Is naturalization a passport for better labor market integration? Evidence from a quasi-experimental setting

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This version : May 2020 †

Abstract

Better integration is beneficial for migrants and the host country. In this respect, granting citizenship is deemed to be an important policy to boost migrants' integration. In this paper, I estimate the causal impact of obtaining citizenship on migrants' labor market integration. I exploit a change in the law of naturalization through marriage in France in 2006. This reform amended the eligibility criteria of applicants by increasing the required number of years of marital life from 2 to 4, providing a quasi-experimental setting. Using administrative panel data, I first show evidence of the impact of the reform on the naturalization rates. I then use a dynamic triple-differences model to estimate the labor market returns to naturalization. I find that citizenship leads to increased labor market participation by 10%. Among those working, it leads to higher overall earnings associated with an increased number of hours worked, with no evidence of an effect on hourly wage. A gender decomposition shows that the effect on the increased probability of working is more relevant for men. On the other hand, among those working, women tend to be the ones benefiting from higher overall earnings by around 40% as a result of an increase in their number of hours worked, partly driven by the increased probability of full-time employment.

JEL classification: J61, J71.

Keywords: Citizenship, Immigrants, Labor market, Mixed marriages.

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†I would like to thank Thomas Piketty, Marion Leturcq, Hillel Rapoport, Cyprien Batut, Paolo Santini, Sara Signorelli, Mirna Safi and the participants of the Political Economy Workshop, Harvard University, Applied Economics Seminar, PSE as well as the Séminaire Café, INED for their helpful comments.

1. Introduction

Foreign-born population are a significant share of total population in the developed world[1] and their integration is a challenge faced by most countries. Well-integrated migrant is a desirable condition for the migrants themselves, as well as for the host country. Economic integration through the labor market participation leads to less dependence on the welfare benefits and positive net fiscal contributions (Dustmann and Frattini, 2014, d'Albis, Boubtane, and Coulibaly, 2016) as well as less crime and hence, more social cohesion in the host country (Freedman, Owens, and Bohn, 2018, Mastrobuoni and Pinotti, 2015).

Different factors can boost migrants' socio-economic integration. Better language skills (Dustmann and Fabbri, 2003; Lochmann, Rapoport, and Speciale, 2019), networks, marriage to a national (Safi and Rogers, 2008; Meng and Gregory, 2005; Meng and Meurs, 2009) all help migrants to better integrate the labor market. However, it is well-documented that migrants tend to remain at a disadvantage on the labor market when compared to natives (Chiswick, 1978; Baker and Benjamin, 1994; Dell'Aringa, Lucifora, and Pagani, 2015).

One potential tool at the hand of governments is the naturalization of migrants. The debate on whether naturalization is only a reward for integration or is in itself a catalyst for further integration has led to advocacy of different policies. Advocates of the former prescribe that the rules for naturalization should be hardened in order to screen the best integrated migrants. Others, on the other hand, supports the relaxation of the rules since it would help accelerate integration of migrant (Hainmueller, Hangartner, and Pietrantuono, 2017). Despite the substantial interest around this question and some suggestive evidences, there is so far, almost no causal evidence of such a link. In this paper, I aim to address this gap in the literature by estimating the causal impact of naturalization on the labor market outcomes of migrants.

Chiswick (1978), at the onset of this literature, found positive correlation between naturalization and labor market outcomes, by comparing naturalized to non-naturalized individuals in the U.S, later confirmed by Bratsberg, Ragan, and Nasir (2002). While these studies were the first attempts at providing an insight on the link between naturalization and labor market outcomes, they suffer from issues of endogeneity and self-selection. Naturalization involves a double positive selection: firstly, individuals who chose to apply for the nationality are positively selected among the pool of all immigrants and secondly, those who

[1] 10% in France and 13.5% in the US

end up obtaining the nationality are also positively selected among the group of applicants. Hence, comparing naturalized immigrants to non-naturalized ones lead to upward-biased estimates. Establishing the causal impact of naturalization is furthermore complicated since while citizenship might lead to better labor market outcomes, the reverse could also be true as well-integrated immigrants have higher chances of being naturalized.

A more recent strand of the literature has exploited panel data to partly address these issues by taking into account time-invariant individual characteristics, also finding a positive association (Bratsberg, Ragan, and Nasir, 2002; Fougère and Safi, 2009; Steinhardt, 2012). In France, comparing naturalized and non-naturalized migrants using panel data, Fougère and Safi (2009) found that having the French nationality was associated with a significant increased probability of being employed. However, individual fixed-effects only addresses part of the challenges in this literature, without properly tackling the issue of reverse causality or omitted variable bias such as language skills.

A noticeable exception to this is a recent paper by Hainmueller, Hangartner, and Ward (2019) which attempts to estimate the effect of naturalization in a very particular setting in Switzerland, whereby certain migrants' naturalization application is decided by direct democracy and voted through referendum by inhabitants. By comparing immigrants who are naturalized or not by a very close margin, they show that naturalization has a long-run positive effect on earnings in that setting. However, it exploits a small-scale local-level referendum on migrants that have spent a substantial amount of time on the Swiss territory. Critics of the direct referendum to grant citizenship in Switzerland put forward the potentially discriminatory practice[2] and the unwelcome feeling felt by those who are refused the nationality by members of their locality. It might induce the latter to react negatively on the labor market, hence affecting the control group.

In this paper, I analyze the causal impact of naturalization on the labor market outcomes of migrants, by exploiting a national-level reform in the law of naturalization through marriage in France. As laid down in section 2, this reform amended the eligibility criteria of applicants by increasing the required number of years of marital life from 2 to 4, providing a quasi-experimental setting. The design overcomes the issues of endogeneity, self-selection and reverse causality. It is, to the best of my knowledge, the first to provide causal evidence of the effect of naturalization on labor market outcomes, exploiting a nation-wide reform.

[2]It has been declared unconstitutional in 2003.

Using administrative panel data described in section 3, I provide a first-stage to show that the reform led to a differential rate of naturalization between the treated and control group. I then estimate the reduced-form of the effect of naturalization on labor market outcomes, showing that naturalization increases the labor market participation. On the intensive margin, naturalization increases earnings mostly through an effect on the number of hours of worked. I also show that these effect differ by gender in section 4. I conclude and provide the way forward in this project.

2. Context & Design

Like most developed countries, France has had a long history of political debate about migration. Foreigners are issued different types of visa, depending on their status and purpose of stay. These may be short-term ones (e.g. student visa, short-term work..) or longer-terms (e.g. 10 years residence permit). Upon satisfactory integration in France, foreigners become eligible for naturalization.

Applicants to naturalization are judged, by the French authorities, on their degree of social and economic integration in the country. The two main channels through which a foreigner can apply for naturalization are through decree and through declaration[3]. The latter applies to individuals born in France to foreign parents, as well as foreigners married to a french national. Since both situations, in themselves, constitute some level of integration, naturalization through declaration is deemed as part of the natural order. In fact, while foreigners applying through decree have to show proof of substantial integration in the social and professional life in France, foreign spouses of French citizens are only required to fulfill three criteria: number of years of marriage, proof of residence in France and a sufficient knowledge of french, their marriage to a French national being an adequate proof of integration.

The success rate among admissible files is estimated to be at around 70% for applications by decree and 90% for those through declaration. This gives an insight into the relative preference for the latter channel whenever possible. Rejections of applications of naturalization through marriage are rare and occur in cases of ineligibility with respect to the main criteria or for invalid marriages determined through an in-depth inquiry by the local authorities. Despite the measures in place, this somewhat privileged access to naturalization has led

[3]The bulk of applications, around 60% are through decree and 40% through declaration, of which half is in the case of a marriage.

many to fear that mixed marriages could be wrongly instrumentalized to obtain the French nationality.

Hence, throughout time, the French government has attempted to harden the rules to applying through the channel of marriage. It has achieved so mainly by increasing the number of years of marriage to a French national required to be eligible. Apart from the 1998 reform, when this condition had been relaxed, all the other reforms have aimed at increasing this duration, the underlying justification being that a longer marriage duration requirement would be more costly and deter individuals from contracting marriages for the sole reason of obtaining the French nationality.

In this paper, I will exploit the a reform in the law of naturalization through marriage in France to estimate the causal effect of naturalization on labor market outcomes. Announced in March 2006, the reform acted in July 2006 changed the eligibility criteria of naturalization through marriage by increasing the number of years of marriage from 2 years to 4 years. Given the retroactive nature of the law, the applicable eligibility criteria depended on the application date. Effectively, anyone applying before July 2006 would require two years of marriage to be eligible and conversely, any application after July 2006 will have to fulfill the new requirement of four years of marriage to be eligible. In other words, for simplicity, only marriages that were contracted before July 2004 would be eligible for applying to naturalization after 2 years of marriage. Those married after July 2004 will face the hardened eligibility criteria[4].

Since the reform was unanticipated at the time of marriage, it can be considered as an exogenous shock for those couples. Hence, there should be no reason to expect mixed married couples before and after 2004 to be any different except for their differential probability of obtaining the nationality, at least for a window of two years. I thus define marriages within a window before July 2004 as the treated group (by naturalization) and those after July 2004 as the control group (with respect to naturalization) as in Figure 1. Distortionary behavior due to the announcement of the reform in March 2006 is taken into account by restricting the end date of the control cohort to February 2006. In the same way, the end date defining the treated cohort is limited to February 2004, in order to account for reaction delays. This concerns individuals who would have been eligible to apply between March and June 2006,

[4]As an example, a foreigner married to a French national in January 2004 would be eligible as soon as January 2006 while a similar foreigner married in December 2004 would only have 2 years of marriage in December 2006, not enough to be eligible under the new law.

but would potentially not have the time to apply by that date.

