel displays the difference between the treated group and the synthetic control group with a solid blue line, centered at the pre-treatment average difference. Vertical lines shows the corresponding bootstrapped 95% confidence intervals. The gray lines are placebo effects, obtained from the same calculations except that the treatment status is fictitiously attributed to the corresponding control group. Source: French Population Census, wave 2014, INSEE.

To test this hypothesis, we rely on questions about perceived discrimination available in the two waves of the Trajectories and Origins survey. Because the sample size of this dataset does not allow us to compute time trends for each potential control group separately, we rely on a standard Two-stage Least-squares setting. To maximize the sample size, we gather in a single comprehensive control group individuals from all the individual control groups considered in the Synthetic Difference-in-differences framework. In addition, we extend the window birth cohorts to $\pm$ 7 years. We estimate the following IV model:

$$Y_i = \alpha_2 + \beta_2 \text{Treated}_i + \delta_2 \text{Post}_i + \gamma_2 \widehat{\text{Naturalization}}_i + \lambda_2 X_i + \epsilon_i, \tag{4}$$

where $\widehat{\text{Naturalization}}_i$ refers to binary variable taking the value 1 if the individual acquired French citizenship and 0 otherwise, instrumented by the interaction between being born after the reform and being in the treated group, i.e., EU citizens born in

France. X is a set of controls including age, education, gender, EU citizenship, being born in France, and a survey wave fixed effect. We estimate Equation 4 on two binary outcome variables: self-reported discrimination experienced during the past 5 years, and more specifically self-reported discrimination about skin tone, origins, nationality, or accent. Results are displayed in Table 3

If anything, results point towards a decrease in self-reported discrimination induced by the reform. Indeed, the estimated effect is negative for both outcomes, but is also small and not statistically significant. Yet, the lack of precision in the estimated coefficients may partly be due to the lack of statistical power of the TeO survey, and taken at face value, coefficients corroborates that the reduction of discrimination is a potential channel of the positive effect of naturalization on employment rates.

5.4.3 Substitution with self-employment

As it removes barriers to public jobs, and potentially reduces labor market discrimination, naturalization could owe part of its positive effect on employment to the reduction in self-employment it may induce. Indeed, it enlarges the set of outside options to this labor market status that may be unstable for second-generation working as independents. To test this hypothesis, we estimate a Synthetic Difference-in-Differences on the share of self-employed individuals. Results are represented graphically in Figure 7. The corresponding regression results are documented in Appendix Table B.7, and the robustness of the ITT to the set of control groups is assessed in Appendix Figure A.18.

Results show a decreasing trend in self-employment for the treated group, accentuated after the reform. Even though barely significant, this pattern is in line with the idea that citizenship acquisition could indeed constitute stepping stone to depart from self-employment towards other types of occupations that may offer more stability on the labor market.

5.4.4 Sense of belonging

Naturalization can promote a sense of belonging to the host country. This is not only important for social cohesion and identity formation, but also for human capital investments of naturalized citizens, and hence, for their labor market integration. In order to test whether naturalization has impacted the sense of belonging of naturalized individuals, we exploit the Trajectory and Origins survey. Despite its small sample size, this survey allows us to explore the extent to which people agree with the statements: *"I feel French"* and *"I feel at home in France"*. To investigate this channel, we estimate Equation 4 on binary variables taking the value 1 if individuals agree with these statements, and 0 otherwise. Results are displayed in Table 4

Results suggests that naturalization led to the feeling of being French for more than

Table 3: Effect of naturalization on self-reported experienced discrimination

	Citizenship Acquisition	Self-reported discrimination		About skin tone, origins nationality, or accent	
		ITT	IV	ITT	IV
Male	−0.161*** (0.040)	-0.234*** (0.049)	−0.238*** (0.045)	−0.200*** (0.045)	−0.211*** (0.041)
Post	−0.048 (0.036)	0.181*** (0.044)	0.180*** (0.043)	0.185*** (0.041)	0.182*** (0.040)
Post×Male	0.246*** (0.048)	−0.007 (0.058)		−0.016 (0.053)	
$\widehat{\text{Acquisition}}$			−0.030 (0.236)		−0.064 (0.218)
Constant	−10.65 (9.00)	32.26*** (10.98)	31.95*** (11.24)	39.41*** (10.10)	38.73*** (10.37)
Age	X	X	X	X	X
Education	X	X	X	X	X
Gender	X	X	X	X	X
EU citizenship	X	X	X	X	X
Born in France	X	X	X	X	X
Survey wave	X	X	X	X	X
Observations	1,612	1,605	1,605	1,604	1,604
R2	0.191	0.109	0.116	0.137	0.141

Notes: This table shows the results of a Two-stage Least-squares estimation of the effect of naturalization on the sense of belonging of naturalized second-generation immigrants. The first column documents the first-stage difference-in-differences specification, regressing citizenship acquisition on being a male, being born after 1979, i.e., in birth cohorts that were no longer subject to compulsory conscription, and on the interaction between the two. The first two columns show the results on self-reported discrimination experienced during the past 5 years, and the last two columns self-reported discrimination specifically about skin tone, origins, nationality, or accent. For these two outcomes, the first column shows the reduced form regression that identifies the Intention-to-treat effect, while the second column shows the Instrument Variable regression where the acquisition of French citizenship is instrumented by the first-stage difference-in-differences interaction. Standard errors are reported in parentheses, and statistical significance is reported according to the following symbology. $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$. All specification in this table control for age, education, gender, EU citizenship, being born in France, and TeO survey wave. Source: Trajectories and Origins, INSEE-INED.

half of compliers. A positive effect is also observed on the feeling of being at home in France, even though lower and not statistically significant. We cannot distinguish whether this sense of belonging results from the effect of naturalization on employment or fosters it, but this is suggestive evidence that the sense of belonging may enter the relationship

Figure 7: Synthetic Difference-in-Differences - Self-employed
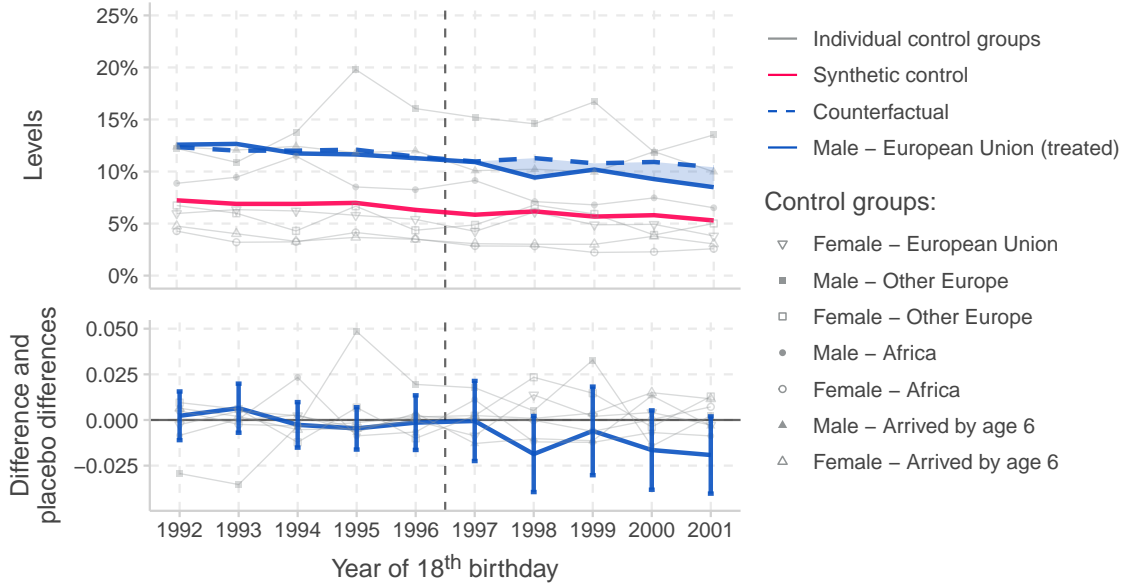
Notes: The upper panel of this figure shows the share of self-employment by birth cohort within each of the groups used in our synthetic difference-in-differences identification strategy. That of the treated group, males born European Union citizens in France, is represented as a solid blue line. That of each of the individual control groups is represented with gray lines, whose marker indicate the corresponding group. The red line shows the trend of the synthetic control group. The dashed blue line represents the counterfactual trend of the treated group. It corresponds to the trend of the synthetic control group shifted by the average difference between the trend of the treatment group and that of the synthetic control group in the pre-period. The bottom panel displays the difference between the treated group and the synthetic control group with a solid blue line, centered at the pre-treatment average difference. Vertical lines shows the corresponding bootstrapped 95% confidence intervals. The gray lines are placebo effects, obtained from the same calculations except that the treatment status is fictitiously attributed to the corresponding control group. Source: French Population Census, wave 2014, INSEE.

between naturalization and employment.

6 Robustness

6.1 Birth nationality substitutions

We show in Section 4 that only individuals born citizens of the European Union react to the abolition of compulsory conscription. This is in line with the fact that their benefits of acquiring French citizenship are lower than those of other nationality groups, for which the cost of military service was not binding under compulsory conscription.

Yet, this heterogeneity could also arise from variations in the cost of military service across birth nationality groups. Indeed, for an individual whose country of birth nationality has a military service that is longer or harder than the French one, the French military service would not constitute a comparatively large cost.

Table 4: Effect of naturalization on the sense of belonging

	Citizenship Acquisition	I feel French		I feel at home in France	
		ITT	IV	ITT	IV
Male	−0.161***	−0.095*	0.001	−0.024	0.009
	(0.040)	(0.053)	(0.051)	(0.051)	(0.047)
Post	−0.048	−0.024	0.003	−0.051	−0.041
	(0.036)	(0.048)	(0.048)	(0.046)	(0.046)
Post×Male	0.246***	0.142**		0.049	
	(0.048)	(0.063)		(0.060)	
$\widehat{\text{Acquisition}}$			0.581**		0.200
			(0.264)		(0.247)
Constant	−10.65	−18.61	−12.52	−12.01	−9.87
	(9.00)	(11.95)	(12.55)	(11.46)	(11.86)
Age	X	X	X	X	X
Education	X	X	X	X	X
Gender	X	X	X	X	X
EU citizenship	X	X	X	X	X
Born in France	X	X	X	X	X
Survey wave	X	X	X	X	X
Observations	1,612	1,591	1,591	1,595	1,595
R2	0.191	0.047	0.005	0.034	0.021

Notes: This table shows the results of a Two-stage Least-squares estimation of the effect of naturalization on the sense of belonging of naturalized second-generation immigrants. The first column documents the first-stage difference-in-differences specification, regressing citizenship acquisition on being a male, being born after 1979, i.e., in birth cohorts that were no longer subject to compulsory conscription, and on the interaction between the two. The first two columns show the results on the statement *"I feel French"*, and the last two columns on the statement *"I feel at home in France"*. For these two outcomes, the first column shows the reduced form regression that identifies the Intention-to-treat effect, while the second column shows the Instrument Variable regression where the acquisition of French citizenship is instrumented by the first-stage difference-in-differences interaction. Standard errors are reported in parentheses, and statistical significance is reported according to the following symbology. *p<0.1; **p<0.05; ***p<0.01. All specification in this table control for age, education, gender, EU citizenship, being born in France, and TeO survey wave. Source: Trajectories and Origins, INSEE-INED.

We thus distinguish individuals according to whether the military service in their country of birth nationality is longer or shorter than the French military service, within the 3 groups of birth nationality. Figure 8 shows the trend in male and female naturalization rates separately for each of the 6 resulting groups.

Figure 8: Naturalization rates by duration of the military service of birth nationality
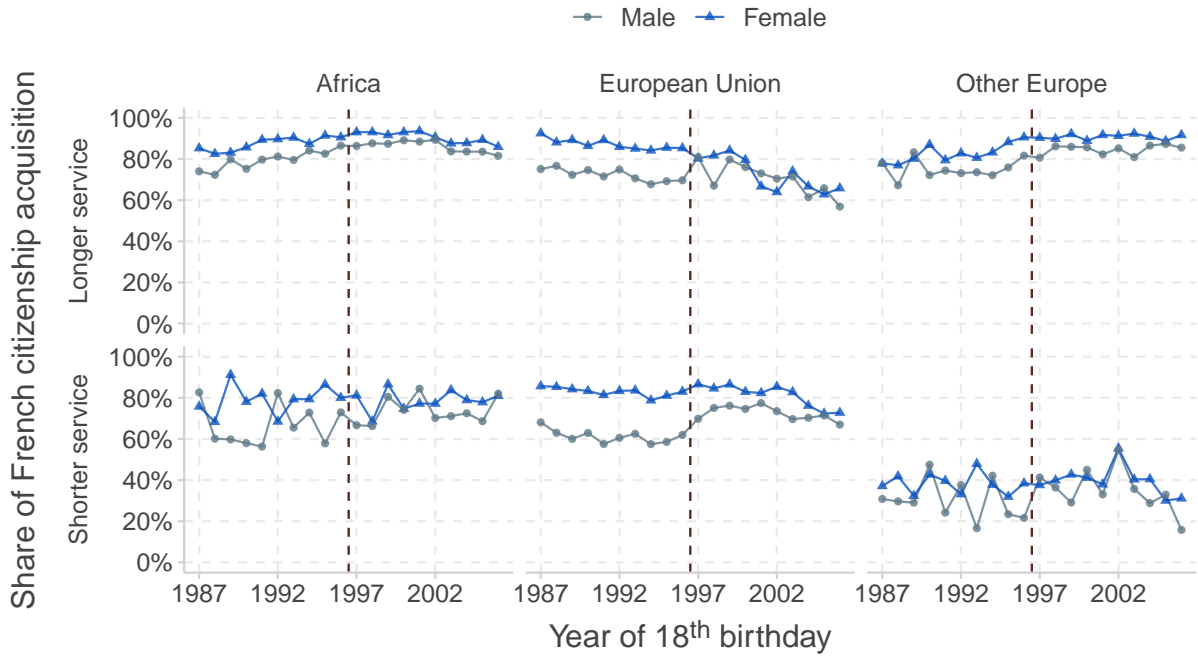
Notes: This figure represents the share of acquisition of French citizenship among individuals born in France without French citizenship for 6 subgroups defined by birth nationality (European Union, Other Europe, and Africa) and military service duration of in the country of birth nationality (longer or shorter than the French military service). In each of the 6 corresponding panels, shares of citizenship acquisition are represented separately for males (gray) and females (blue) and for birth cohorts from 1969 to 1988. The x-axis is labeled according to the year of 18th birthday, which is when males born before 1979 must decide whether to do military service or to refuse French citizenship. Shaded areas represent the fraction of refusals of French citizenship by young males that were induced by compulsory conscription. Source: French Population Census, wave 2014, INSEE.

Rates of citizenship acquisition tend to be lower for individuals whose birth nationality country has a shorter military service, especially among individuals born with a European nationality that does not pertain to the European Union. This suggests that the cost of the French military service is not constant across birth nationalities, and does vary with respect to the duration of the military service in the country of birth nationality.

Still, the effect of the abolition of compulsory conscription does not appear to vary within nationality groups depending on the relative length of the military service. Only European Union citizens at birth do react to the reform, regardless of the relative length of the French military service.

6.2   Direct effect of the military service

To attribute the effect of the abolition of compulsory conscription on labor market outcomes entirely to the shock in naturalization rates it induced, we must ensure that a potential direct effect of the military service does not bias our results.

To the best of our knowledge, no consensus has emerged on the direct effect of military

service on labor market outcomes in the literature so far. Part of the heterogeneity in these results is probably due to the large differences in the modalities of military services across countries.

In the French context, Maurin and Xenogiani (2007) show that compulsory conscription incentivized young males to pursue higher education in order to postpone military service. Their results suggest that the abolition of compulsory conscription had a direct negative effect on males' education relative to females' education.

If such an effect was observed on our population of interest and had consequences on the labor market, then our coefficient of interest would be a combination of that effect and of the effect of naturalization. However, the incentive scheme faced by individuals born in France without French citizenship is not equivalent to that faced by individuals born French. Indeed, most French citizens must do military service and do not have a second nationality to rely on.

To test whether the effect identified by Maurin and Xenogiani (2007, Figure 2) applies to our setting, we reproduce their result as closely as possible with our data. They use the French Labor Force Surveys 1991-2002 to show the changes in the proportion of men and women still in school aged 17-23 across birth cohorts. We cannot use the exact same variable definition because of differences in data collection periodicity. Alternatively, we consider two variables: the proportion of individuals who completed high school, and the proportion of individuals who pursued higher education. In Figure 9, we follow Maurin and Xenogiani (2007, Figure 2) and plot within gender the difference between the proportion in a given birth cohort and the proportion in the 1974 birth cohort. The left panel shows the percentage-point difference between the proportion of high school graduates in a given cohort and the proportion in the 1974 cohort. The right panel shows the same result for higher education. We perform these computations separately for individuals born French and for the three birth-nationality groups of second-generation immigrants, i.e., our sample of interest.

Similarly to what has been shown by Maurin and Xenogiani (2007), we observe that the divergence in the growth of education rates between males and females is more marked from 1978 onward than for the previous birth cohort. In our case, however, results indicate that the divergence did not begin in 1978 but started slightly and progressively from the beginning of the study period. This difference with what is put forward in Maurin and Xenogiani (2007) may be due to the difference in the variable definition or sampling variation between the two data sources. Notably, much more stable trends are obtained from the population census than from the labor force survey, probably because of its much larger sample size.

However, we do not observe such an acceleration of the divergence in the growth of male and female education rates for either of the 3 birth nationality groups of second-generation immigrants. This suggests that while compulsory conscription did incentivize

31

Figure 9: Education rates relative to the 1974 birth cohort
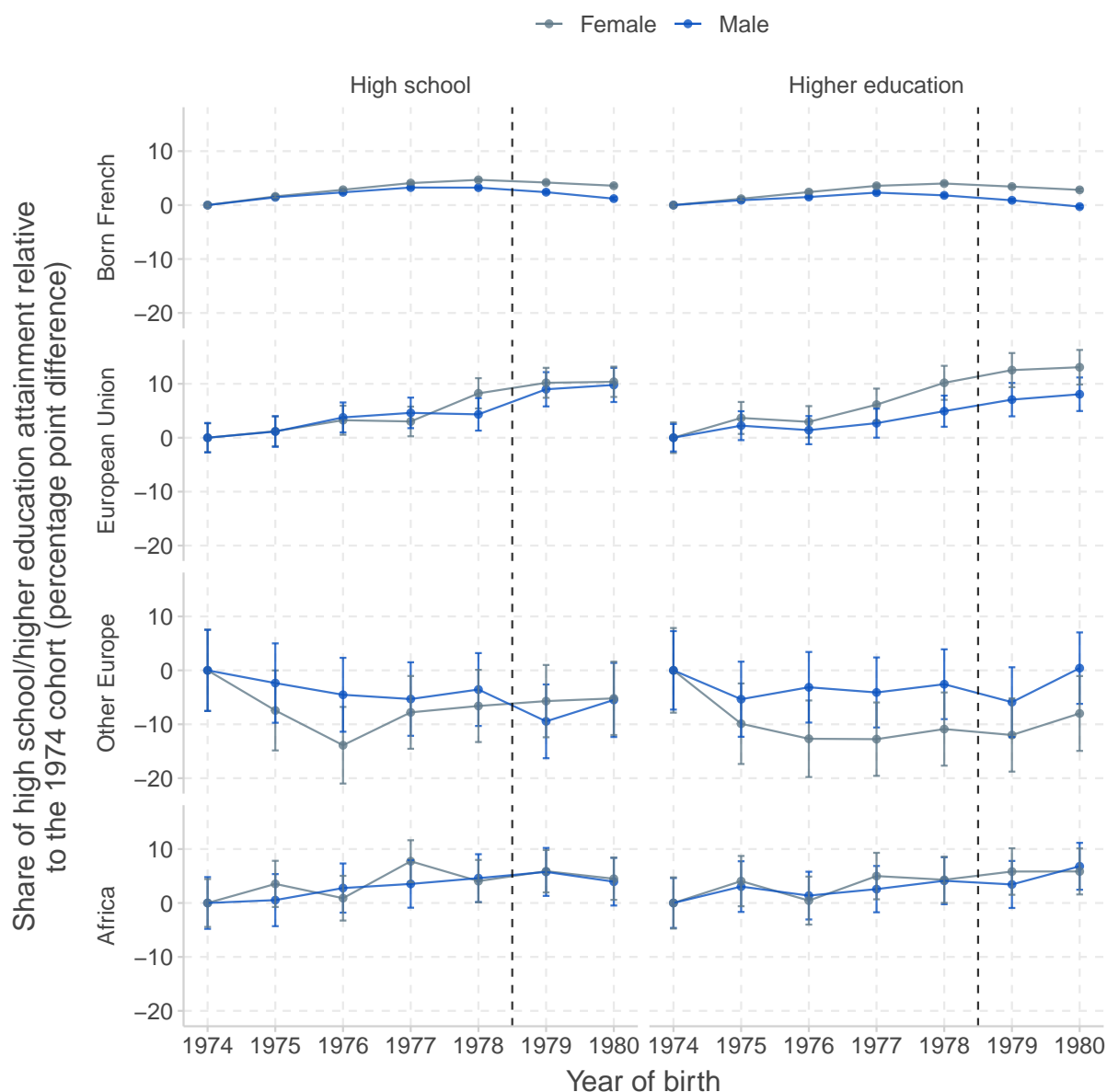
Notes: This figure represents the share of educational attainment -high school on the left panel and higher education on the right panel- for individuals born in France separately by gender, birth cohort, and for four birth nationality groups: French nationality, European Union nationalities, other European nationalities, and African nationalities. Each point represents the difference between the share of a given educational attainment in the corresponding birth cohort and in the 1974 birth cohort, following Maurin and Xenogiani (2007). Vertical bars represent the 95% confidence intervals, and the vertical dashed lines represent the moment of the abolition of compulsory conscription. Source: French Population Census, wave 2014, INSEE.

males born French to pursue higher education, second-generation immigrants did not adopt this behavior. This is likely because, unlike French-born individuals, naturalization considerations enter the decision process at age 18 as well.

Still, the fact that Maurin and Xenogiani (2007) identified a negative effect of the abolition of compulsory conscription on education for the overall male population raises

an issue of general equilibrium effect. Indeed, if individuals born after the reform in the majority group become less educated due to the abolition of compulsory conscription, this could constitute a shock on the labor market for other males in these birth cohorts. As the rates of high school graduation and higher education remained relatively stable for second-generation male immigrants, they became comparatively more skilled.

To test this hypothesis, we control for the share of natives in individuals' local labor market, defined at the employment zone level.[13] Results are presented in Appendix Table B.8. Controlling for the share of natives in the employment zone leaves our estimates virtually unchanged. This absence of a general equilibrium effect could be due to non-substitutability between the two groups resulting from sectoral labor segregation, to labor market frictions in the matching process, or to any other departure from neo-classical settings.

6.3 Anticipation of the reform

Even though the reform did not exempt men born before the 1st of January 1979 from doing military service, it became easier to avoid doing military service after the announcement of the reform.[14] Many of the French males who were born in the last cohorts subject to compulsory conscription and who postponed their military service to pursue higher education actually did not do it in the end.

In our case, anticipation could lead individuals born before 1979, who would have refused French citizenship absent the announcement, to actually accept French citizenship because they anticipate that they will be able to avoid it. This type of behavior would bias our results as such individuals can be viewed as treated individuals in the control group.

To investigate this issue we show the naturalization rates of males and females born in France a non-French European Union citizenship by month of birth instead of year of birth in Figure 10.

Due to the amount of noise in the monthly trend is difficult to confidently identify from which specific birth month individuals react. Still, there is a clear anticipation phenomenon of 2 to 4 months. Anticipation thus starts relatively late given that Presidential announcements were made 7 and 10 months before the effective abolition of compulsory conscription. However, individuals born in France without French citizenship can refuse French citizenship from the age of 17. Thus some individuals can have refused citizenship early, and have then turned 18 between the announcement of the reform and its effective

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[13]The employment zone is a geographical unit whose borders are based on the share of individuals who both work and live in the zone. It is computed with the algorithm LabourMarketAreas, available in OpenAccess.

[14]Fize and Louis-Sidois (2020b) document this issue in more detail using data from the archives of the French Ministry of Defense.