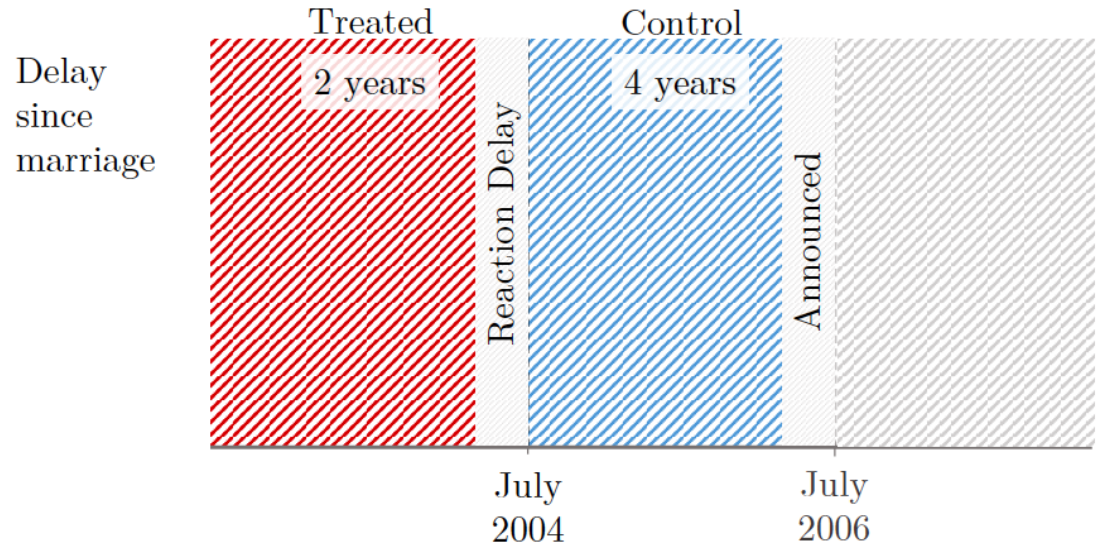


Fig. 1. Design

Additionally, it is worth keeping in mind that foreigners married to French nationals have two channels to apply for the French nationality. As discussed before, it is in their interest to go through the marriage channel as it is significantly more straight-forward. However, if they also fulfill the requirements to apply through the decree channel, they are legally allowed to do so. Hence, given the setting, it is similar to an intention to treat (ITT) design whereby there would be untreated individuals in the treated group due to reaction delay as well as defiers who would not apply to the naturalization irrespective of the criteria. In the same way, there might be always-takers in the control group, for instance if despite having less than 4 years of marriage, individuals resided for at least 5 years on the French territory and can prove sufficient integration in the socio-economic life in France, then they would be eligible to apply through the decree channel.

Theoretically, under a full compliance setting, we would expect 0% naturalization rate among the treated and control group up to two years after marriage. If every individual applied as soon as they were eligible and there were no administrative delay and rejection in obtaining the French nationality through marriage, then there would be a 100% naturalization rate among the treated group as from the third year after marriage. On the other hand, under similar conditions, the control group would have a 0% naturalization rate up to 4 years after marriage and a 100% rate as from the fifth year after marriage (Figure A.1).

However in practice, due to delay non-compliance, the differential naturalization rate would look like Figure A.2. This is empirically tested in the first-stage analysis. The reduced-form will rely on the gap in naturalization rates to estimate its effect on labor market outcomes[5].

3. Data & Empirical Setting

3.1. Data

I exploit the French administrative panel data known as the *Echantillon Démographique Permanent (EDP)*. This is a panel which matches different administrative sources for individuals born on certain dates of the year, providing the socio-demographic characteristics of individuals. Prior to 2004, the EDP constituted a sample of 1% of the total population and 4% thereafter[6].

In this paper, I focus on three main data sources of the EDP which is the population census, civil registries of marriage and employees panel data (DADS). First, the civil registry of marriage allows me to identify the date of marriage of couple with at least one EDP individual, as well as other characteristics for both spouses at the time of marriage. This includes their nationality, gender and age among others. Having categorized individuals into different types of marriage, namely endogamous marriages between two french or two foreigners, as compared to mixed marriages[7]. In line with the identification strategy, mixed marriages is defined as marriages contracted between a non-french individual and a french person, as recorded at the date of marriage. Since europeans are less likely to be affected by this reform, they are excluded from the analysis[8].

Second, I match the marriage registries to population censuses. As from 2004, the population census is based on a five-year rotating sample of around 14% of the population yearly. This annual structure of the population census provides a proxy for naturalization. An individual is considered naturalized if he/she is recorded as non-french at the time of marriage

[5]Extensive robustness checks show that there are no differential rate of migration out of the country due to this reform and the sample composition based on observable characteristics remains similar between treated and control group over time.

[6]Before 2004, the EDP included individuals born on 4 dates of the year. The sample has increased to 16 dates of year as from 2004. This was effectively applied to the civil registries in 2004 but to the population census only as from 2008. Independently, the employer-employee data had a sample of 4% of the population until 2001 and it has increased to 8% in 2002.

[7]Interchangeably used with the term "intermarriage".

[8]Reference to non-french in this paper is interchangeable with non-europeans.

and reports being french in subsequent years in the census[9]. Population census also contains extensive socio-demographic information such as country of birth, level of education and marital status, providing information on divorces.

Finally, in order to look at the effect of naturalization on the labor market outcomes of individuals, I match the above-mentioned sources to the employees panel data. This data is originally derived from a panelized version of the employer-employee linked data (DADS)[10]. It provides extensive annual information on employed individuals, namely their salary, type of contract, type of occupation, number of hours worked among others. Only foreign individuals who have worked at least once before 2002, hence entered the panel prior to their date of marriage, is kept in this panel to ensure that the results are not driven by new migration waves.

3.2. Empirical Strategy

In order to account for the fact that the treated and control groups are different cohorts of marriage, I implement an event-study type of analysis. Each calendar year t is expressed in terms of the distance to the date of marriage or the duration since marriage (Dur). A reasonable event-window of up to 10 years since marriage[11] is kept and the dynamic effects are reported.

The empirical strategy used in this paper is in two-fold. In the first-stage, I show evidence of the effect of the reform on the naturalization rates among the treated and control groups. In order to do so, I match the marriage registry to the population census. I build a dummy of naturalization (Nat_{it}) which takes value one if the individual i was declared as being a foreigner on the marriage certificate and report being French at time t in the census or 0 if individual i reports being a foreigner on the marriage certificate as well as at time t. I estimate the following equation:

$$Nat_{it} = \alpha + \delta T_i + \sum_{d=0}^{10} \beta^d Dur_{it} + \sum_{d=0}^{10} \lambda^{\mathbf{d}} Dur_{it} * T_i + \epsilon_{it} \quad (1)$$

where i is the individual, t is the calendar year, T_i is a dummy if i is in treated or control group, Dur_{it} is a dummy for each year after marriage; d = t - Year of Marriage. The coeffi-

[9]Despite some measurement errors, this remains the best tool to measure naturalization. There are no official dataset that keeps track of naturalized foreign individuals, hence no information on the date and type of naturalization of foreign individuals.

[10]Déclaration annuelle des données sociales

[11]11 time periods. d ranges from 0 (the year of marriage) to 10 (ten years after marriage)

cient of interest, λ^d gives the differential rate of naturalization between treated and control group at each duration since marriage.

In the second step, I estimate the reduced form effect of naturalization on labor market outcomes. In doing so, I match the marriage registry data to the employee panel data. I adopt a triple-difference approach to account for calendar year effects[12]. Marriages between two foreigners are thus considered as never-treated groups since they are not affected by the reform. Hence, there would be no differential rate of naturalized between a similarly-defined "treated" and "control" group among the never-treated foreigner group. In order to ensure that foreigners married to foreigners are similar in characteristics to those married to french, I match the two using a Coarsened Exact Matching (CEM) approach (Iacus, King, and Porro, 2012) on baseline characteristics such as age group, year, gender, sector of employment, working full-time or not and earnings[13]. The reduced form estimate of the effect of naturalization on labor market outcomes is obtained through the following specification:

$$Y_{it} = \alpha + \sum \beta^d Dur_{it} + \eta Mixed_i + \sum \lambda^d [Dur_{it} * T_i] + \sum \gamma^{\mathbf{d}} [Dur_{it} * T_i * Mixed_i] + \mu_i + \epsilon_{it} \tag{2}$$

where Y_{it} are labor market outcomes of individual i at time t, namely the probability to be employed, annual earnings, no of hours worked, hourly wage, full-time employment, public-sector employment; $Mixed_i$ is a dummy for whether the foreign individual is married to a french (group of interest) or to a foreigner (never-treated group) and; μ_i are individual fixed-effects.

I include a duration fixed-effect to account for any potential effects that are specific to a particular number of years of marriage. For instance, couples might have kids in the first few years following marriage. I also include a group fixed effect to account for characteristics that are specific to foreigners married to foreigners and those married to french. It could be the case that, on average, wealthier foreigners get married to french individuals while less wealthy ones marry non-french individuals or vice-versa. The interaction term between duration and treatment group takes into account the differences between the treated and control group among mixed couples. Finally, the term of interest is γ^d which provides the effect of naturalization on labor market outcomes at each duration since marriage for the treated group compared to the control group of the group of interest compared to the never-

[12]The results for a simple double-difference approach is reported in the appendix.
[13]Baseline here refers to pre-treatment period $Dur = 0$ to 2.

treated group.

3.3. Descriptive Statistics

In France, in terms of mixed marriage, there are on average more foreign men married to french women than the contrary. In fact, the proportion of women in my sample is only around 34%. The spouses in the sample are generally between the average age of 30 to 35 at the time of marriage. Given that there is a generally increasing trend in the age of marriage over the period of interest, the average age at marriage among the treated group compared to the control group is mechanically lower, especially for the group of interest (Panel A of Table 1). The same goes for a generally increasing trend in net constant annual earnings as seen in both cases (A and B). The difference of the differences in Panel C shows that labor-related factors[14] are not significantly different between the treated and control group when general trends are taken into account.