Figure 10: Anticipation of the reform - Naturalization rates by month of birth
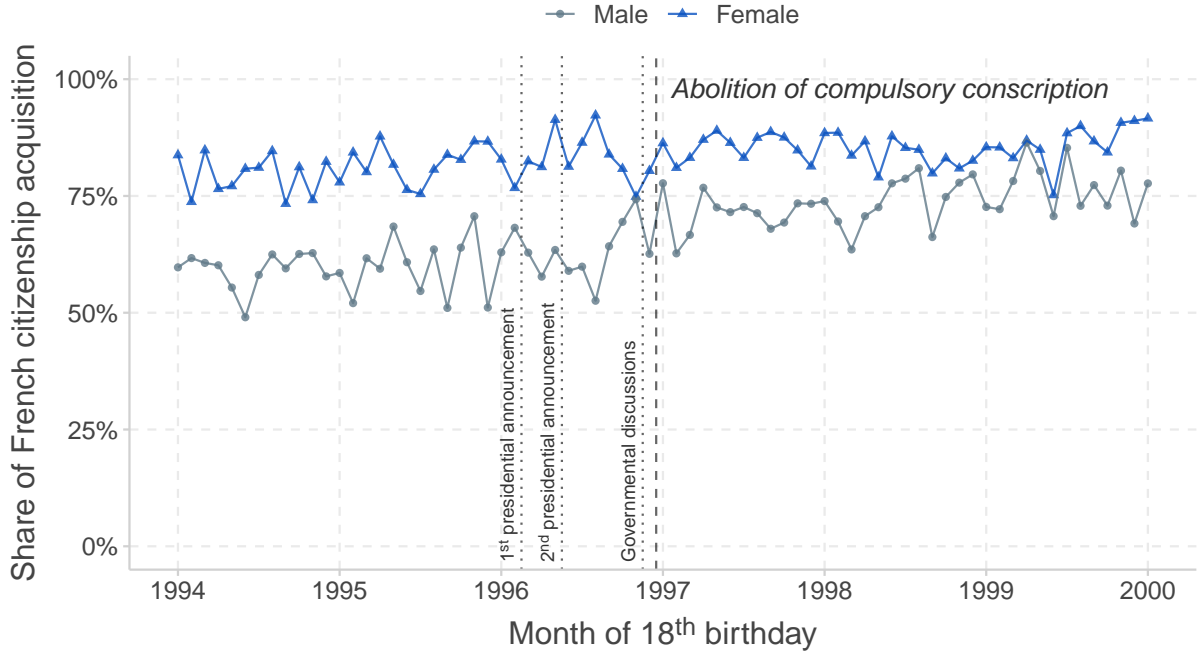
Notes: This figure represents the share of acquisition of French citizenship among individuals born in France without French citizenship, separately for males (gray) and females (blue) and for each month of birth from January 1976 to January 1982. The x-axis is labeled according to the month of 18$^{\text{th}}$ birthday. The vertical dashed line represents the abolition of compulsory conscription, and the vertical dotted lines represents milestones in the implementation of the reform, from the 1$^{\text{st}}$ presidential announcement to the final governmental discussions. Source: French Population Census, wave 2014, INSEE.

implementation.

Anticipation is of particular importance in the case of a Synthetic Difference-in-differences identification strategy, because the weighting of the time units tends to give more importance to more recent periods, which are the ones potentially subject to anticipation. We thus test the robustness of our result to the exclusion of the 1978 birth cohort, with and without time weights. The resulting ITT coefficients are presented in Table 5.

ITT coefficients tend to be closer to zero when using time weights, which is usually the case because they allow to match more closely on recent values of the pre-trend, and thus avoid the propagation of slight wedges at the end of the pre-period to the estimated difference in the post period. But both with and without time weights, results are robust to the exclusion of the 1978 cohort, both in terms of magnitude and statistical significance. The same pattern is observed for LATE coefficients, presented in Appendix Table B.9.

6.4   Differential attrition

The theoretical framework presented in Section 4.1 implicitly assumes that second-generation immigrants would stay in France in adulthood in the same proportions before and after

Table 5: Robustness of the ITT to the exclusion of the 1978 birth cohort

	With time weights		Without time weights	
	Including $t-1$	Excluding $t-1$	Including $t-1$	Excluding $t-1$
Employed	0.020**	0.018**	0.025***	0.022***
	(0.009)	(0.009)	(0.008)	(0.008)
Public job	0.014**	0.014*	0.016***	0.014**
	(0.007)	(0.008)	(0.005)	(0.006)
Inactive	−0.012**	−0.010*	−0.017***	−0.017***
	(0.006)	(0.006)	(0.004)	(0.004)
Self-employed	−0.012	−0.012	−0.012**	−0.012*
	(0.007)	(0.008)	(0.006)	(0.007)
Intermediate job	0.013	0.013	0.019**	0.017*
	(0.011)	(0.010)	(0.009)	(0.009)
Manager	0.010	0.003	0.014*	0.010
	(0.011)	(0.011)	(0.008)	(0.008)
Unemployed	−0.004	−0.005	−0.005	−0.003
	(0.009)	(0.008)	(0.006)	(0.007)
Worker	−0.006	−0.005	−0.010	−0.007
	(0.012)	(0.012)	(0.010)	(0.010)

Notes: This table reports the results of Synthetic Difference-in-Differences specification estimating the effect of the increase in the naturalization rates of males born European Union citizens in France induced by the abolition of compulsory conscription on several labor market outcomes. The first two columns report the estimate for each outcome variable using the time weights as in Arkhangelsky et al. (2021), while the last two columns show the estimate resulting from an equal weighting of each birth cohort. The first column of each of these two sets includes all birth cohorts in the pre-period, while the last one is estimated without the 1978 birth cohort, i.e., the last one before the reform, which is potentially subject to anticipation effects. Bootstrapped standard errors are reported in parentheses, and statistical significance is reported according to the following symbology. *p<0.1; **p<0.05; ***p<0.01. Source: 2014 French Population Census.

the abolition of compulsory conscription. If the cost of the French military service influences individuals' migration decisions, differential attrition around the threshold could induce a selection bias.

To investigate this issue we make use of the Permanent Demographic Sample, which follows a subset of the main population census across census waves. Figure 11 shows the probability for individuals born in France without French citizenship to be observed in the 2014 census wave, i.e., in our main sample, conditional on being observed in the 1990 (top panel) or 1999 (bottom panel) census by gender and birth cohort. We separate individuals who were born European citizens from other birth nationalities. Missing information at the end of the period for EU individuals from the 1999 census wave is due to insufficient sample size.

Figure 11: Rates of presence in the 2014 census among 1990 and 1999 census populations
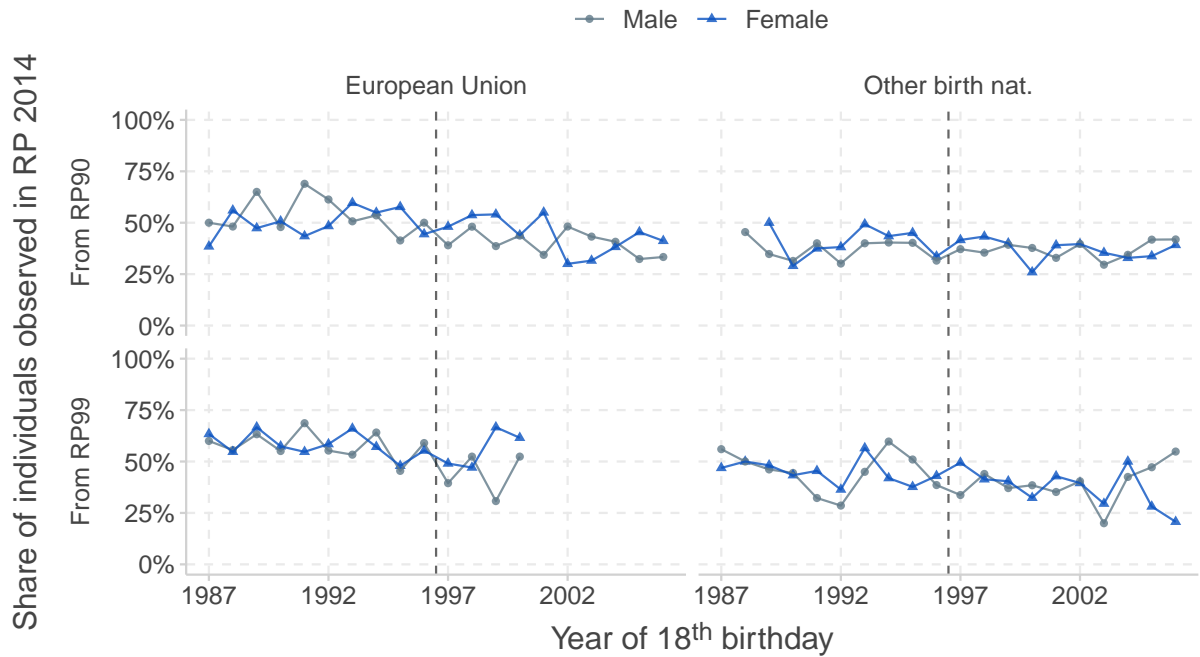
Notes: This figure represents the share of individual observed in the 2014 census wave among individuals observed in the 1990 census wave (upper panel) and in the 1999 census wave (lower panel), separately for males (gray) and females (blue) and for birth cohorts from 1969 to 1988. The x-axis is labeled according to the year of 18th birthday, which is when males born before 1979 must decide whether to do military service or to refuse French citizenship. The vertical dashed line represents the abolition of compulsory conscription. Computations are made on the Permanent Demographic Sample, in which census information for the 1990 and 1999 waves is available for individuals born during the first 4 days of October. Missing information at the end of the period for EU individuals from the 1999 census wave is due to insufficient sample size. Source: Permanent Demographic Sample, INSEE-DGFiP.

Results reveal no differential attrition around the threshold. Males and females' probabilities to be observed in the 2014 census wave conditional on being observed in either the 1990 or the 1999 census wave follow a very stable trend over the period. This holds both for individuals whose birth nationality pertains to the EU and for other second-generation immigrants.

7   Conclusion

This paper aims to shed light on the effect of policies that change naturalization costs on second-generation immigrants' naturalization decisions, and on the causal effect of naturalization on labor market outcomes. We rely on the fact that citizenship is automatically granted to individuals born in France to foreign parents and that the obligation for citizens to undergo military service makes naturalization a costly choice. We exploit the abolition of compulsory military service in France as an exogenous shock that reduced the cost of naturalization for second-generation men while not impacting women.

We show that, as anticipated theoretically in a simple rational choice model, the decrease in the cost of naturalization led to a jump in naturalization rates. This increase is entirely driven by individuals with the lowest expected benefits, individuals born European Union citizens who can already work and reside in France. They refuse citizenship more often when there are military service obligations, while this cost is not binding for other birth nationality groups. Additionally, we show that there is a skill gradient in the cost of military service, with the low-educated reacting more to the reform. We exploit the variety of unaffected gender and birth nationality groups in a Synthetic Difference-in-Differences approach to study the causal impact of this jump in naturalization rates on labor market outcomes. Our results show positive labor market effects, with an increase in employment and a reduction in inactivity for EU citizens. We find that this employment effect is accompanied by an increase in public sector jobs and in the sense of belonging, and by a decrease in self-employment and self-reported experienced discrimination.

Altogether, these results provide valuable insights both on the citizenship take-up decision of children of immigrants, and on the gains from naturalization for those who would have refused French citizenship had it entailed higher costs. In particular, our findings illustrate how policies that affect naturalization costs heterogeneously across immigrants can unintentionally divest specific groups of improved labor market prospects.

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Appendix

A   Additional figure

Figure A.1: Naturalization rates by education and birth nationality groups - Excluding Austrian, Finnish, and Swedish birth nationalities
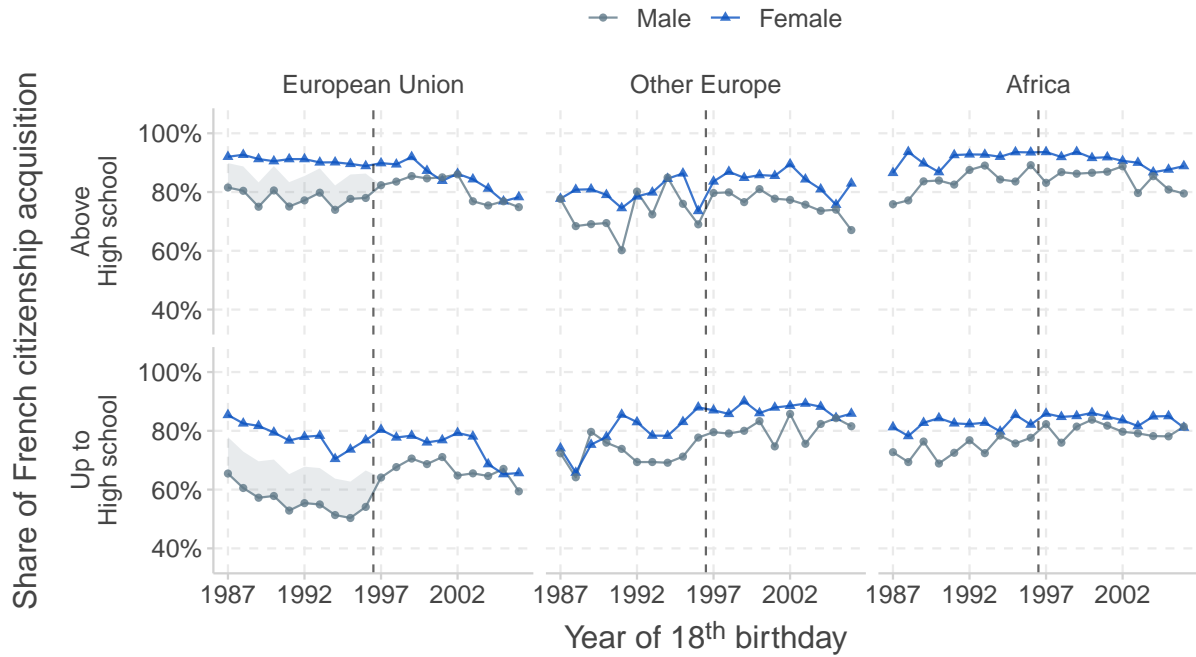
Figure A.2: Female naturalization rates by their husband's birth cohort
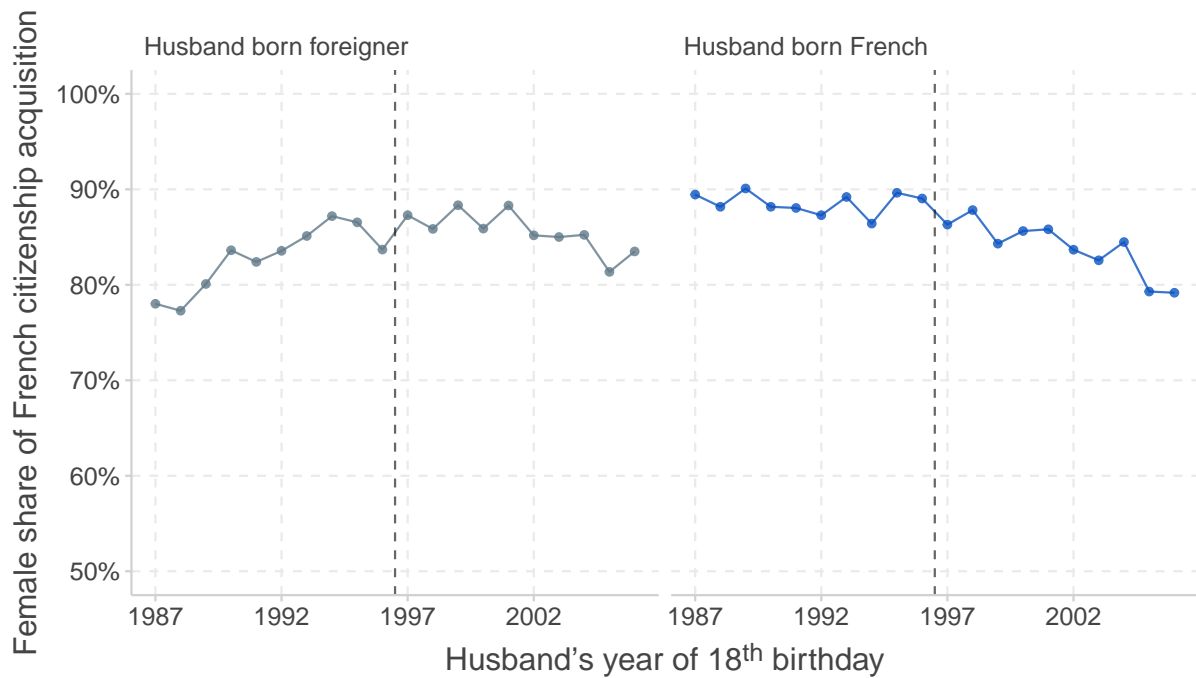
Figure A.3: Naturalization rates of EU second-generation immigrants
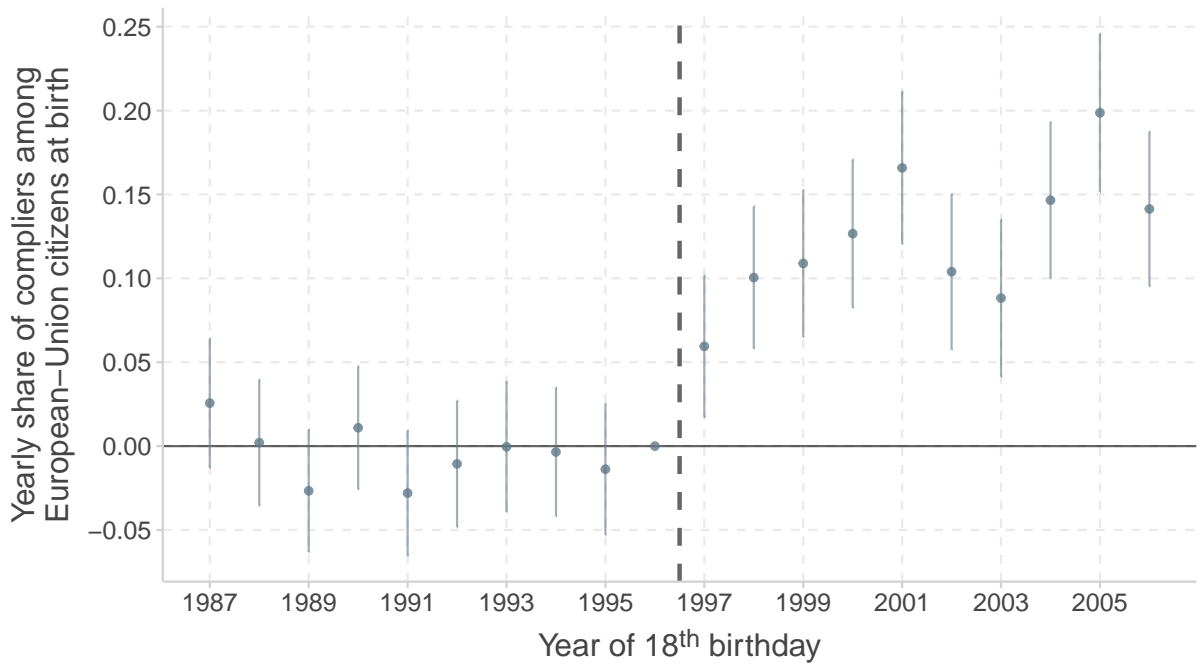
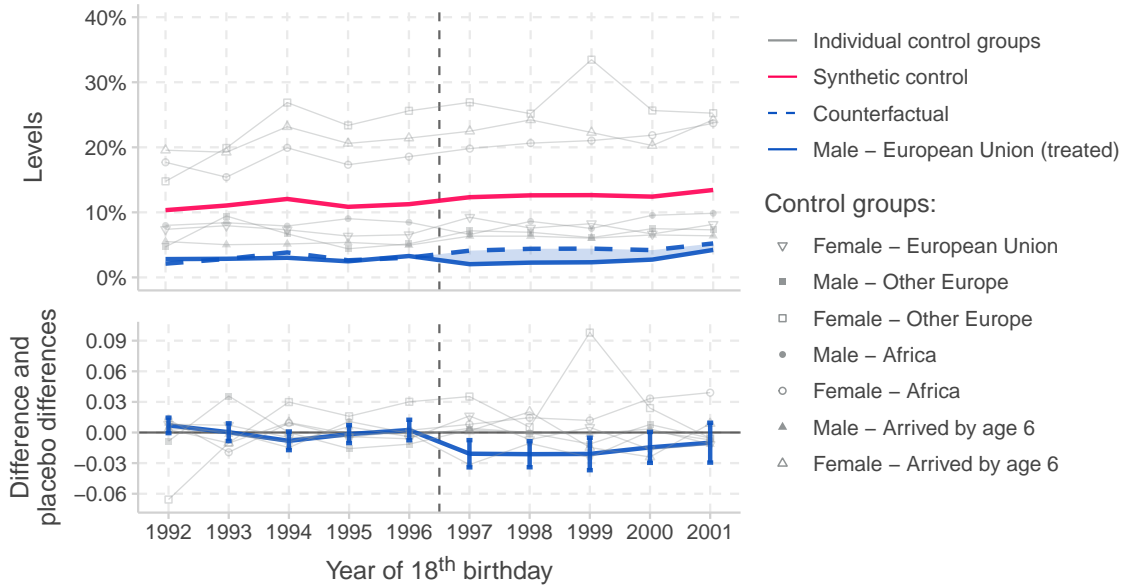Figure A.4: Synthetic Difference-in-Differences - Inactive

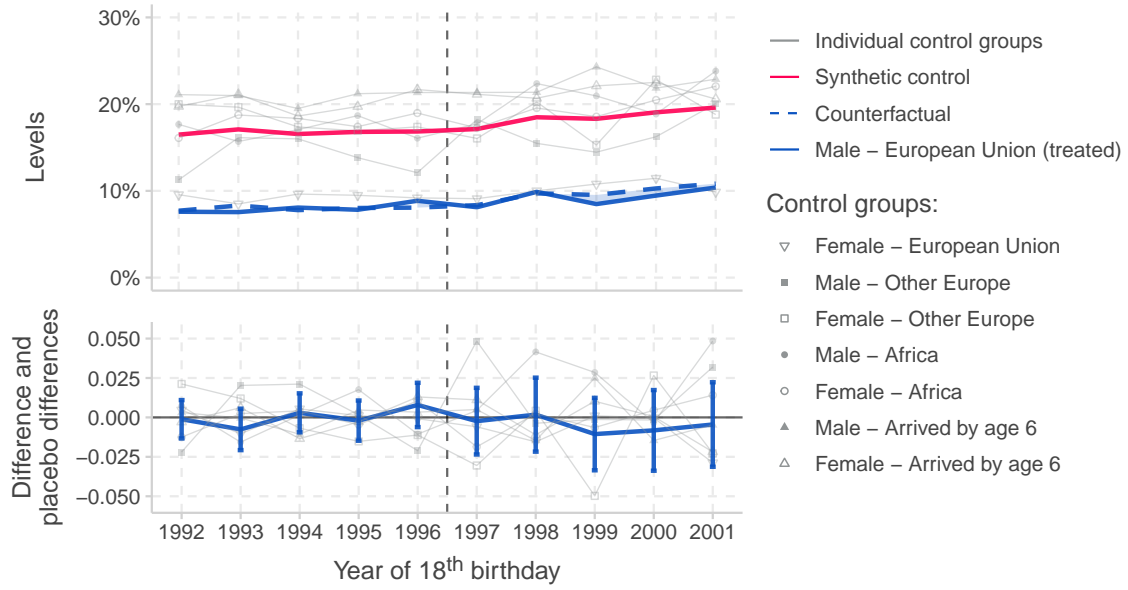Figure A.5: Synthetic Difference-in-Differences - Unemployed