Table 1: Balancing test at time of marriage

	Panel A: Foreign-French			**Panel B: Foreign-Foreign**			**Panel C**
	Control (1)	**Treated (2)**	**Diff (3)**	**Control (4)**	**Treated (5)**	**Diff (6)**	**Diff of (3)-(6)**
Age	32.99	30.89	-2,10***	34.13	34.57	0.44	-2.54***
	(7.70)	(6.03)	(0.36)	(7.46)	(8.38)	(0.50)	(0.60)
Age Difference	5.29	5.69	0.4	5.29	6.68	1,38***	-0.98**
	(5.10)	(5.20)	(0.27)	(4.67)	(6.07)	(0.34)	(0.43)
% of women	0.32	0.33	0.01	0.45	0.44	-0.01	-0.02
	(0.47)	(0.47)	(0.02)	(0.50)	(0.50)	(0.03)	(0.04)
% of prev. single	0.83	0.92	0,08***	0.77	0.76	-0.01	0.09**
	(0.37)	(0.27)	(0.02)	(0.42)	(0.43)	(0.03)	(0.03)
Proportion	0.76	0.76	0.01	0.69	0.76	0,07**	-0.06*
working	(0.43)	(0.42)	(0.02)	(0.46)	(0.43)	(0.03)	(0.04)
% of Full-time	0.68	0.64	-0.05*	0.69	0.64	-0.05	0.00
	(0.47)	(0.48)	(0.03)	(0.46)	(0.48)	(0.04)	(0.05)
No of hours	1159.51	1093.44	-66.07	1280.16	1189.53	-90,64*	-24.57
	(694.93)	(683.94)	(41.42)	(725.29)	(675.85)	(52.70)	(66.76)
Net constant	12857.36	11363.56	-1493,80***	13749.35	12485.14	-1264,21*	-229.59
annual earnings	(9259.52)	(9700.67)	(564.03)	(9735.30)	(8950.09)	(697.93)	(899.47)
Observations	765	722	1,487	557	445	1,002	2489

[14]Except for the proportion working, which is close to not significant

4. Results

4.1. First-Stage

This section tests whether the reform has had an effect on the naturalization rates in the treated and control group, by estimating equation (1). The regression coefficients estimating the differential rate of naturalization in the treated group compared to the control group among intermarriages are plotted in Figure 2[15]. T0 corresponds to the year of marriage and T10 refers to 10 years after marriage. Since the treated group are those married before the 2004 threshold, they will become eligible to apply to naturalization through marriage as soon as 2 years after marriage. On the contrary, having contracted a marriage after July 2004, the control group marriages will only become eligible through this channel of naturalization after 4 years of marriage. It takes a year on average for the French administration to provide a positive or negative response to the application.

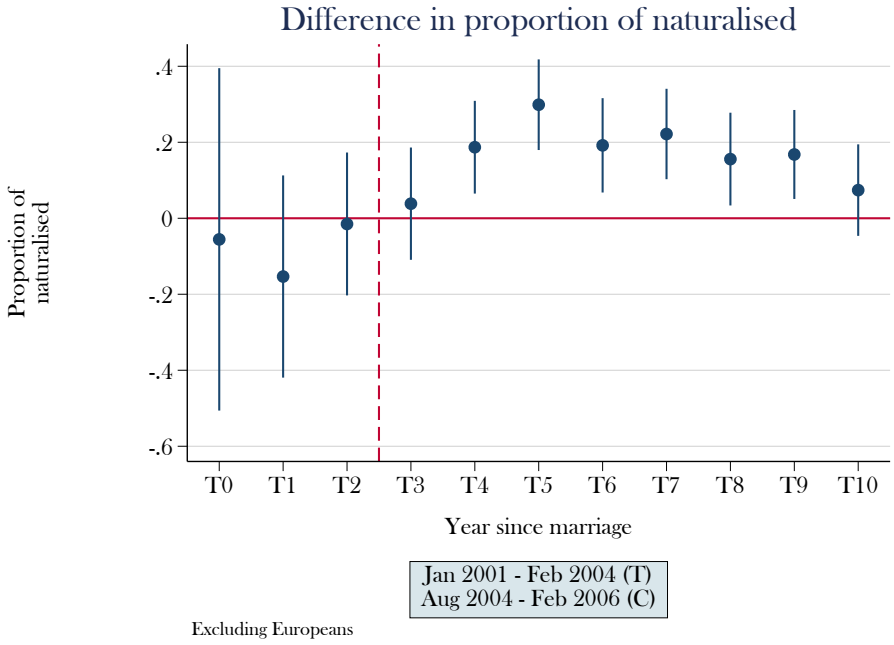


Fig. 2. Naturalization rate differences among mixed marriages

In figure 2, the rates of naturalization between the two groups does not seem to sig-

[15]The estimate of rate of naturalization is conditional upon being observed in the population census. For instance, the coefficient of T4 is interpreted as a 20 percentage point higher naturalization rate among the treated group compared to the control group conditional of being in the population census 4 years after marriage. A series of robustness checks are carried out to show that there is no differential rate of attrition and stable population composition (available upon request). An alternative test of the first-stage is presented in Appendix section.

nificantly different in the "pre-treatment" period, from the year of marriage to two years after marriage since non of the groups are eligible for naturalization through the channel of marriage. The difference gradually sets in as from the fourth year of marriage which is what we should expect given the administrative delay of a year. The gap between the two group seems to close off as from 6 years of marriage, consistent with the timing at which the control group is likely to witness an increasing probability of being naturalized. Interestingly, it takes a longer period of time for the gap to disappear[16].

To provide additional proof that this gap between the treated and control group is actually driven by this reform, I perform two types of placebo analysis. In Figure 3, I repeat the same exercise with non-mixed foreign marriages. I identify cohorts of marriages as defined for the group of interest and compare their naturalization rates. The combined F-test of these coefficients suggests that there is no significant difference in the naturalization rates in this never-treated group.

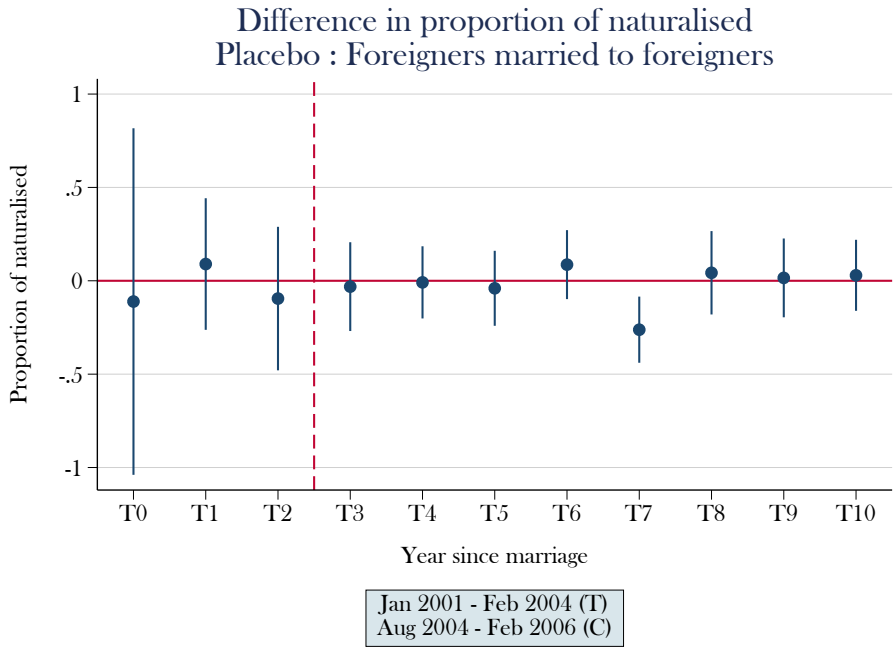


Fig. 3. Difference in naturalization rate among foreign non-mixed marriages

In a second set of placebo tests, I set the reform timing at other random dates and repeat the above exercise among the group of interest, foreigners married to French citizens. The

[16] Again, extensive robustness checks show that there are no differential probability of observing individuals in the treated and control group over time and the sample composition based on observable characteristics remains similar between treated and control group over time.

top left panel corresponds to the actual date of the reform, July 2006 and is exactly the same as Figure 2. The top-right panel of Figure 4 shows the differential rates under the assumption that there was a reform in July 2008. In the bottom left and right panels, the reform date is assumed to be on July 2010 and 2012 respectively[17]. There seems to be no significant differential naturalization rates under the three placebo scenarios.

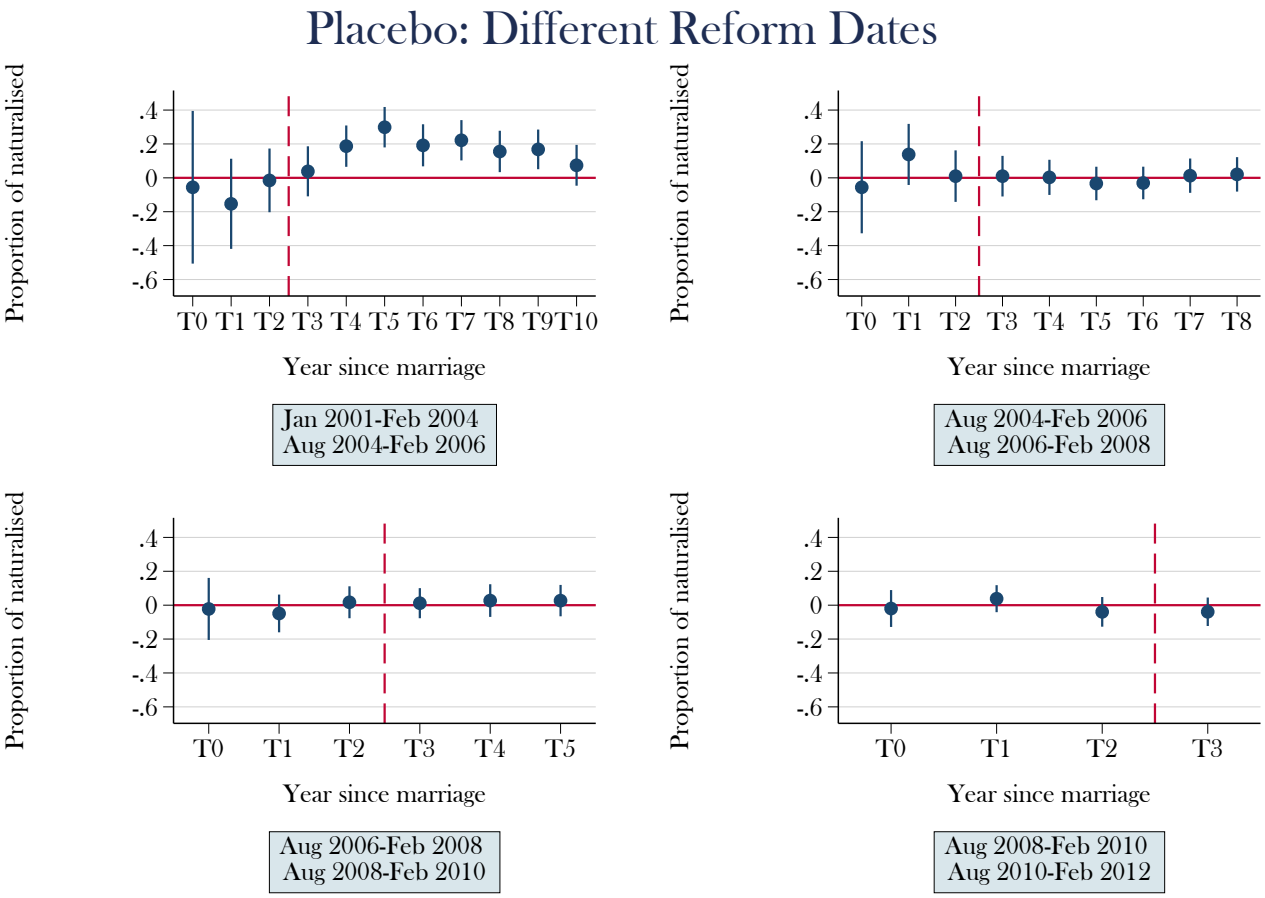


Fig. 4. Placebo: Difference in naturalization rate with different reform dates

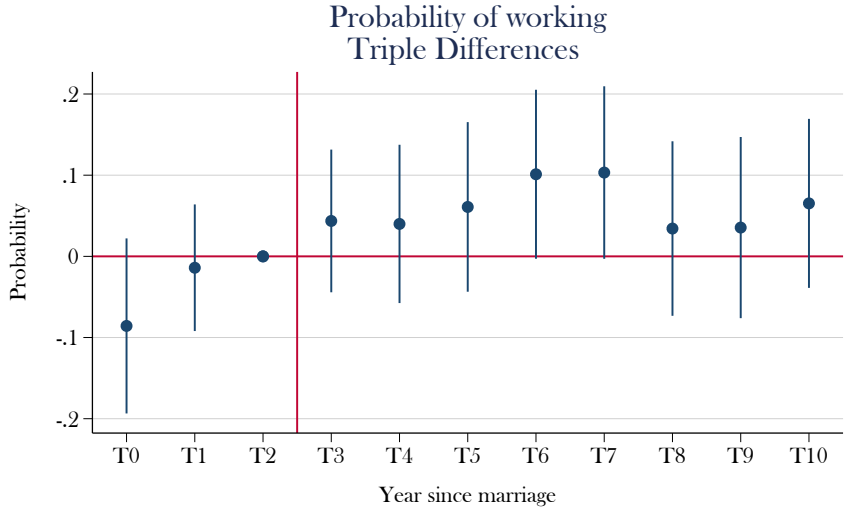
4.2. Reduced-Form

Exploiting the 2006 reform shock on the naturalization propensity of two otherwise comparable groups, I estimate the causal effect of naturalization on the labor market outcomes

[17]Choosing a more recent reform date restricts the number of periods after marriage that can be observed in the data, knowing that the latest year for which population census data is available is 2016.

of foreigners. In this section, the reduced-form equation (2) is estimated and the dynamic effects of the triple-difference approach are presented[18].

Looking on the extensive margin in Figure 5, there seems to be no effect prior to the treatment and a gradual increase in the probability of employment up to 7 years after marriage and a decline thereafter, as the control group becomes more and more naturalized. Naturalization significantly increases the probability of employment by 10%. This translates into higher total net annual earnings as shown in Figure 6. The total effect of naturalization on annual net earnings is positive and is around 5000 € in absolute terms. This corresponds to a substantial increase of around 52% due to the fact that these migrant populations tend to have a low annual earnings of around 9500 € at baseline.



Triple difference regression. Coefficients plotted are the interaction terms between treatment, duration and type of marriage. With Individual FE. Clustered SE
Missing observations set to 0.
N = 9151; Adj-R2 = 0.46; Mean = 0.72; Constant =.73

Fig. 5. Probability of employment

[18] All confidence interval are at the 95% as standard in the literature.

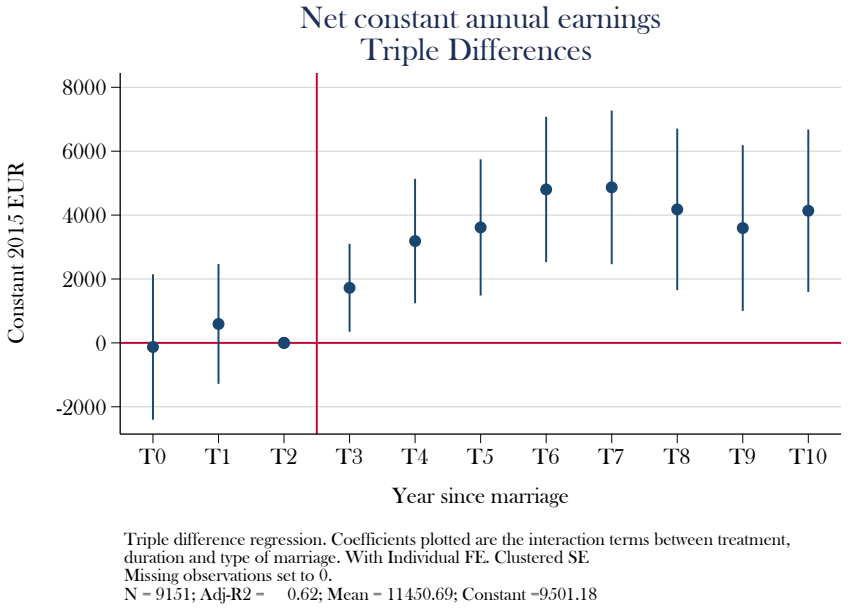


Fig. 6. Net constant annual earnings

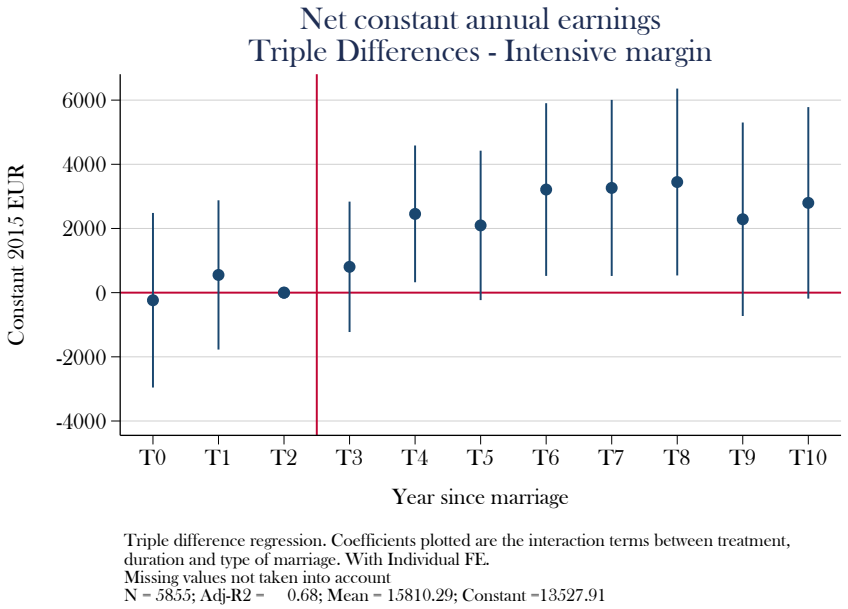


Fig. 7. Net constant annual earnings (intensive margin)

Focusing on the intensive margin, among those working, naturalization increases their annual labour income by around 3400 €. This effect gradually disappears as the control group catches up given their higher propensity to naturalize as from T6. The effect of naturalization on total earnings can be decomposed into two components: hours of work

and hourly wage as shown in Figure 8 and Figure 9. While naturalization seems to have led to an increase in the length of work by around 200 hours, there are no discernible effect on the hourly wage. Hence, these results taken together suggest that the increase in annual salary is mostly driven by an increase in the number of hours worked. This seems in turn to be the result of an increase in the proportion of full-time employment (see Figure B.2).