Figure A.6: Synthetic Difference-in-Differences - Intermediate job
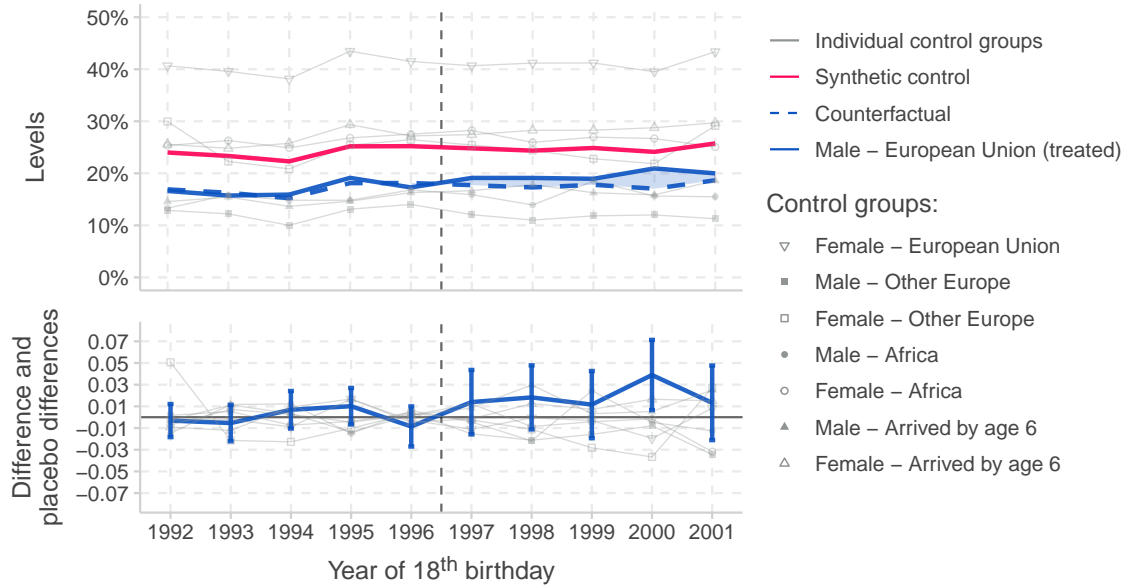
Figure A.7: Synthetic Difference-in-Differences - Manager
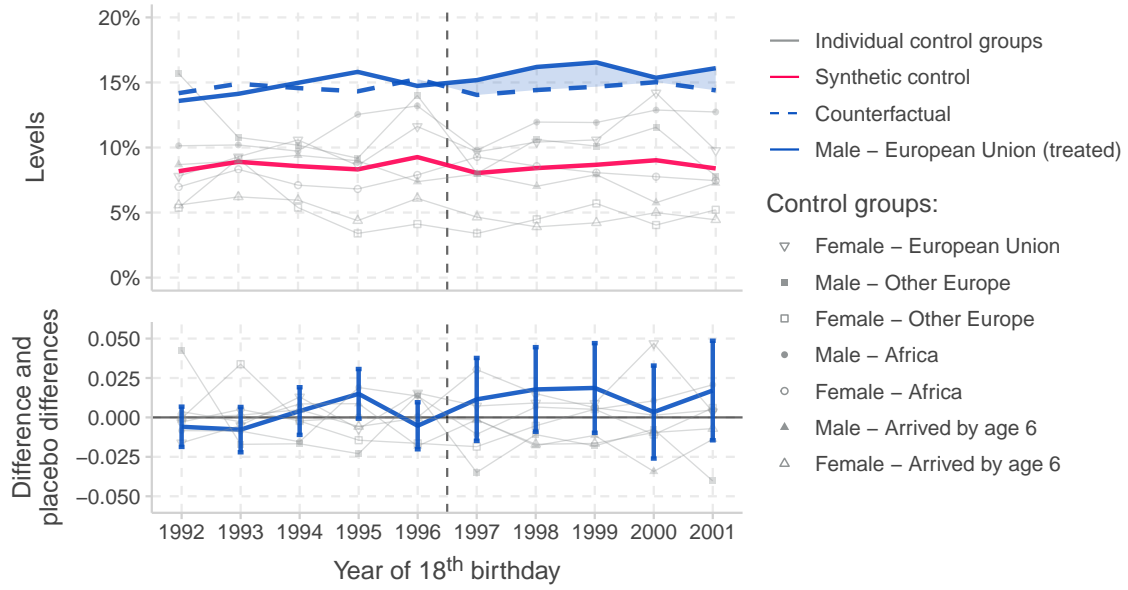
Figure A.8: Synthetic Difference-in-Differences - Worker
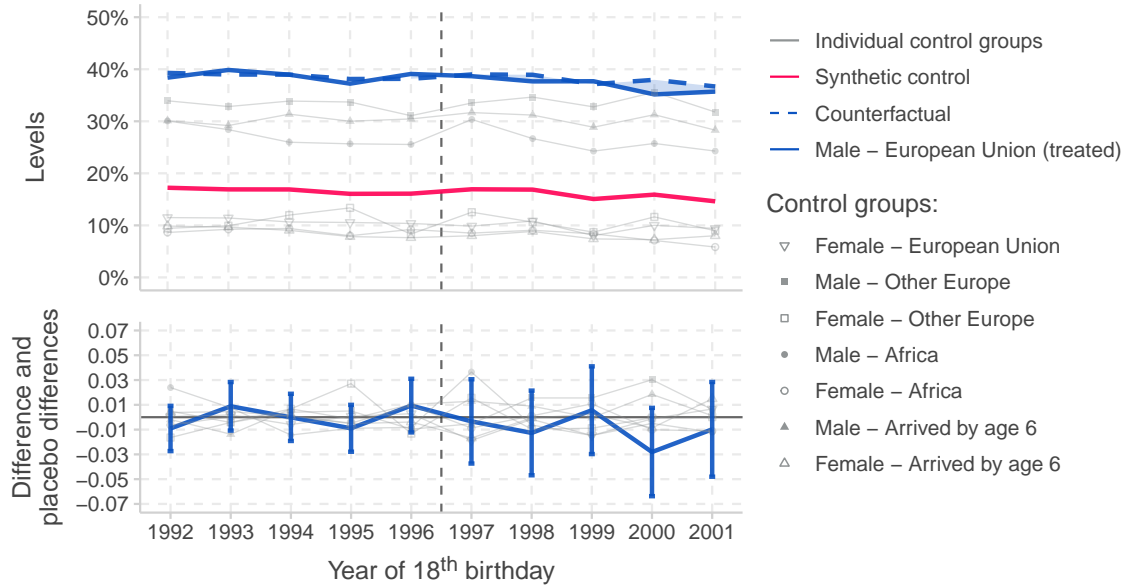
Figure A.9: Naturalization rates of first-generation immigrants arrived by age 6
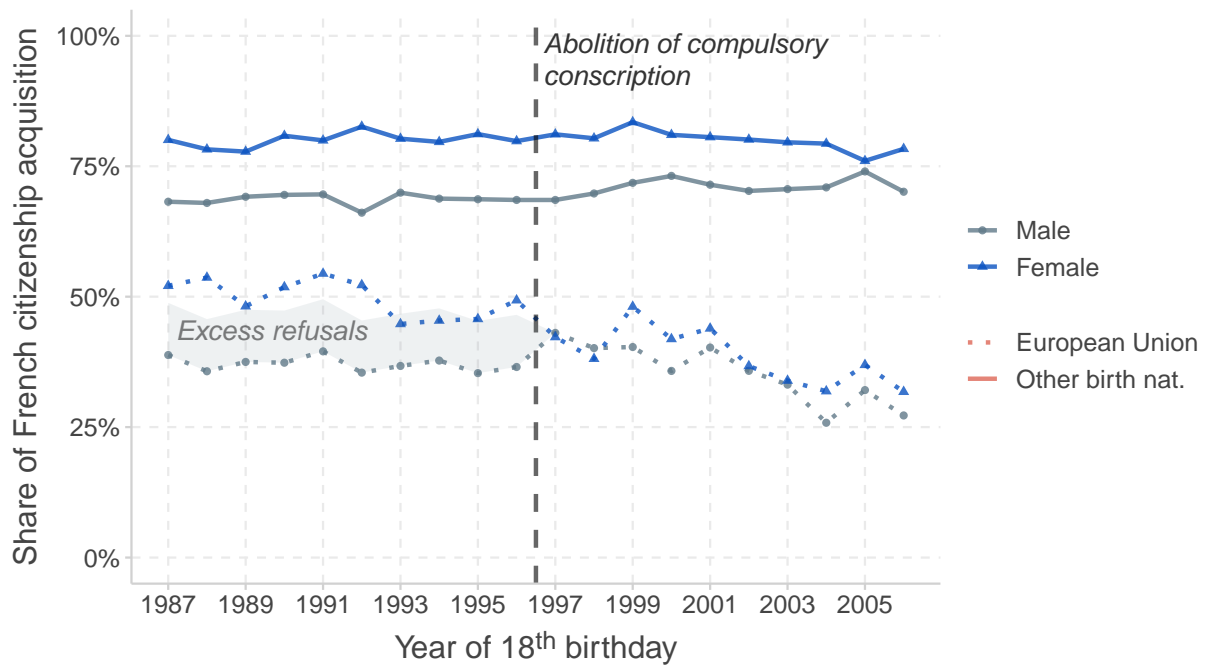
Figure A.10: Registration in electoral list
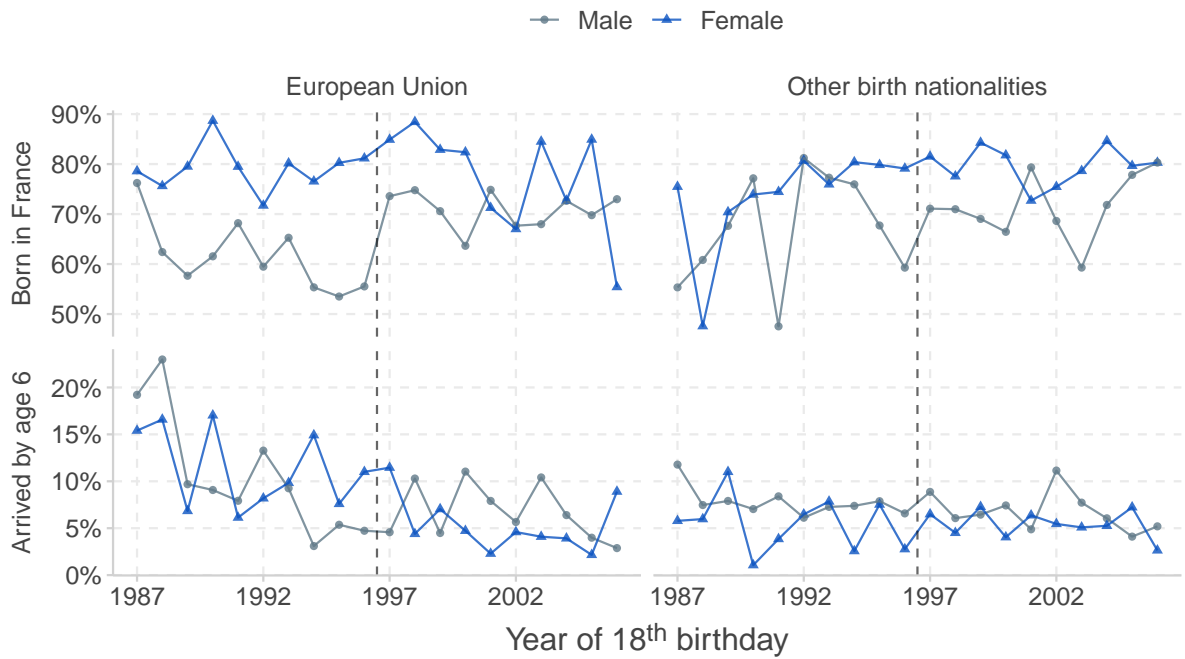
Figure A.11: Age at registration in electoral list
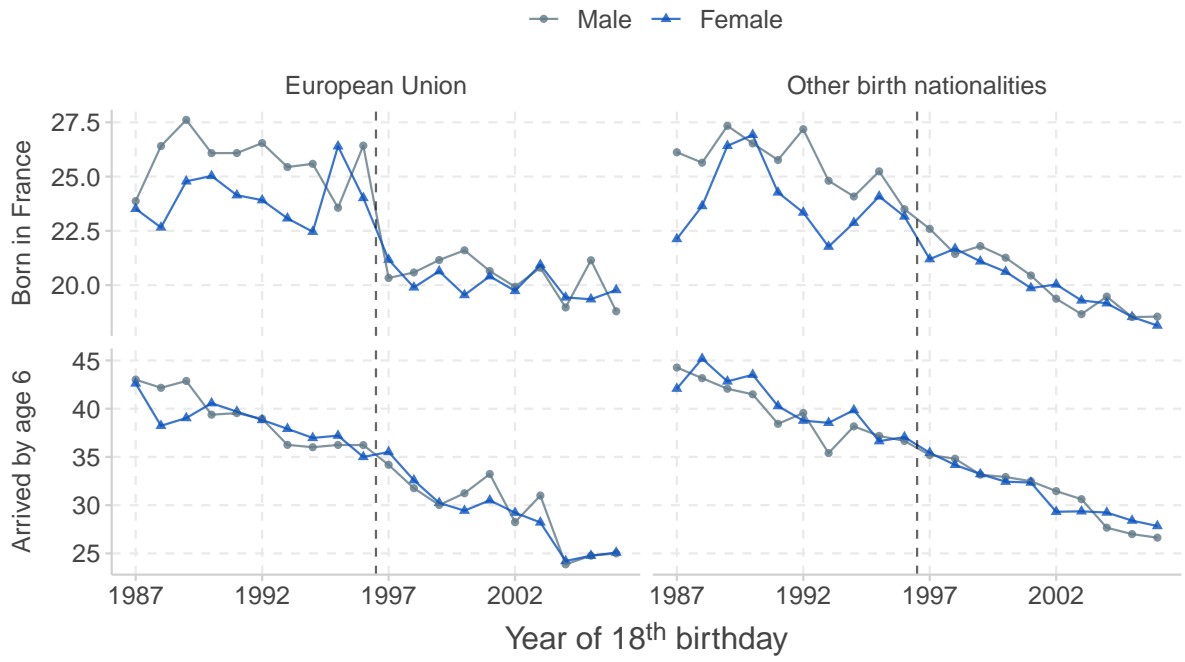
Figure A.12: Female labor market outcomes by their husband's birth cohort
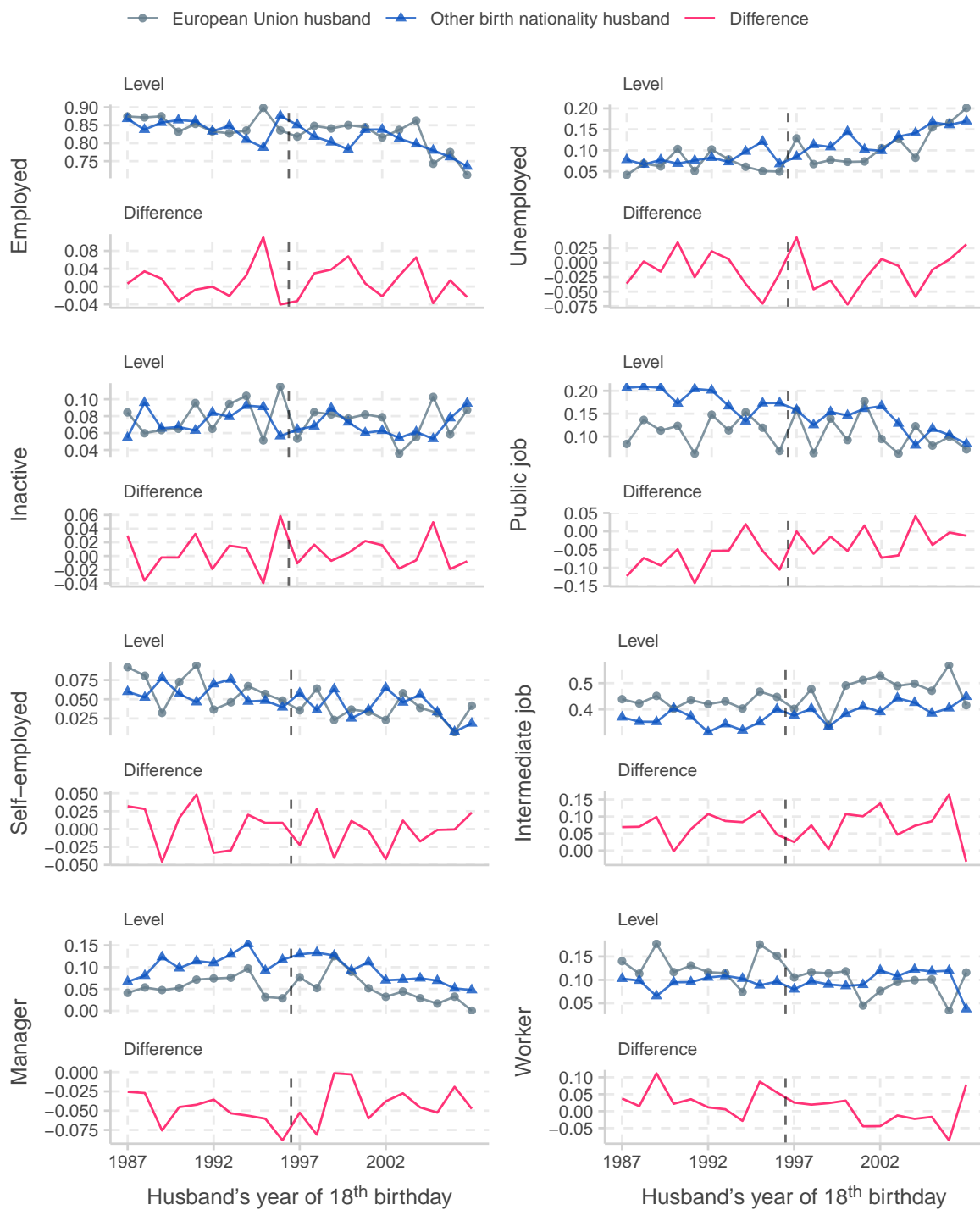
Figure A.13: Inactive ITT - Every combination of control groups
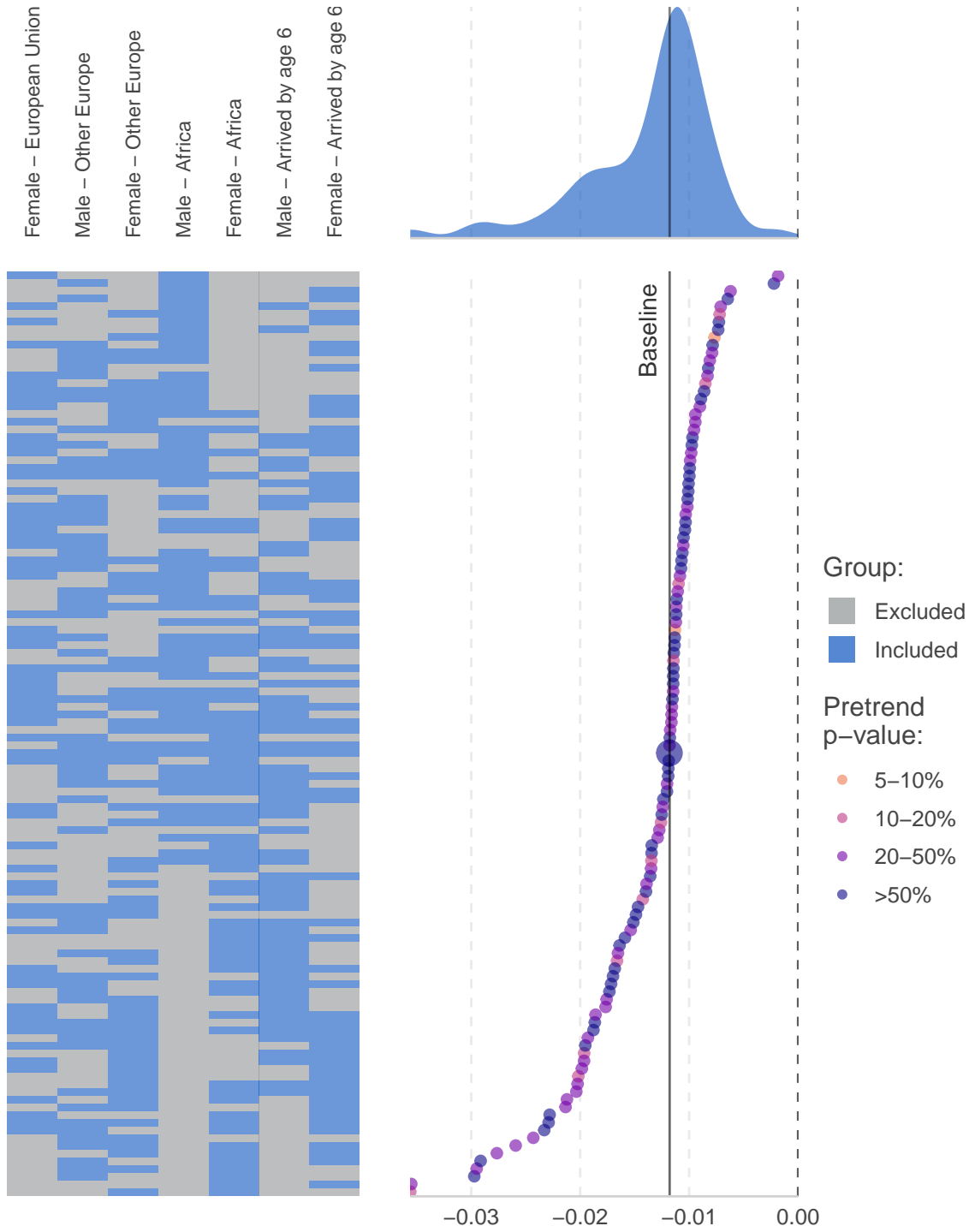
Figure A.14: Unemployed ITT - Every combination of control groups
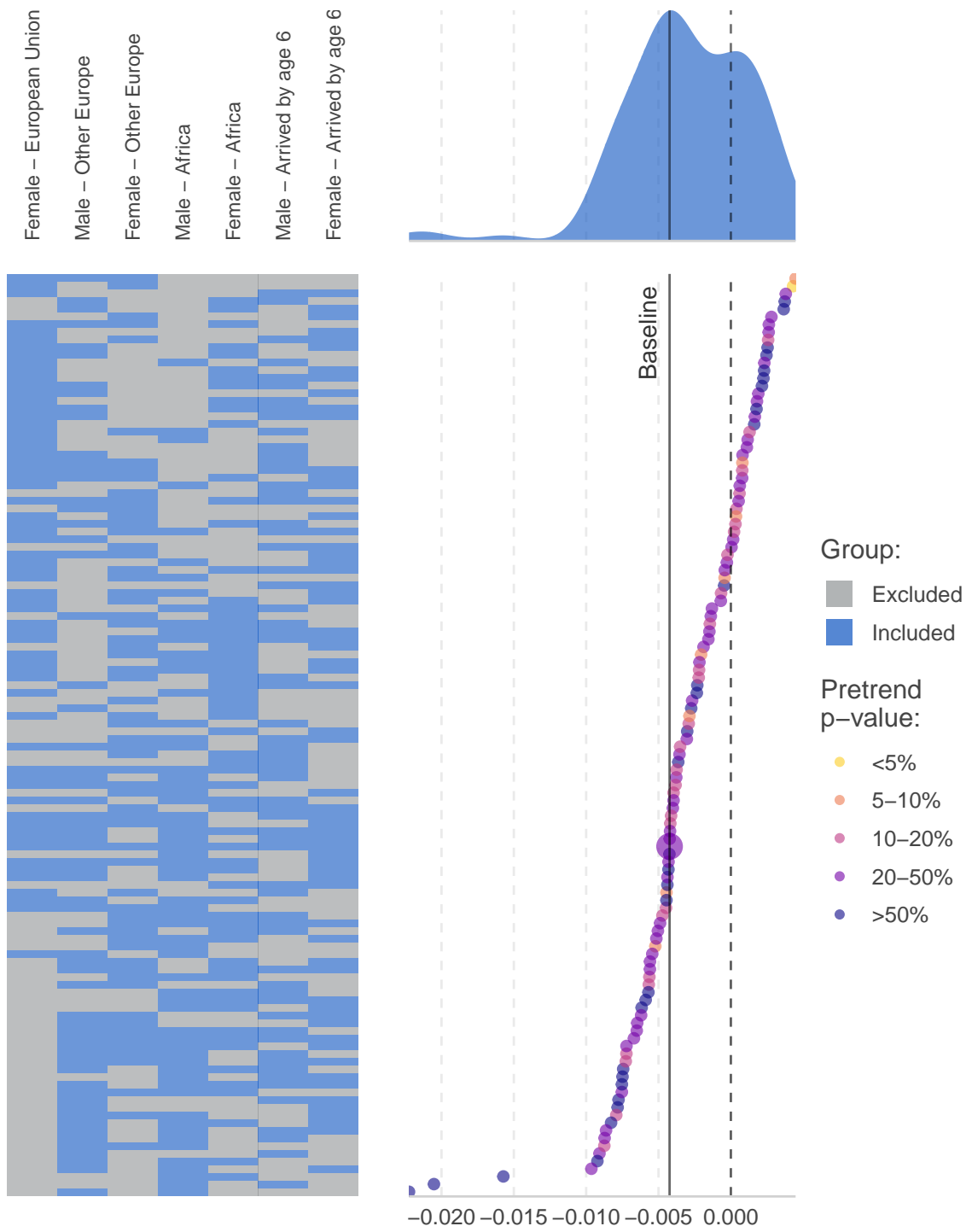
Figure A.15: Intermediate job ITT - Every combination of control groups
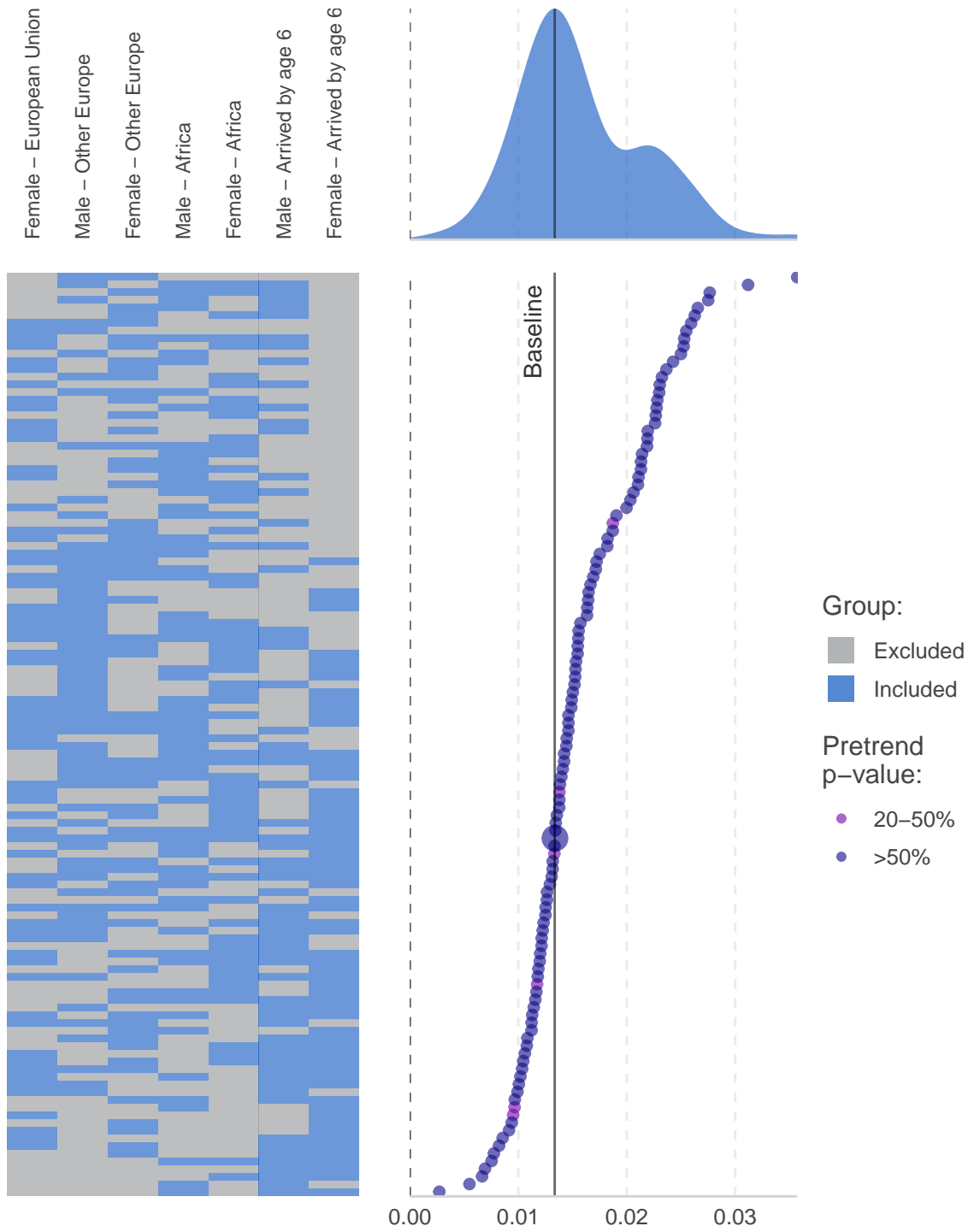
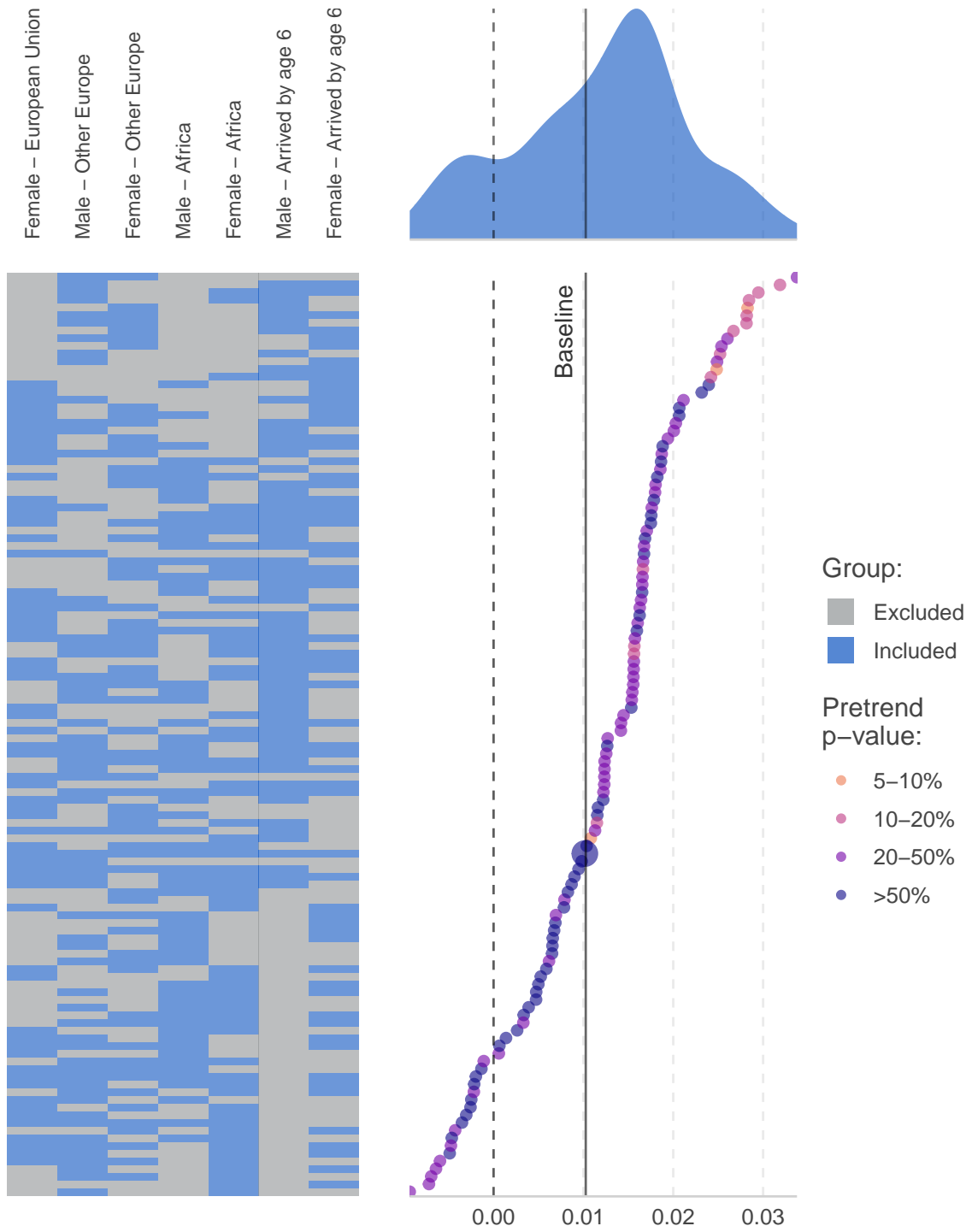Figure A.16: Manager ITT - Every combination of control groups

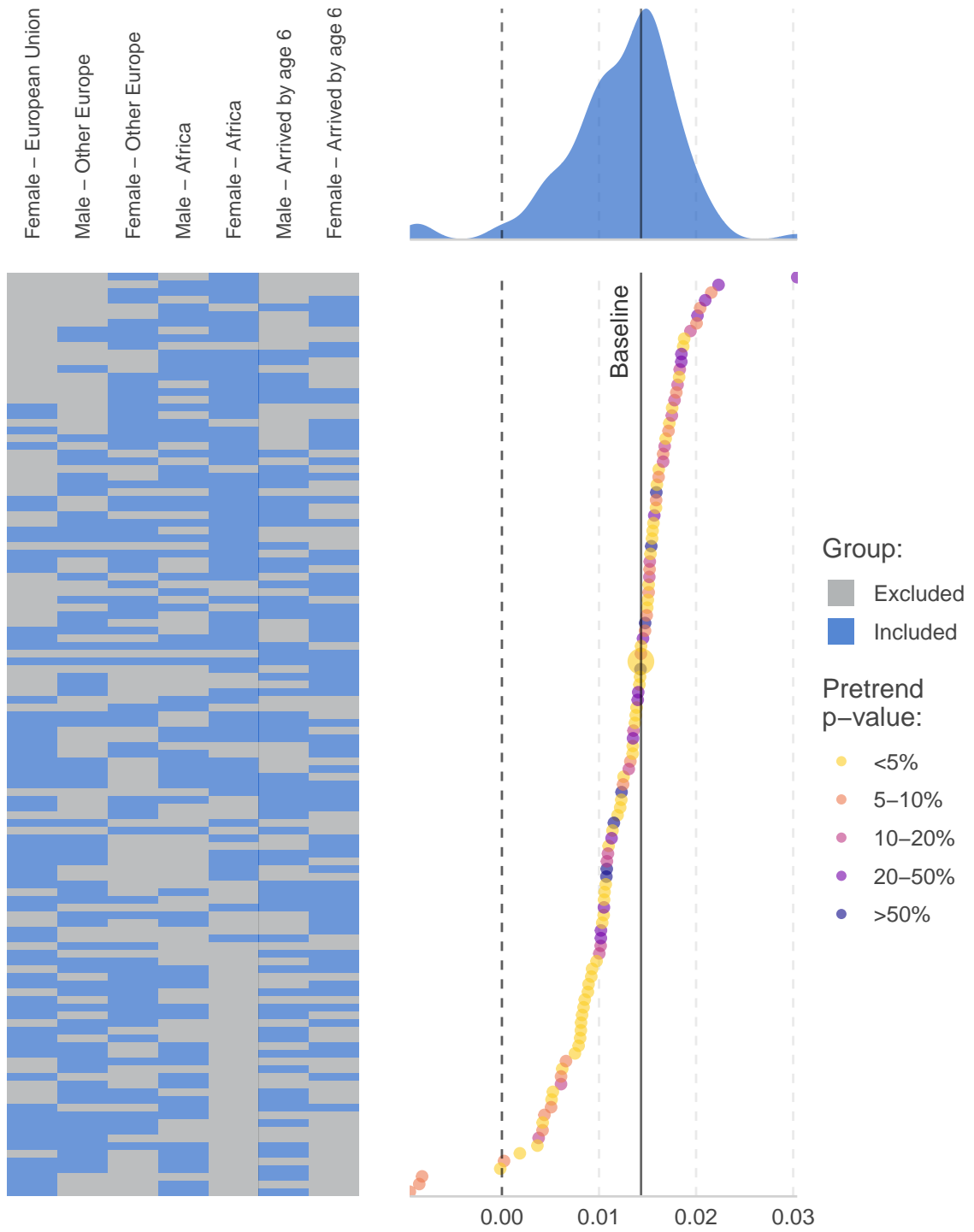Figure A.17: Public job ITT - Every combination of control groups