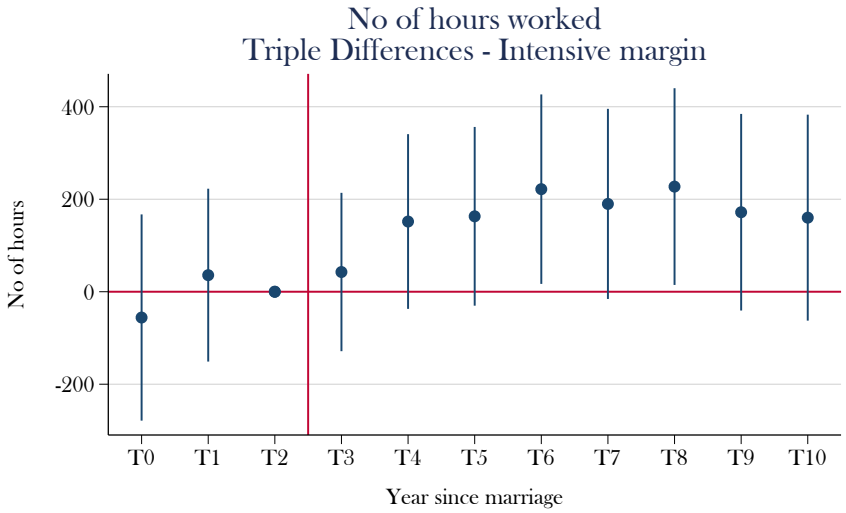


Fig. 8. Number of hours of work

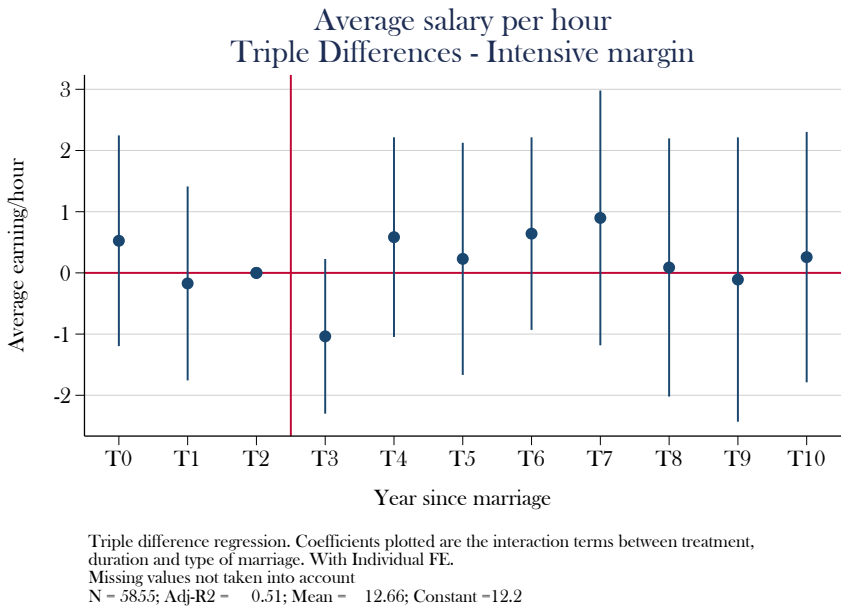
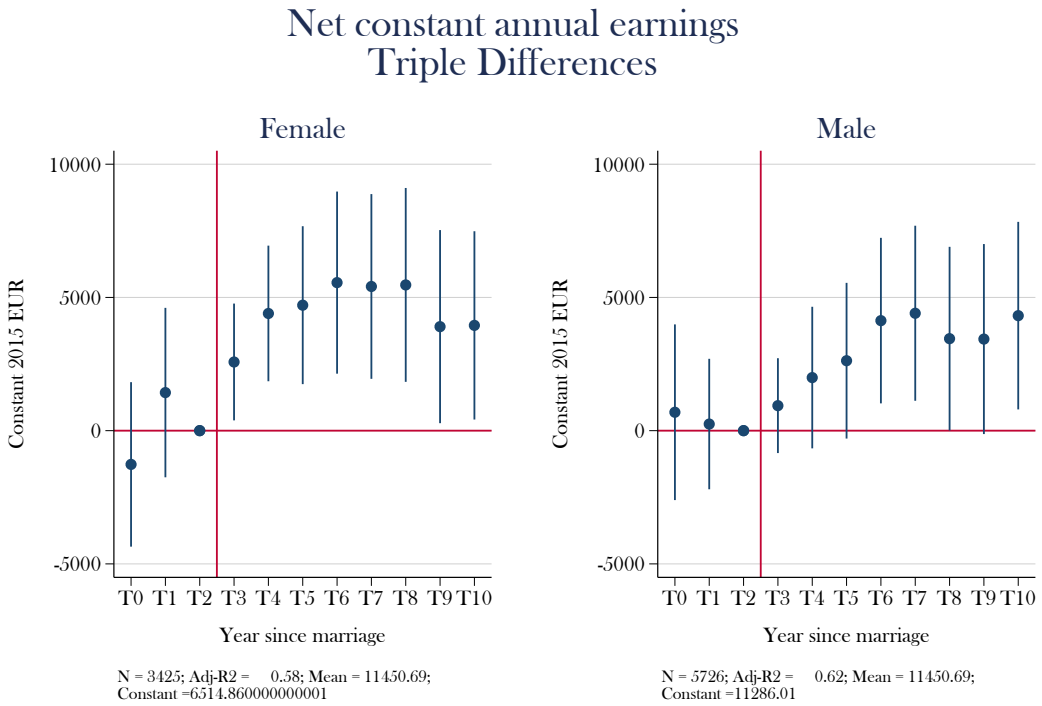


Fig. 9. Hourly wage

These results mask underlying gender differences. Figure 10 shows that the total effect on annual income is positive for both men and women. While for men it is due to an increase on both the intensive and extensive margin, there seem to be no significant effect on extensive margin for women. Thus, obtaining the French nationality does not seem to push more women in the labor market (See Figures B.2 and B.3). Overall, naturalization leads to an increase in annual income of around 5000 € for men and women and of around 6000-8000 € on the intensive margin for women. The former corresponds to an increase of around 70% for women and 45% for men, while among working women, naturalization leads to a 38-50% increase in their annual labor earnings. It is consistent with the fact that women are at a lower baseline earnings in absolute terms.



Triple difference regression. Coefficients plotted are the interaction terms between treatment, duration and type of marriage. With Individual FE. Clustered SE Missing observations set to 0.

Fig. 10. Net constant annual earnings by gender

The intensive margin effect for women is driven by an increase in their number of hours worked with some evidence of an increase in their probability of full-time employment. In line with the overall picture, there are no effect on the average salary per hour, irrespective of gender (Figures B.4 to B.6).

4.3. Discussion

The literature puts forward different potential mechanisms through which naturalization could lead to better economic integration. The most important factor is the unrestricted access to the labor market. In fact, in the case of France, Fougère and Safi, 2009 document that around 20% of the labor market is not accessible to migrants. Among other jobs, part of the public sector is not accessible to foreigners. I, thus, estimate, as in the previous section, the effect of naturalization on public sector employment in France. Despite non-significance for most of the periods[19], there is some hint towards an increasing trend as from T6 as seen in figure 11.

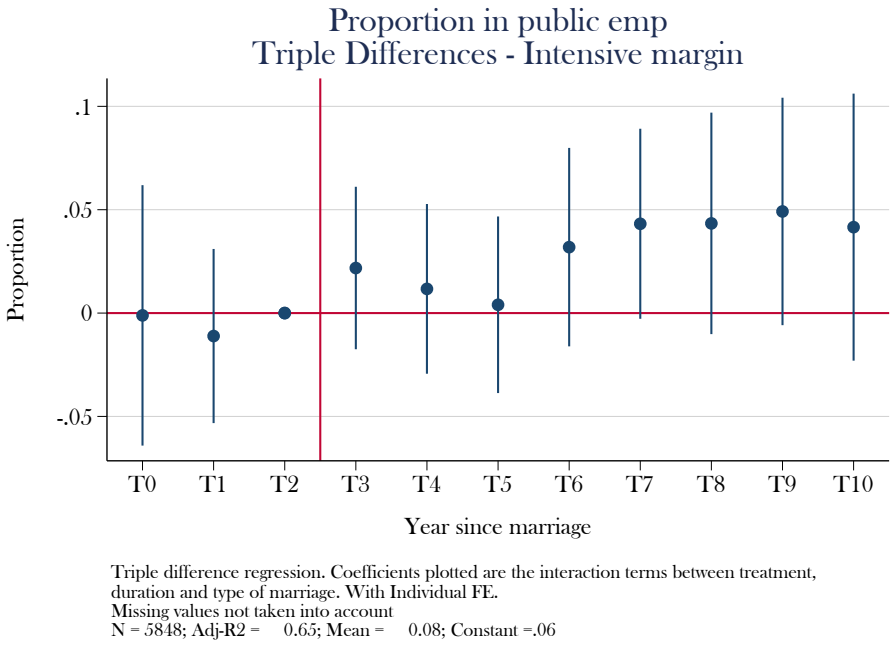


Fig. 11. Probability of public sector employment

Another potential mechanism is higher job mobility due to naturalization. This would be in line with the skill down-grading phenomena, according to which foreigners receive a lower return to similar levels of education and experience as natives due to the imperfect valuation of human capital acquired in home country (Dustmann and I. Preston, 2012, Dustmann, Frattini, and I. P. Preston, 2013). Additionally, acquiring the nationality could be used as a signaling device to the employer as a commitment for long-term stay in the country. This might make the latter more prone to invest and promote the individual who has obtain the nationality. Finally, naturalization might help combat discrimination which are legal

[19]Significant at 90% confidence level for period 7 and 9

or otherwise. There is a need to further uncover the channels that could have led to the observed effect of naturalization.

5. Conclusion & Way Forward

Given the known benefits of economically well-integrated migrants, efforts should be put in further integrating them in the labor market of the host country. One of the policies at the disposal of every government is the naturalization process of migrants. Due to the rising fear towards migrants, countries tend to become stricter in terms of their naturalization rules. In the same line, France has increasingly hardened the rules and thus restricting the path to naturalization. The channel of naturalization through marriage, traditionally thought to be a natural process for well-integrated citizen, has not been spared by the tightening of rules.

In this paper, I exploit such a reform in the law of naturalization through marriage in France in 2006 as an exogenous shock on mixed married couples in France. To the best of knowledge, it is the first paper to exploit a national-level reform which provides a quasi-experimental setting, allowing to overcome the main issues of the existing literature: endogeneity, selection and reverse causality. Using a triple-difference strategy with matching, I show that naturalization has a positive effect on the probability of employment of foreigners, with an increase of 10%. It increases the annual earnings of both men and women, more for the latter in relative terms. While for men, the positive effect on total earnings is due to an increase in participation on the labor market, for women, it is driven by an increase in the number of hours worked. These results are also evidences that the 2006 reform has had a negative effect on the labor market outcomes of individuals who were prevented from applying for naturalization, without any clear evidence of having attained its stated aim.

Of the potential mechanisms put forward by the literature for the positive association between naturalization and labor market outcomes, unrestricted access to the local labor market is likely to have played a role. While there are some suggestive evidence, it is however not the only explanatory factor. Going further, I will attempt to see whether the positive effect on the labor market can be explained by increased job mobility, as well as, reduced discrimination. I will also perform different heterogeneity analysis. More specifically, I would like to disentangle the effect for level of occupation, the type of contract, the individuals' origin, the sector of employment, and the date of arrival in France among others.

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Appendix A. Design

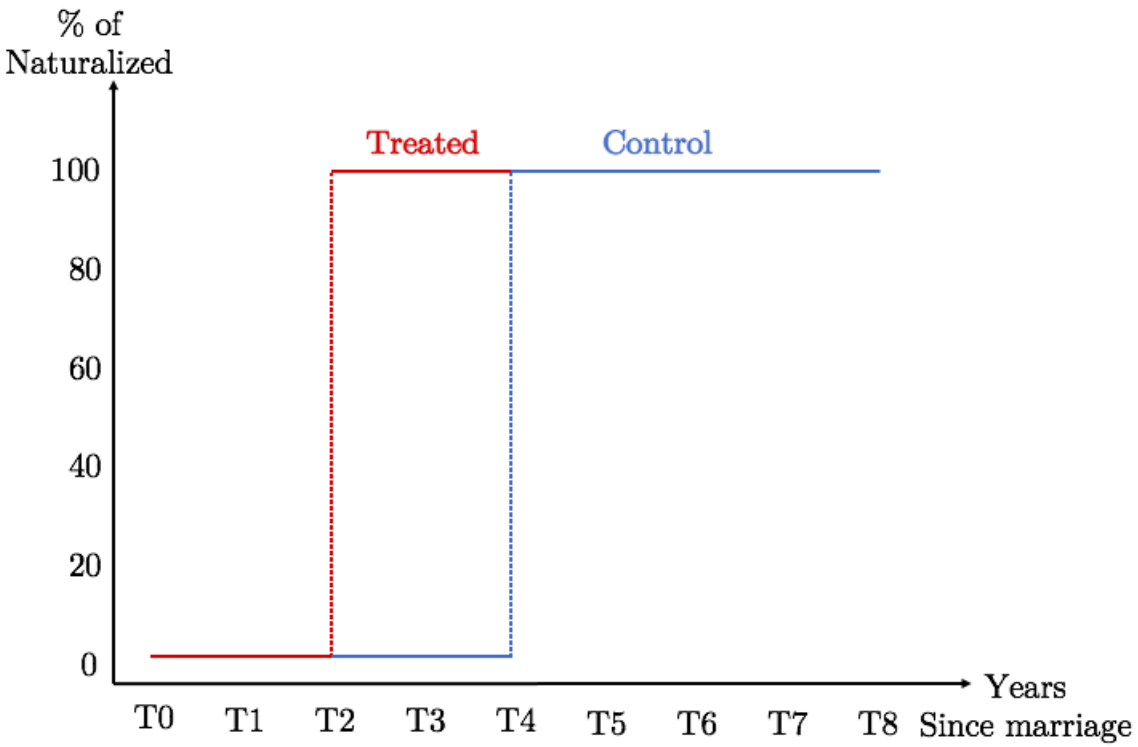


Fig. A.1. Under full compliance and no delay

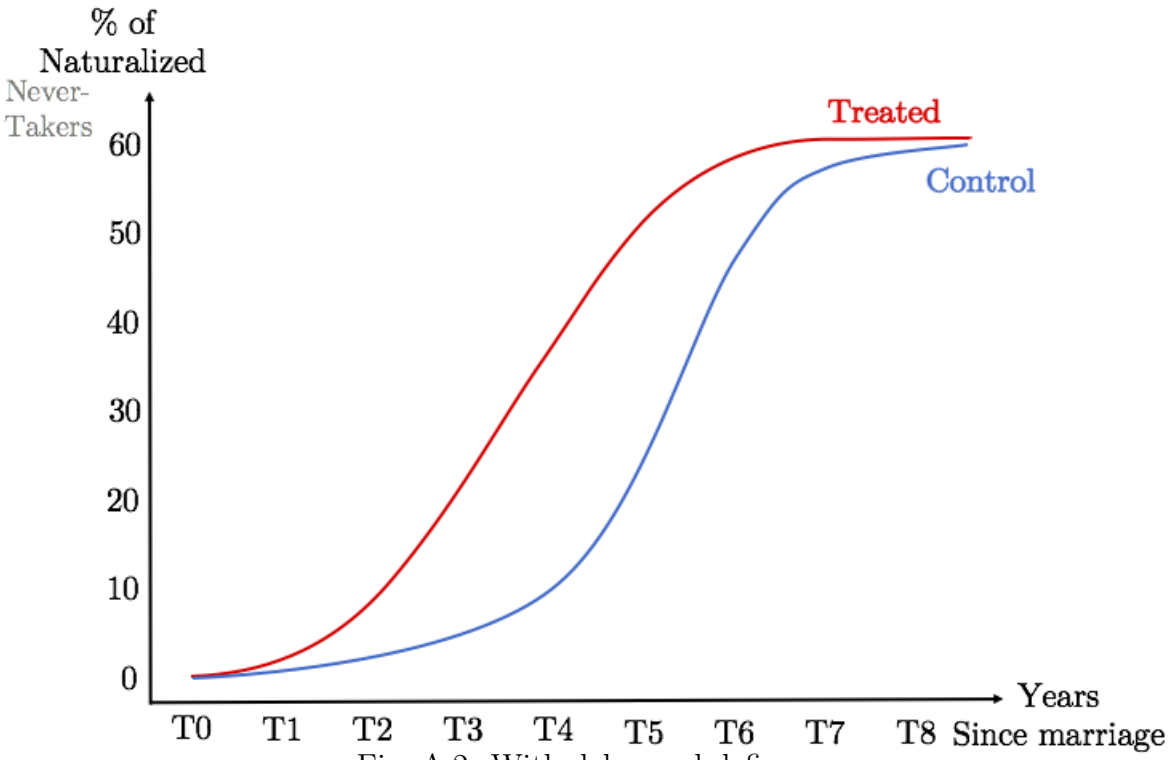
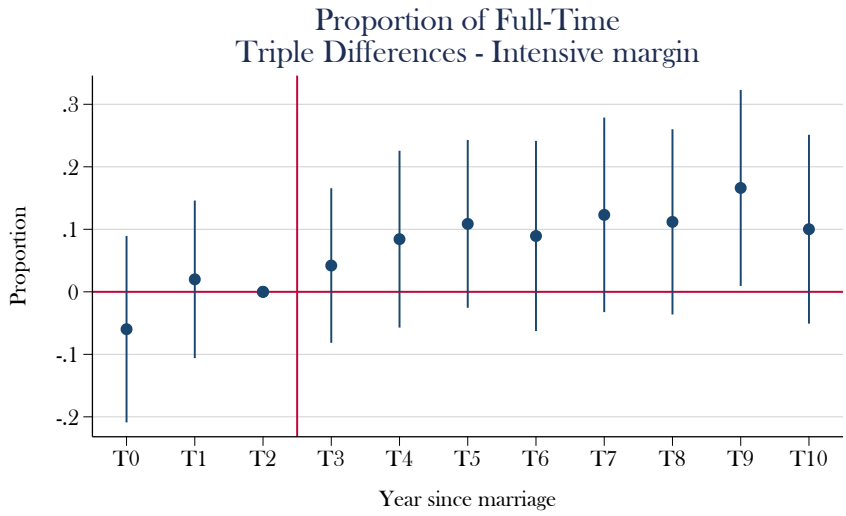


Fig. A.2. With delay and defiance

Appendix B. Labor market outcome

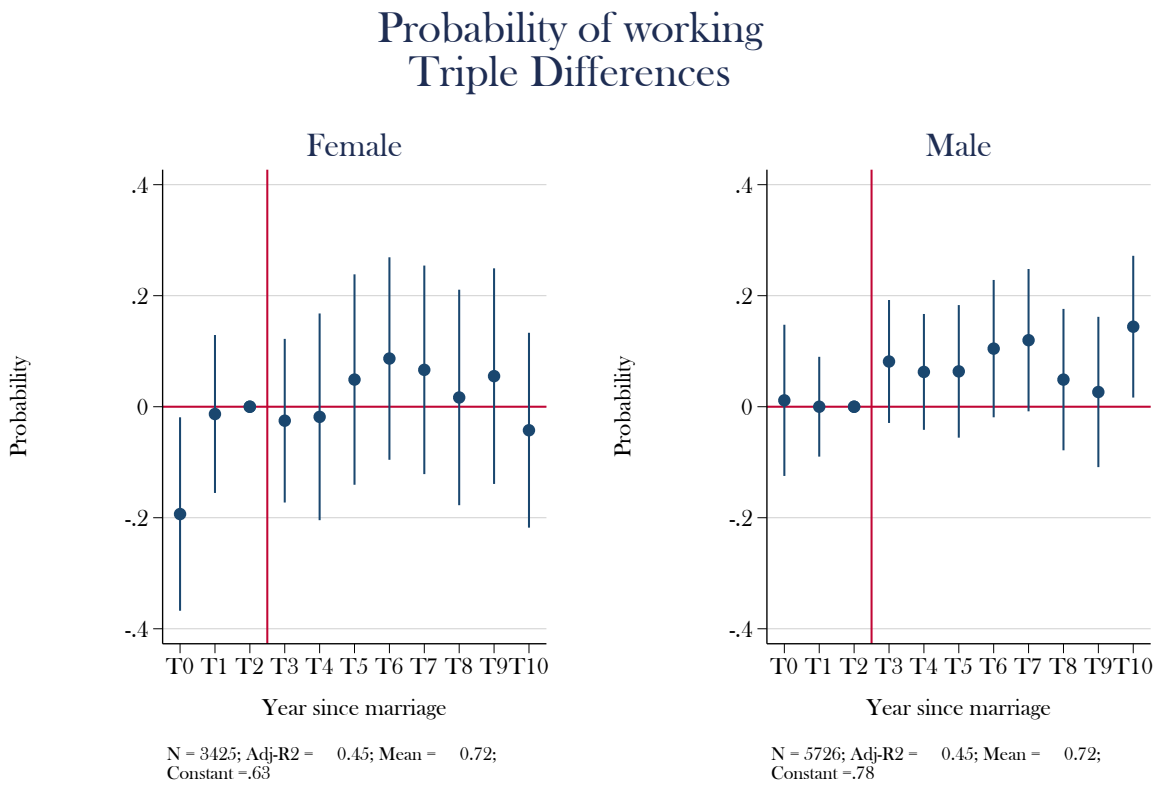
B.1. Full-time employment



Triple difference regression. Coefficients plotted are the interaction terms between treatment, duration and type of marriage. With Individual FE.
Missing values not taken into account
N = 5851; Adj-R2 = 0.33; Mean = 0.71; Constant =.7000000000000001