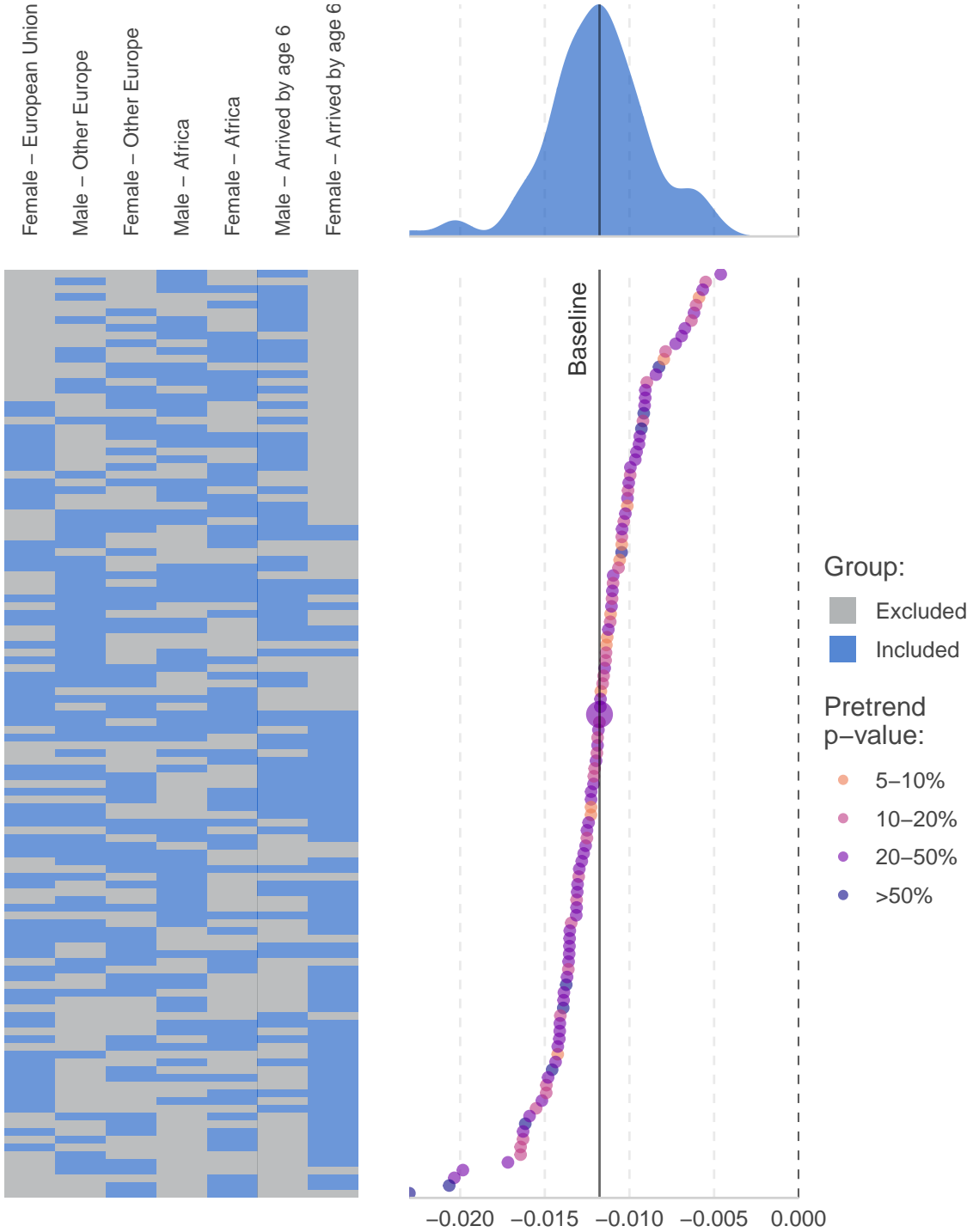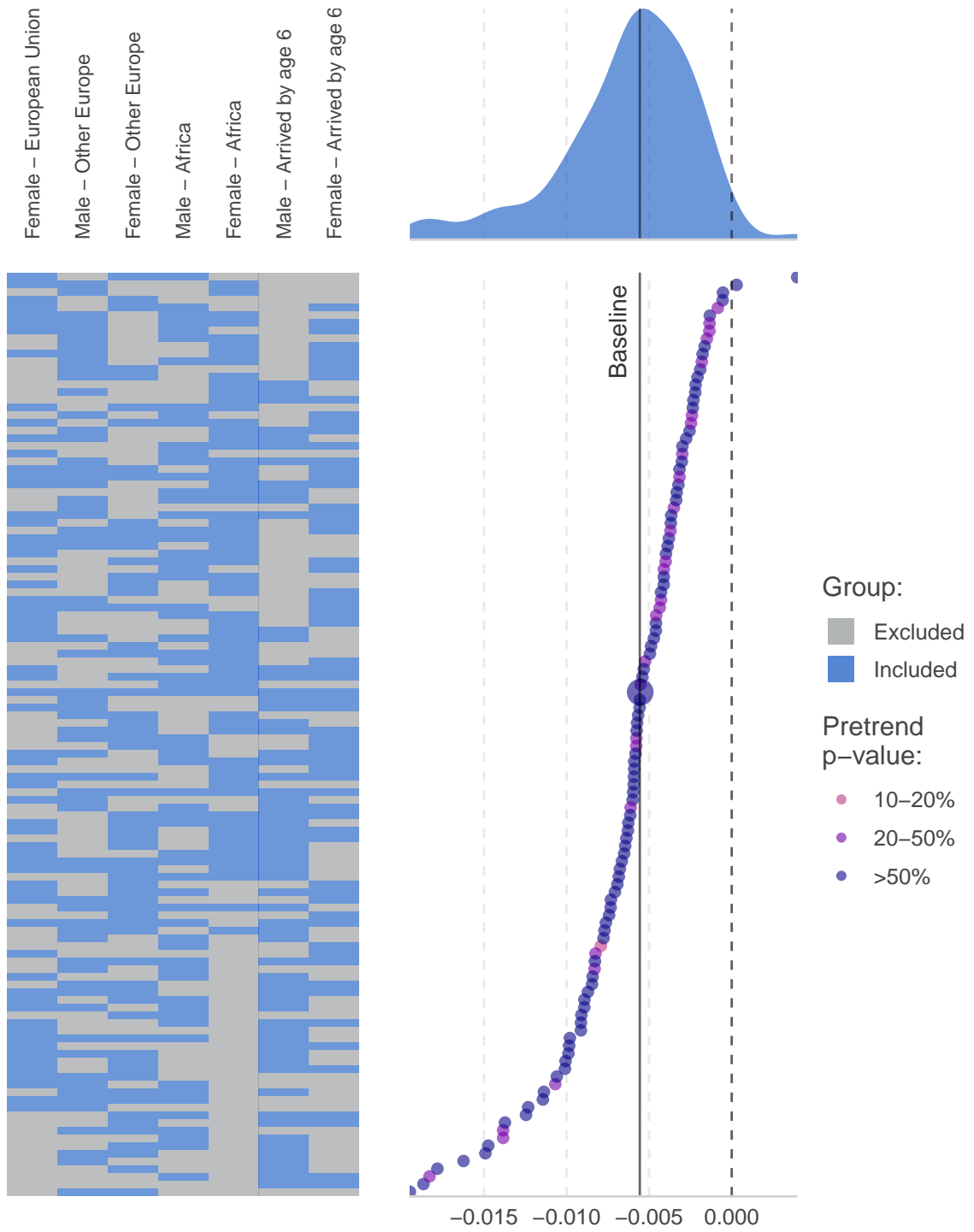Figure A.18: Self-employed ITT - Every combination of control groups