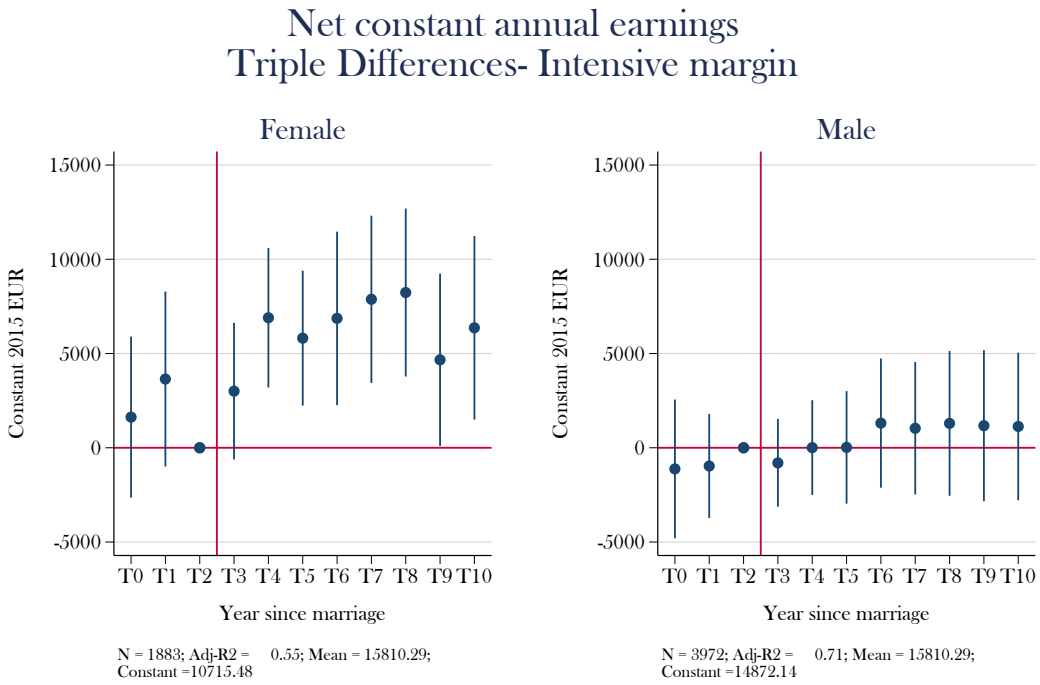
Fig. B.1. Probability of full-time employment

B.2. Gender Heterogeneous analysis



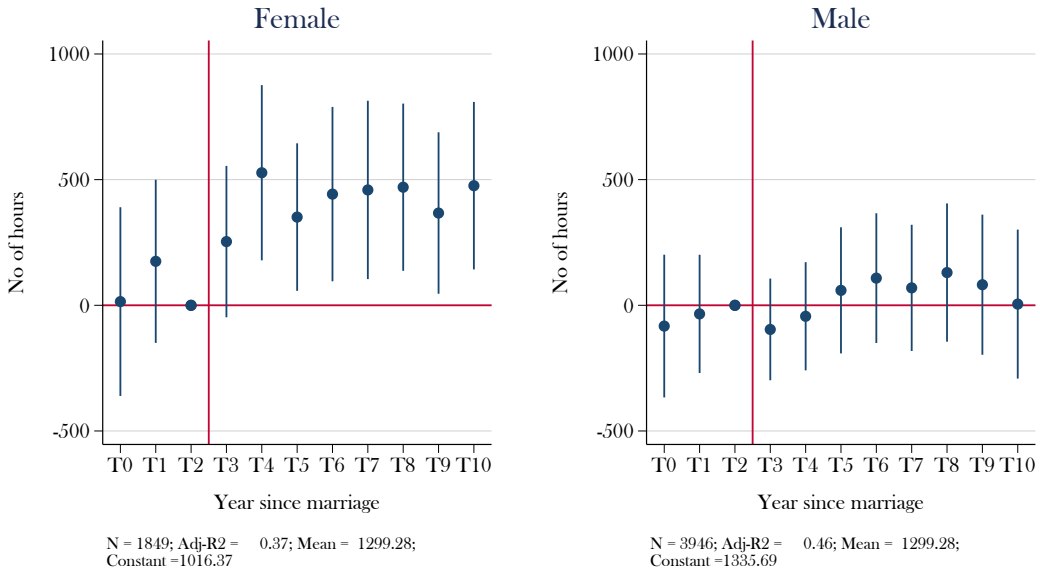
Triple difference regression. Coefficients plotted are the interaction terms between treatment, duration and type of marriage. With Individual FE. Clustered SE Missing observations set to 0.

Fig. B.2. Probability of employment by gender



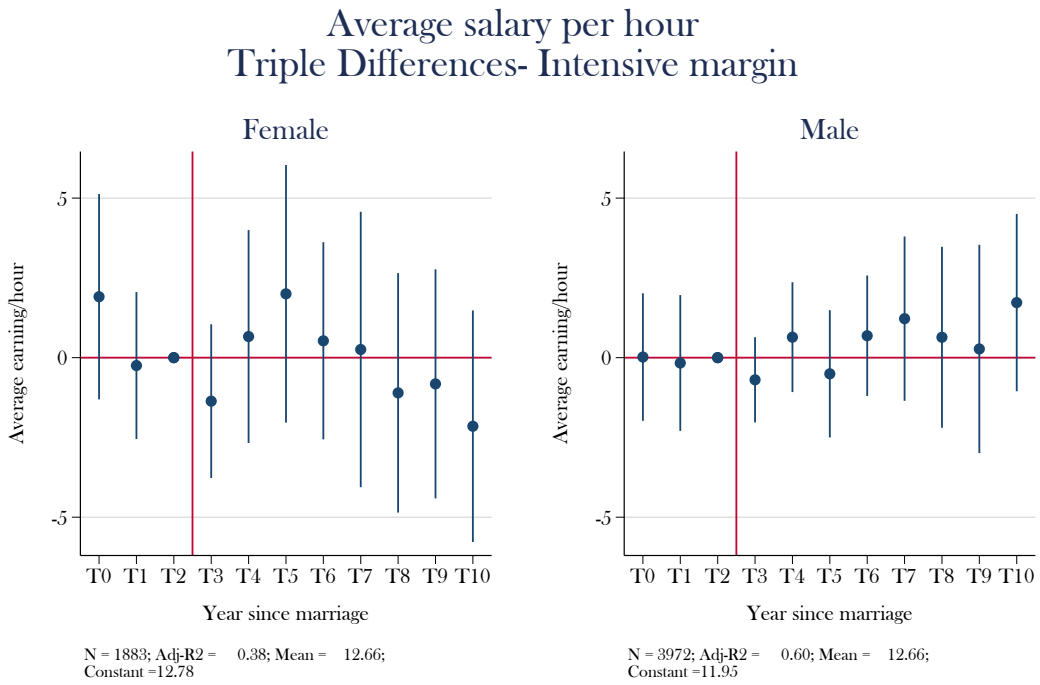
Triple difference regression. Coefficients plotted are the interaction terms between treatment, duration and type of marriage. With Individual FE.
Missing values not taken into account

Fig. B.3. Net constant annual earnings by gender (intensive margin)



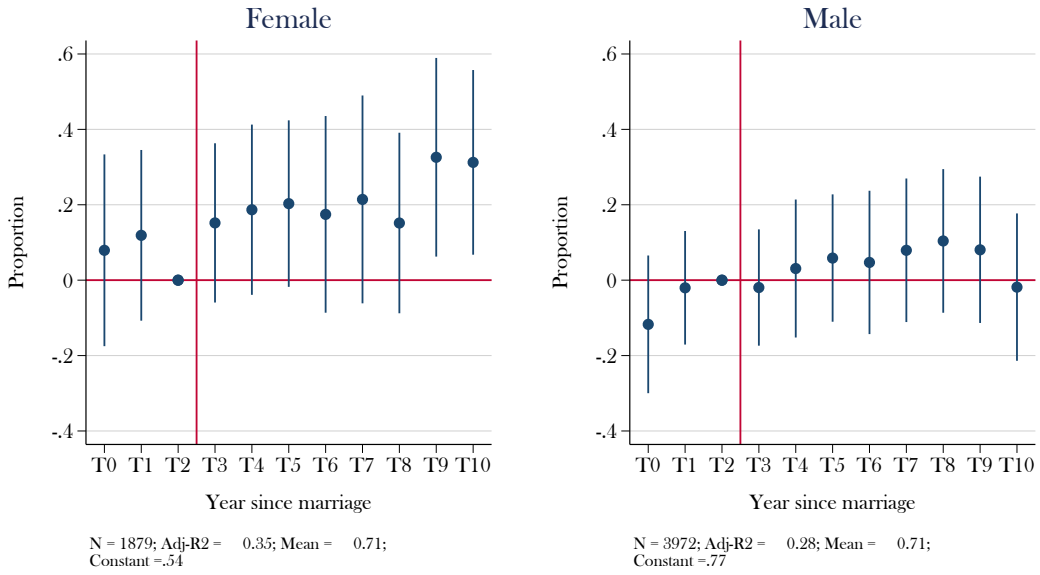
Triple difference regression. Coefficients plotted are the interaction terms between treatment, duration and type of marriage. With Individual FE.
Missing values not taken into account