Figure A.19: Worker ITT - Every combination of control groups

B Additional tables

Table B.1: Share of the most represented birth nationalities of individuals born in France without French citizenship

European Union		Other Europe		Africa		Other	
Portuguese	33.69%	Turkish	7.05%	Moroccan	15.97%	Cambodian	0.84%
Spanish	6.34%	Serbian	2.01%	Tunisian	7.61%	Laotian	0.72%
Italian	6.34%	Polish	0.72%	Algerian	4.07%	Vietnamese	0.53%
Belgian	0.72%	British	0.68%	Cameroonian	0.85%	Haitian	0.52%
German	0.65%	Swiss	0.66%	Congolese	0.7%	Chinese	0.51%
Other	0.64%	Other	1.35%	Other	3.89%	Other	2.92%
Total	48.37%	Total	12.48%	Total	33.11%	Total	6.04%

Table B.2: Effect of the abolition of compulsory conscription on naturalization

	French citizenship acquisition
Male	-0.171^{***}
	(0.004)
Post	0.026^{***}
	(0.004)
Post×Male	0.088^{***}
	(0.006)
Constant	0.844^{***}
	(0.003)
Observations	70,117
R2	0.037

Notes: *p<0.1; **p<0.05; ***p<0.01. Window: ±5years.

Table B.3: Effect of the abolition of compulsory conscription on naturalization by education and birth nationality group

	European Union		Other Europe		Africa	
	Low edu.	High edu.	Low edu.	High edu.	Low edu.	High edu.
Post	0.025**	−0.016**	0.048***	0.051***	0.028***	−0.005
	(0.010)	(0.008)	(0.014)	(0.019)	(0.010)	(0.008)
Male	−0.222***	−0.128***	−0.109***	−0.038*	−0.062***	−0.065***
	(0.008)	(0.008)	(0.014)	(0.021)	(0.010)	(0.009)
Post × Male	0.125***	0.082***	0.027	−0.026	0.019	−0.001
	(0.014)	(0.012)	(0.019)	(0.028)	(0.014)	(0.012)
Constant	0.755***	0.900***	0.826***	0.803***	0.82***	0.930***
	(0.006)	(0.005)	(0.010)	(0.014)	(0.007)	(0.006)
Observations	20,064	14,284	6,539	3,138	12,554	10,016
R^2	0.048	0.021	0.021	0.007	0.007	0.011
F-stat.	340***	102***	47***	8***	30***	39***

Notes: *$p<0.1$; **$p<0.05$; ***$p<0.01$. Window: ±5years.

Table B.4: Effect of the abolition of compulsory conscription on naturalization by education and birth nationality group

	European Union as in 1996		European Union as in 1994	
	Low edu.	High edu.	Low edu.	High edu.
Post	0.025**	−0.016**	0.025**	-0.014*
	(0.010)	(0.008)	(0.010)	(0.008)
Male	−0.222***	−0.128***	−0.223***	−0.128***
	(0.008)	(0.008)	(0.008)	(0.008)
Post × Male	0.125***	0.082***	0.124***	0.083***
	(0.014)	(0.012)	(0.014)	(0.012)
Constant	0.755***	0.900***	0.755***	0.900***
	(0.006)	(0.005)	(0.006)	(0.005)
Observations	20,064	14,284	20,042	14,229
R^2	0.048	0.021	0.048	0.021
F-stat.	340***	102***	340***	102***

Notes: *$p<0.1$; **$p<0.05$; ***$p<0.01$. Window: ±5years.

Table B.5: Effect of the abolition of compulsory conscription on naturalization on European Union citizens

	French citizenship acquisition		
	(1)	(2)	(3)
Male	−0.210***	−0.210***	−0.187***
	(0.006)	(0.006)	(0.006)
Post	0.016**	0.047***	0.033***
	(0.007)	(0.009)	(0.009)
Post×Male	0.116***	0.116***	0.121***
	(0.009)	(0.009)	(0.009)
Age		0.006***	0.007***
		(0.001)	(0.001)
Higher Education			0.167***
			(0.005)
Constant	0.824***	0.594***	0.498***
	(0.004)	(0.043)	(0.042)
Observations	34,348	34,348	34,348
R2	0.048	0.049	0.084
F-stat.	577***	440***	629***

Notes: *p<0.1; **p<0.05; ***p<0.01. Window: ±5years

Table B.6: Effect of naturalization on public-sector jobs

	Public job
ITT ($\hat{\tau}$)	0.014**
	(0.007)
LATE ($\hat{\tau}/\hat{\gamma}$)	0.119*
	(0.063)
Group weights ($\hat{\omega}_i$)	
Female - European Union	0.119
Male - Other Europe	0.187
Female - Other Europe	0.100
Male - Africa	0.131
Female - Africa	0.168
Male - Arrived by age 6	0.135
Female - Arrived by age 6	0.160
Time weights ($\hat{\lambda}_t$)	
1992	0
1993	0.808
1994	0
1995	0
1996	0.192
Education	X
Age	X
First-stage F-stat.	629***
Share of compliers ($\hat{\gamma}$)	0.121*** (0.009)

Notes: *p<0.1; **p<0.05; ***p<0.01. Bootstrapped standard errors in parentheses.

Table B.7: Effect of naturalization on self-employment

	Self-employment
ITT ($\hat{\tau}$)	-0.012
	(0.007)
LATE ($\hat{\tau}/\hat{\gamma}$)	-0.097
	(0.066)
Group weights ($\hat{\omega}_i$)	
Female - European Union	0.159
Male - Other Europe	0.054
Female - Other Europe	0.139
Male - Africa	0.167
Female - Africa	0.152
Male - Arrived by age 6	0.172
Female - Arrived by age 6	0.157
Time weights ($\hat{\lambda}_t$)	
1992	0
1993	0.273
1994	0
1995	0.288
1996	0.438
Education	X
Age	X
First-stage F-stat.	629***
Share of compliers ($\hat{\gamma}$)	0.121*** (0.009)

Notes: *p<0.1; **p<0.05; ***p<0.01. Bootstrapped standard errors in parentheses.

Table B.8: Sensitivity of baseline results to the share of natives in the employment zone

Outcome	ITT (1)	ITT (2)	LATE (3)	LATE (4)
Employed	0.020**	0.020**	0.163*	0.163**
	(0.009)	(0.009)	(0.084)	(0.079)
Public job	0.014**	0.014**	0.119*	0.119*
	(0.007)	(0.007)	(0.063)	(0.064)
Inactive	−0.012*	−0.012*	−0.098*	−0.098*
	(0.006)	(0.006)	(0.057)	(0.056)
Self-employed	−0.012	−0.012	−0.097	−0.097
	(0.007)	(0.007)	(0.066)	(0.065)
Intermediate job	0.013	0.013	0.111	0.111
	(0.010)	(0.011)	(0.092)	(0.096)
Manager	0.010	0.010	0.085	0.085
	(0.011)	(0.011)	(0.096)	(0.094)
Unemployed	−0.004	−0.004	−0.035	−0.035
	(0.008)	(0.008)	(0.069)	(0.070)
Worker	−0.006	−0.006	−0.046	−0.046
	(0.012)	(0.012)	(0.106)	(0.108)
%Natives in ZE		X		X

Notes: *p<0.1; **p<0.05; ***p<0.01. Bootstrapped standard errors in parentheses.

Table B.9: Robustness of the LATE to the exclusion of the 1978 birth cohort

	With time weights		Without time weights	
	Including $t-1$	Excluding $t-1$	Including $t-1$	Excluding $t-1$
Employed	0.163*	0.149*	0.207***	0.183***
	(0.084)	(0.080)	(0.070)	(0.067)
Public job	0.119*	0.119*	0.130***	0.116**
	(0.063)	(0.066)	(0.048)	(0.050)
Inactive	−0.098*	−0.083	−0.145***	−0.137***
	(0.057)	(0.052)	(0.040)	(0.042)
Self-employed	−0.097	−0.097	−0.101*	−0.103*
	(0.066)	(0.065)	(0.056)	(0.056)
Intermediate job	0.111	0.111	0.159**	0.142*
	(0.092)	(0.092)	(0.071)	(0.077)
Manager	0.085	0.027	0.113	0.085
	(0.096)	(0.094)	(0.070)	(0.071)
Unemployed	−0.035	−0.037	−0.040	−0.027
	(0.069)	(0.070)	(0.058)	(0.056)
Worker	−0.046	−0.045	−0.080	−0.056
	(0.106)	(0.109)	(0.087)	(0.090)

Notes: *p<0.1; **p<0.05; ***p<0.01. Bootstrapped standard errors in parentheses.