Fig. B.4. No of hours worked by gender



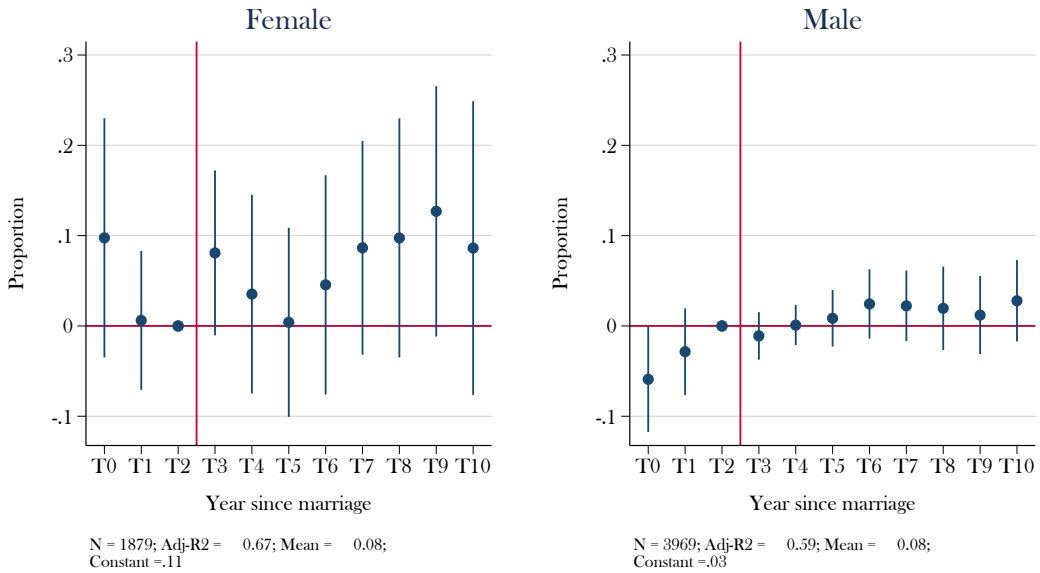
Triple difference regression. Coefficients plotted are the interaction terms between treatment, duration and type of marriage. With Individual FE.
Missing values not taken into account

Fig. B.5. Hourly wage by gender



Triple difference regression. Coefficients plotted are the interaction terms between treatment, duration and type of marriage. With Individual FE.
Missing values not taken into account

Fig. B.6. Probability of full-time employment by gender



Triple difference regression. Coefficients plotted are the interaction terms between treatment, duration and type of marriage. With Individual FE.
Missing values not taken into account

Fig. B.7. Probability of employment in public sector by gender

B.3. Regression results

Table 2: Extensive margin

	Probability of employment			Net Annual earnings		
	All	**Women**	**Men**	**All**	**Women**	**Men**
T0	-0.09	-0.19**	0.01	-129.2	-1,266.4	690.7
	(0.05)	(0.09)	(0.07)	(1,159.6)	(1,569.0)	(1,678.3)
T1	-0.01	-0.01	-0.00	591.9	1,429.0	248.0
	(0.04)	(0.07)	(0.05)	(955.2)	(1,616.3)	(1,246.0)
T3	0.04	-0.03	0.08	1,724.4**	2,577.2**	938.6
	(0.04)	(0.07)	(0.06)	(700.9)	(1,113.9)	(905.9)
T4	0.04	-0.02	0.06	3,187.0***	4,398.6***	1,991.9
	(0.05)	(0.09)	(0.05)	(991.8)	(1,293.3)	(1,352.5)
T5	0.06	0.05	0.06	3,613.8***	4,709.1***	2,625.0*
	(0.05)	(0.10)	(0.06)	(1,086.6)	(1,505.8)	(1,487.2)
T6	0.10*	0.09	0.10*	4,802.2***	5,555.9***	4,129.6***
	(0.05)	(0.09)	(0.06)	(1,159.4)	(1,737.0)	(1,581.2)
T7	0.10*	0.07	0.12*	4,867.9***	5,411.3***	4,406.3***
	(0.05)	(0.10)	(0.07)	(1,225.5)	(1,762.2)	(1,672.1)
T8	0.03	0.02	0.05	4,178.8***	5,469.4***	3,452.9**
	(0.05)	(0.10)	(0.06)	(1,288.2)	(1,848.9)	(1,754.3)
T9	0.04	0.06	0.03	3,594.3***	3,904.0**	3,437.3*
	(0.06)	(0.10)	(0.07)	(1,321.6)	(1,841.8)	(1,815.2)
T10	0.07	-0.04	0.14**	4,136.6***	3,950.8**	4,316.2**
	(0.05)	(0.09)	(0.06)	(1,295.0)	(1,795.7)	(1,791.5)
Constant	0.73***	0.63***	0.78***	9,501.2***	6,514.9***	11,286.0***
	(0.01)	(0.02)	(0.01)	(256.4)	(359.2)	(350.3)
Observations	9,151	3,425	5,726	9,151	3,425	5,726
Adj R2	0.46	0.45	0.45	0.6	0.6	0.6
Individual FE	Yes	Yes	Yes	Yes	Yes	Yes

Table 3: Intensive Margin

	Net Annual earnings			No of hours worked			Hourly earnings			Full-time Employment		
	All	**Women**	**Men**	**All**	**Women**	**Men**	**All**	**Women**	**Men**	**All**	**Women**	**Men**
T0	-236.7	1,624.7	-1,121.7	-55.79	14.70	-82.67	0.52	1.91	0.02	-0.06	0.08	-0.12
	(1,385.5)	(2,167.1)	(1,871.8)	(113.57)	(190.65)	(144.49)	(0.88)	(1.63)	(1.02)	(0.08)	(0.13)	(0.09)
T1	552.4	3,646.5	-968.3	35.86	175.01	-34.16	-0.17	-0.25	-0.17	0.02	0.12	-0.02
	(1,184.8)	(2,356.2)	(1,404.0)	(95.20)	(164.83)	(119.68)	(0.81)	(1.17)	(1.08)	(0.06)	(0.11)	(0.08)
T3	805.0	3,003.4	-801.9	42.63	253.49*	-95.98	-1.04	-1.36	-0.69	0.04	0.15	-0.02
	(1,035.1)	(1,839.0)	(1,185.1)	(87.21)	(152.89)	(102.91)	(0.64)	(1.22)	(0.68)	(0.06)	(0.11)	(0.08)
T4	2,454.8**	6,895.9***	7.9	151.83	527.45***	-43.60	0.58	0.66	0.64	0.08	0.19	0.03
	(1,085.3)	(1,878.0)	(1,278.6)	(96.21)	(176.97)	(109.52)	(0.83)	(1.69)	(0.88)	(0.07)	(0.11)	(0.09)
T5	2,096.2*	5,814.7***	21.4	163.09*	351.07**	59.50	0.23	2.00	-0.51	0.11	0.20*	0.06
	(1,185.9)	(1,816.8)	(1,518.6)	(98.42)	(149.00)	(127.65)	(0.97)	(2.05)	(1.01)	(0.07)	(0.11)	(0.09)
T6	3,213.2**	6,864.7***	1,308.7	221.81**	442.40**	108.19	0.64	0.53	0.69	0.09	0.17	0.05
	(1,370.4)	(2,336.3)	(1,744.0)	(104.34)	(176.09)	(131.30)	(0.80)	(1.57)	(0.96)	(0.08)	(0.13)	(0.10)
T7	3,263.9**	7,875.7***	1,035.1	189.90*	459.03**	69.35	0.90	0.26	1.22	0.12	0.21	0.08
	(1,397.5)	(2,252.8)	(1,787.3)	(104.70)	(180.16)	(127.75)	(1.06)	(2.19)	(1.31)	(0.08)	(0.14)	(0.10)
T8	3,447.8**	8,233.9***	1,292.8	227.36**	469.91***	130.31	0.09	-1.10	0.64	0.11	0.15	0.10
	(1,483.0)	(2,262.1)	(1,953.9)	(108.33)	(168.91)	(139.93)	(1.07)	(1.91)	(1.44)	(0.08)	(0.12)	(0.10)
T9	2,287.6	4,666.3**	1,172.6	171.93	367.16**	81.94	-0.11	-0.82	0.27	0.17**	0.33**	0.08
	(1,535.7)	(2,321.7)	(2,039.0)	(108.27)	(163.06)	(141.87)	(1.18)	(1.82)	(1.66)	(0.08)	(0.13)	(0.10)
T10	2,798.3*	6,363.4**	1,130.7	160.20	476.01***	4.88	0.26	-2.15	1.73	0.10	0.31**	-0.02
	(1,520.1)	(2,471.7)	(1,991.7)	(113.43)	(169.21)	(150.82)	(1.04)	(1.84)	(1.41)	(0.08)	(0.12)	(0.10)
Constant	13,527.9***	10,715.5***	14,872.1***	1,234.89***	1,016.37***	1,335.69***	12.20***	12.78***	11.95***	0.70***	0.54***	0.77***
	(256.0)	(459.3)	(304.2)	(21.38)	(38.10)	(25.60)	(0.26)	(0.57)	(0.27)	(0.02)	(0.03)	(0.02)
Observations	5,855	1,883	3,972	5,795	1,849	3,946	5,855	1,883	3,972	5,851	1,879	3,972
Adj R2	0.7	0.6	0.7	0.44	0.37	0.46	0.51	0.38	0.60	0.33	0.35	0.28
Individual FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes