

Do dual citizenship rights make more and healthier citizens? Evidence from a quasi-experiment

Marco Pecoraro
SFM & IRENE, University of Neuchâtel
marco.pecoraro@unine.ch

Philippe Wanner
IDESO, University of Geneva
philippe.wanner@unige.ch

March 6, 2018

Abstract

Naturalised migrants are found to have a higher human capital endowment as they are more educated, more likely to be employed or have higher earnings than non-naturalised migrants. But little is known about how naturalisation affects health. Since 2007, Germany has recognised dual citizenship, while Austria still does not grant this right to their citizens. In the present paper, we exploit this policy change as a source of exogenous variation to identify the causal impact of dual citizenship on health and labour market outcomes. Based on panel data from the Swiss Labour Force Survey for the years 2003-2009, we first show that German migrants (who were granted the right of dual citizenship) are more likely to acquire the Swiss nationality compared to Austrian migrants (for whom the law has remained unaltered). Overall, the effects of dual citizenship rights on health and labour market outcomes are not significant. Behind this general picture, however, there are heterogeneous effects of the policy change, in particular in terms of health outcome. For instance, the legalisation of dual citizenship improves health for young foreign-born or Swiss-born Germans relative to their Austrian peers. A direct policy implication of these results would be that naturalisation should be facilitated at younger ages in order to enhance young migrants' health and thus avoid any negative financial repercussions on the health system.

Keywords: Migration, Health, Labour Market, Dual Citizenship, Naturalisation, Difference in Differences, Panel Data Analysis, Fixed Effects

JEL Classification: F22, I10, J15, J20, J30

1 Introduction

The past decades have been characterised by a growing literature on the role of naturalisation in the labour market integration process. In this literature, naturalised migrants are found to have a higher human capital endowment than non-naturalised migrants (e.g. Gathmann, 2015; Steinhardt and Wedemeier, 2012; Pecoraro, 2012; Liebig and Von Haaren, 2011; Fibbi et al., 2007; Devoretz and Pivnenko, 2005). That is, naturalisation is positively associated with education and labour market outcomes such as labour force participation (e.g. Fougère and Safi, 2009; Bevelander and Pendakur, 2012) and earnings (e.g. Bratsberg et al., 2002), with notable heterogeneous patterns since not all new citizens are rewarded equally for their human capital investment (Helgertz et al., 2014; Steinhardt, 2012; DeVoretz, 2008). Citizenship acquisition is also shown to have a positive impact on political participation (Just and Anderson, 2012) and to promote social integration in the host society (Hainmueller et al., 2017). However, little is known about how naturalisation affects migrants' health. The purpose of this paper is to investigate whether naturalisation can be an instrument for improving the health of the migrant population.

The few studies on the link between health and naturalisation produced mixed results. In line with the view that naturalisation is an important step towards integration, Minsart et al. (2012) showed that the acquisition of the Belgian citizenship is protective of perinatal mortality. Minsart et al. sustained that naturalised immigrant mothers are significantly less affected by perinatal death in a country with a very liberal naturalization policy, such as in Belgium, where access to health care is universal. Focusing on other health outcomes – e.g. self-assessment of functional limitations – in the U.S. context, Gubernskaya et al. (2013) found heterogeneous associations across subgroups of age at migration among the foreign-born over age 50: Naturalised citizens show better health compared to non-citizens when those foreign-born immigrated as children and young adults. On the contrary, when immigration occurred at middle and older ages, naturalised citizens' health is worse compared to that of non-citizens. According to the authors, these associations can be interpreted as the combination of two mechanisms. Naturalisation acts as an instrument of integration which ensures better health (cf. Minsart et al., 2012), the younger an immigrant is upon arrival. On the other hand, the acquisition of the U.S. citizenship may occur more frequently in case of poor health, because it lifts restricted access to health care programmes. As a result, this negative health selection into citizenship outweighs the positive health effects of integration the older an immigrant is upon arrival. In another U.S. study on Hispanic immigrants' health, Riosmena et al. (2015) indicated a negative association between naturalisation and mortality for women only (the association being not statistically significant for men). Consistent with the protective role

of integration, Riosmena et al. argued that this finding contradicts the hypothesis of negative acculturation to American society worsening immigrant health. But all these relationships are not causal and simply serve to identify significant correlations in the data.

When examining the health effect of naturalisation, one should take into consideration the fact that different health outcomes are also likely to influence the acquisition of the host country's citizenship (reverse causality). A common way of handling endogeneity involves the use of instrumental variables (IV, Angrist et al., 1996; Wooldridge, 2010) that are correlated with citizenship (relevance condition) but uncorrelated with a given health outcome (exogeneity condition). Few studies have applied this method when studying the impact of citizenship on employment probabilities (Fougère and Safi, 2009; Bevelander and Pendakur, 2012) or on the political participation in the host country (Just and Anderson, 2012). Among proposed instruments for citizenship, one could focus on variables such as the number or proportion of foreigners residing in the same municipality (see Fougère and Safi), citizenship acquisition rules and the years since first eligible for citizenship (see Bevelander and Pendakur), distance between an immigrant's country of origin and the host country (see Just and Anderson); these seem likely to influence the propensity to naturalise while, at the same time, are less likely to be correlated with many contemporaneous health indicators.

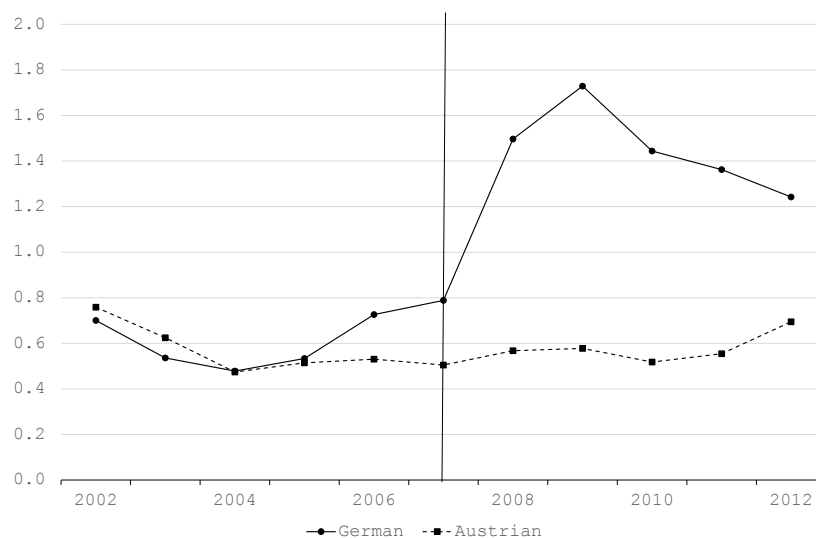
Though some of the instruments mentioned have been previously used in other contexts, there are some concerns about the exogeneity of the instruments and the validity of the exclusion restriction assumption in this particular context. For instance, it is not sure that the exclusion restriction will hold when using the number or proportion of foreigners residing in the same municipality to instrument for naturalisation, as the share of co-ethnic foreigners may also affect social norms and healthy behaviors. Moreover, any model of naturalisation would think of this as a human capital investment and hence anything that influences this will also influence investments in other types of human capital including education and health. Put differently, it is very difficult to believe that any valid IVs exist.

A solution would be to use a policy shock as a source of exogenous variation. Such variation may arise from government policies concerning naturalisation. The extension of the dual citizenship rights in some source countries is one example among others. Mazzolari (2009) relied on such a policy reform to identify the effects of dual citizenship on naturalisation propensities and labour market outcomes in the United States. She showed that the recognition of dual citizenship rights by some Latin American countries in the 1990s has a causal effect on naturalisation and positively affects their economic assimilation. In the spirit of Mazzolari (2009), we exploit a change in the rules for nationality acquisition as a source of exogenous variation.

Until recently, Germans and Austrians could not acquire a new nation-

ality without losing their own. Since the 28th of August, 2007, Germany has recognised dual citizenship – if the other nationality is either one of an EU member country or of Switzerland –, while Austria still does not grant this right to their citizens. At that time and since then, Germans have been the second largest group of the permanent foreign population in Switzerland (after Italians). Although Austrians form a smaller community, they have been ranked around the tenth position since 2007.¹ Figure 1 shows the trend in the percentage of naturalised citizens among Germans and Austrians with a long-term residence permit in Switzerland. This figure is drawn from administrative data on the number of naturalisations processed per year by the Central Information System on Migration.² The period 2008 to 2010 is characterised by a spike in the percentage of naturalisations among Germans (who were granted the right of dual citizenship), but not among Austrians (for whom the law has remained unaltered).

Figure 1: Gross rate of naturalisations in the 2000s



Data source: Swiss Federal Statistical Office.

Note: Annual number of naturalisations per 100 long-term foreigners.

Based on panel data from the Swiss Labour Force Survey (SLFS) for the years 2003-2009, we use a difference-in-differences plus fixed effects approach to compare the change over time in naturalisation propensities of Germans who were granted the right of dual citizenship (*treatment* group)

¹ A wide range of statistics covering the migrant population in Switzerland are available at the website of the Swiss Federal Statistical Office. ² The Central Information System on Migration is a register-based nationwide census of foreign nationals, who were granted a valid residence permit to stay in Switzerland.

with the change in naturalisation propensities of Austrians for whom the law has remained unaltered (*control* group). We also rely on this approach to estimate the effects of the change in naturalisation policy on different outcomes such as chronic health problems, unemployment, self-employment and earnings. To the best of our knowledge, this study is the first attempt to estimate the causal effect of dual citizenship on health. The results show first that Germans are more likely to acquire the Swiss nationality compared to Austrians. Overall, the effects of dual citizenship on health and labour market outcomes, if mediated through naturalisation, are not significant. Behind this general picture, however, there are heterogeneous effects of the policy change, in particular in terms of health outcome.

The remainder of the paper is organized as follows. Section 2 reviews different approaches to the study of health outcomes among the migrant population. The data source is described in Section 3. Section 4 is devoted to the empirical strategy, and the results are presented in Section 5. Section 6 draws conclusions and presents a possible avenue for future research.

2 Explaining differences in health between the non-naturalised and naturalised migrants

The link between migration and health has been examined extensively in the literature (Lu and Zhang, 2016). It is acknowledged across many studies that immigrants are in better health upon arrival in the host country compared to natives (the so-called “healthy immigrant effect”), but this health advantage erodes over time (the “exhausted migrant effect”, cf. Bollini and Siem, 1995). Most of this evidence is drawn from the literature on the U.S. (e.g. Afable-Munsuz and Pérez-Stable, 2017; Cunningham et al., 2008; Antecol and Bedard, 2006; Jasso et al., 2004), Canada (e.g. Kwak, 2016; Newbold, 2005; McDonald and Kennedy, 2004) and Australia (e.g. Chiswick et al., 2008; Biddle et al., 2007), three countries receiving very large inflows each year as part of a deliberate immigration policy. On the other hand, evidence from Europe has been more mixed (e.g. Moullan and Jusot, 2014), with some exceptions (e.g. Germany, see Giuntella and Mazzonna, 2015).

In general, the immigrants’ place of origin plays an important role in determining the relevance of the healthy immigrant effect. For instance, the largest gaps between immigrant and native health are found for immigrants from developing countries, which can be explain by a strong self-selection mechanism (Farré, 2016): Healthier potential immigrants are more likely to be physically or financially able to migrate. In addition, unhealthy migrants may be more likely to return to their home countries; but empirical evidence in favour of this hypothesis is mixed (for the case of Hispanic migrants in the U.S., see Abraido-Lanza et al., 1999; Turra and Elo, 2008).

The convergence in health status between immigrants and natives with

the time spent in the host country, which is often translated into the deterioration of immigrant health, might arise from diverse factors, notably lower entitlements in the receiving societies (Bollini and Siem, 1995), negative acculturation (in the sense that acculturation is associated with some unhealthy behaviours, see Abraido-Lanza et al., 2005; Lara et al., 2005; Clark and Hofsess, 1998) or cumulative disadvantage in the host labour market (Riosmena et al., 2015) such as exposure to discrimination (Johnston and Lordan, 2012) or exposure to unfavourable working conditions (Giuntella and Mazzonna, 2015). Immigrant health convergence also depends on the country of origin (Leung, 2014). In fact, Leung’s results suggest that immigrants from countries with a lower smoking prevalence relative to the host country (the U.S. here) are more likely to initiate smoking with assimilation (i.e. unhealthy assimilation), whereas immigrants from higher-smoking countries are more likely to quit smoking with assimilation (i.e. healthy assimilation).

Here we do not want to give too much emphasis to the healthy immigrant effect, given that our study focuses solely on German and Austrian migrants in Switzerland. Indeed, as EU residents, they can live, work and access healthcare without restriction in accordance with the Swiss-EU bilateral agreement on the free movement of people. In this context, there are almost no cultural or language barriers, no entry screening or points-based selection systems, no health screening, and a relatively familiar health system, all of which have been argued to be major determinants of the healthy immigrant effect. Most importantly, this framework is unclear on the health adjustment process among the migrant population due to naturalisation, in particular when it comes to second- and third-generation migrants.

In the limited literature on the link between naturalisation and health (e.g. Minsart et al., 2012; Gubernskaya et al., 2013; Riosmena et al., 2015), the acquisition of the host-country citizenship is often regarded as an important step towards integration which ensures better health. This argument is consistent with the evidence of Bollini et al. (2009) who show a lower risk of perinatal mortality in countries with a strong integration policy measured by an easier access to naturalisation. The protective role of integration for health is also compatible with the view that naturalised migrants are positively selected in terms of human capital endowments. Put differently, naturalisation can also be seen as an investment which protects from health problems (see Grossman, 1972, 2000, 2006; Becker, 2007). Moreover, naturalisation is likely to stabilise migrants in the place where they live and thus should reduce the stress of having to leave the host country as well as enhance the sense of belonging. Overall, we expect naturalisation to have a positive influence on health, for instance in the form of improved psychological well-being. We also expect heterogeneity in health responses along different characteristics such as gender (Riosmena et al., 2015) or age at arrival (Gubernskaya et al., 2013).

3 Data

The empirical analysis in this study is based on panel data from the SLFS, which is representative for the permanent resident population aged 15 and older. The SLFS has been a yearly rotating panel from 1991 to 2009,³ including up to five waves for each individual. Since 2003, an additional sample of 15,000 foreigners (until 2009 and 21,000 from 2010) is selected from the Central Information System on Migration. Interviews have since then been conducted in languages other than French, German and Italian.⁴ The SLFS is then capable of providing reliable information on various outcomes for individuals with a migration background. However, from 2010 onwards, not only the number of languages used in interviews were reduced to four (French, German, Italian and English) but also the panel design of the SLFS changed.⁵ As a result, it is impossible to combine the new SLFS with the one set up before 2010 and only individuals interviewed over the years 2003-2009 are selected.

To identify German and Austrian nationals eligible to naturalise, we restrict the analysis to those who have been living in Switzerland for at least 12 years (which is the minimum length of time required to qualify for the Swiss citizenship).⁶ This threshold is reduced to 5 years if the applicant for naturalisation is married to a Swiss citizen. We also retain both the foreign born (first generation) and the Swiss-born (second and third generations) belonging to the labour force (employed or unemployed). The final sample resulting from this selection procedure consists of 694 Austrians and 2,602 Germans, which amounts to 1,553 and 5,729 observations respectively. Descriptive sample statistics are presented in Table A.1 in the appendix.

The dependent variable for the acquisition of the Swiss citizenship in a given year is self-reported by the respondents whose nationality at birth was non-Swiss. The health outcome is derived from the question ‘Do you have a physical or psychological problem/illness which in some way restricts your daily lives and you have already had for more than one year?’ with an affirmative or negative answer. This outcome is coded as 1 for yes and 0 for no, reflecting the risk of *chronic illness*.⁷ We also add three labour

³ During the period 1991-2009, the survey was conducted every 2nd quarter of the year (April, May and June). ⁴ In addition to the national languages, interviews has been carried out in English since 2003, in Albanian and Serbo-Croatian from 2003 to 2009, also in Portuguese and Turkish over the period 2005-2009. ⁵ Since 2010, not only the information on the respondents’ health status has been changed but also the number of interviews per person has been reduced to four at most. The second interview takes place three months after the first but does not include any health-related questions. The third interview occurs a year after the first and includes the full set of questions. The last interview is conducted three months later and, again, contains no health-related information.

⁶ The years spent in Switzerland between the age of 10 and 20 count double. ⁷ From a health care expenditure perspective, the focus on chronic conditions is relevant because of the large potential costs associated with the necessary prolonged care use due to chronic health problems (Tsiachristas et al., 2016).

market outcomes: *Unemployment* (= 1 if unemployed, 0 if employed), *self-employment* (=1 if self-employed or partner in his relatives' firm, 0 if salary worker) and the *log yearly gross earnings* (deflated into 2000 Swiss francs and adjusted to full-time equivalent basis).

4 Empirical strategy

Our modelling strategy aims to identify the causal effect of the extension of the dual citizenship rights for Germans on the acquisition of the Swiss citizenship, health and labour market outcomes in Switzerland. It builds on the central idea of a 'natural experiment' that creates at a certain point in time (2007 here) a shift in the naturalisation policy for Germans but not for Austrians.

Consider the following baseline difference-in-differences model:

$$y_{it} = \boldsymbol{\tau}_t + \lambda \text{German}_i + \delta_{\text{did}}(\text{Post-Shock}_t \times \text{German}_i) + \mathbf{controls}_{it}\boldsymbol{\beta} + \text{error}_{it},$$

where y_{it} denotes the outcome of interest for individual i in year t (see Section 3). $\boldsymbol{\tau}_t$ is a vector of year fixed effects. Post-Shock_t is a dummy variable indicating if time t occurs from 2008 to 2009 (i.e. the period since the reform). German_i is also a dummy variable which equals 1 for Germans and 0 for Austrians. Because the extension of the dual citizenship rights only affects Germans and not Austrians, δ_{did} is the causal effect of the policy shock. Control variables include sex, age, age squared, foreign born, years since migration, years since migration squared, education level, marital status, wave and canton dummies. We consider 4 levels of education: primary, secondary vocational, secondary general and tertiary. Another control is a dummy for unemployment when estimates are based on the labour force sample.

The difference-in-differences specifications are estimated using the fixed effects (FE) method in which the error term includes the individual unobserved heterogeneity c_i : $\text{error}_{it} = c_i + u_{it}$, where u_{it} are the independent and identically distributed (i.i.d.) errors. The fixed effects estimator allows us to control for self-selection on unobserved characteristics. The difference-in-differences model with fixed effects is written as:

$$y_{it} = \boldsymbol{\tau}_t + \mathbf{c}_i + \delta_{\text{did}}(\text{Post-Shock}_t \times \text{German}_i) + \mathbf{controls}_{it}\boldsymbol{\beta} + u_{it}. \quad (1)$$

A further check consists in applying the difference-in-differences approach with fixed effects to compare changes in outcomes between Germans and Austrians in the years before the reform. If there are no preexisting differences between treated and control groups, i.e. we cannot reject the hypothesis that $\delta_{\text{did}} = 0$, the common trend assumption is likely to hold in

the pretreatment period and the FE difference-in-differences estimator will produce unbiased estimates.

5 Results

The first column of Table 1 presents the fixed-effects estimation results of equation (1), where the outcome variable is the event of naturalisation. The coefficient estimate shows that the extension of dual citizenship rights has a positive causal impact on the naturalisation rate of Germans relative to Austrians. The increase in the propensity to become Swiss citizens amounts to almost 5 percentage points during the period 2008-2009. In contrast, the fixed-effects estimation result in the second column of Table 1 indicates that dual citizenship has no significant effect on the risk of chronic health problems (for a p -value less than 0.10). The same conclusion applies when the dependent variables capture selected labour market outcomes. These outcome variables are the unemployment risk (third column), the propensity of self-employment (fourth column) and the log of the yearly gross earnings (fifth column), respectively. Similarly to the results observed for chronic health problems, there is no impact of dual citizenship on three different indicators of labour market outcomes.

Table 1: Naturalisation, chronic illness and LM outcomes: DID FE results

	Naturalisation	Chronic illness	Labour market (LM) outcomes		
			Unemployment	Self-employment	log(w)
δ_{did}	0.047** (0.012)	0.023 (0.025)	0.006 (0.018)	0.002 (0.020)	-0.006 (0.062)
Control variables	yes	yes	yes	yes	yes
Observations	7,282	7,282	7,282	7,014	6,014
Number of i	3,295	3,295	3,295	3,205	2,857
Within R^2	0.125	0.014	0.019	0.009	0.021

Source: SLFS 2003-2009 (data are unweighted).

Notes: Coefficient estimates (robust standard errors in parentheses); ** $p < 0.05$, * $p < 0.10$. All estimates include year fixed effects. DID FE: Difference-in-differences with individual fixed effects. The first outcome variable is a binary indicator for naturalisation status. The second outcome variable is a binary indicator for chronic illness. Labour market (LM) outcomes: Unemployment (= 1 if unemployed, 0 if employed), self-employed (= 1 if self-employed or partner in his relatives' firm, 0 if salary worker), log wage (deflated into 2000 Swiss francs and adjusted to full-time equivalent basis).

The validity of the difference-in-differences approach rests on the common trend assumption. This assumption requires that the treatment and control groups would have comparable patterns in the naturalisation rate, prevalence of chronic health problems and other labour market outcomes, in the absence of the policy reform. A test procedure consists in detecting if there are pre-existing differences in the trends of the outcomes variables between the treatment and control groups on the basis of data available before the reform (Abadie, 2010). Table A.2 in the appendix shows the difference-in-differences fixed effects estimation results of this procedure for

all the dependent variables. None of the coefficient estimates are statistically different from zero before 2007, i.e. in the year when the policy change actually occurred (at a level of significance below 0.10). In other words, the difference-in-differences fixed effects estimator produces unbiased estimates.

Equation (1) assumes that the impact of dual citizenship is homogeneous across different characteristics of the German and Austrian workforce, such as gender, levels of education, current age, place of birth, years since migration and age at arrival in Switzerland for the foreign born. We then relax that assumption and split the sample according to each of these characteristics. In the remainder of the empirical analysis, we only report the results from models with naturalisation and chronic illness as dependent variables. Further analysis examining the effects on labour market outcomes by the aforementioned characteristics confirms that the recognition of dual citizenship has no impact across all subsamples. These additional results are presented in Table A.3 and Table A.4 in the appendix.⁸

The results in the first two columns of Table 2, in which the sample is subdivided by gender, show that the introduction of dual citizenship has a positive impact on naturalisation rates for both genders but the estimated impact is statistically significant for women only (panel A). In parallel, consistent with results reported previously, the policy reform has no impact on the risk of chronic health problems (panel B). In the third and fourth columns of Table 2, the sample is disaggregated into two large educational groups (those with less than a tertiary education and those with a tertiary education). For both subsamples, dual citizenship has a positive impact on naturalisation rates (panel A) but not on chronic health problems (panel B). Interestingly, in panel A, the impact of dual citizenship on the propensity to naturalize is almost twofold greater for the highly educated than for those with lower levels of education (6.8 vs. 3.6 percentage points).

The last three columns in Table 2 present estimation results where the sample is broken down by age groups. While the impact of dual citizenship on naturalisation is significantly positive for all subsamples (panel A), the health effects by age groups are quite different from those presented above (panel B). The policy reform is found to reduce the risk of chronic health problems by 2.4 percentage points for young Germans (aged under 35 years) compared to their Austrian peers. However, this relationship is reversed for the cohort aged 50 or older. Among this age group, Germans in the post-reform period are negatively affected in terms of health and the size of the impact is very large. It corresponds to an increase in the risk of chronic health problems of 13 percentage points.

In the first two columns of Table 3, we consider the impact of dual citi-

⁸ The results for all different subgroups are largely equivalent to those based on the entire sample when a particular characteristic (or a set of related characteristics) is interacted with all other variables in the right-hand side of equation (1), see Table A.5 and Table A.6 in the appendix.

Table 2: Heterogeneity of the reform impacts: DID FE results (part 1)

	Gender		Education		Current age		
	M	F	Less than tertiary	Tertiary	Age < 35	35 ≤ Age < 50	50 ≤ Age
	A. Naturalisation						
δ_{did}	0.031 (0.020)	0.063** (0.013)	0.036** (0.016)	0.068** (0.015)	0.040* (0.022)	0.056** (0.017)	0.042** (0.017)
Control variables	yes	yes	yes	yes	yes	yes	yes
Observations	3,594	3,688	4,469	2,813	1,158	4,031	2,093
Number of i	1,615	1,680	2,058	1,270	619	1,874	1,011
Within R^2	0.098	0.176	0.123	0.163	0.221	0.152	0.174
	B. Chronic illness						
δ_{did}	0.016 (0.035)	0.031 (0.035)	0.032 (0.033)	-0.007 (0.041)	-0.024* (0.015)	-0.004 (0.037)	0.130** (0.052)
Control variables	yes	yes	yes	yes	yes	yes	yes
Observations	3,594	3,688	4,469	2,813	1,158	4,031	2,093
Number of i	1,615	1,680	2,058	1,270	619	1,874	1,011
Within R^2	0.026	0.021	0.015	0.041	0.080	0.018	0.045

Source: Swiss Labour Force Survey 2003-2009 (data are unweighted).

Notes: Coefficient estimates (robust standard errors in parentheses); ** $p < 0.05$, * $p < 0.10$. All estimates include year fixed effects. DID FE: Difference-in-differences with individual fixed effects. M = males and F = females. Tertiary education includes cantonal universities, federal institutes of technology, universities of applied sciences, universities of teacher education and advanced professional education & training.

zenship by country of birth (Switzerland or abroad). While the recognition of dual citizenship increases the propensity to naturalise for both subgroups, it also has a significant impact on their health status. On one hand, the policy reform decreases the risk of chronic illness for the Swiss-born second and third generations of Germans relative to those of Austrians. On the other hand, the health effect of dual citizenship is detrimental to foreign-born Germans in comparison with foreign-born Austrians. These results are somewhat reminiscent of those obtained when the sample is subdivided by age group (last three columns in the Table 2). More specifically, the policy reform is beneficial to the health of the youngsters – the Swiss-born migrants being younger than the foreign-born migrants on average. A crucial difference here is the size of the impact which corresponds to a reduction in the risk of chronic illness of almost 10 percentage points for the Swiss born, against a reduction of 2.4 percentage points for the young (aged under 35).

In the other columns of Table 3, the focus is on the effects of dual citizenship among the sample of the foreign born. In particular, we consider various subgroups within this sample, classified on the basis of the duration of stay (less than 20 years vs. at least 20 years) and the age at arrival (before 25 years vs. 25 years and older). Whatever the length of residence since immigration or the age at arrival in Switzerland, the coefficient estimates in panel A indicate a positive impact of dual citizenship on naturalisation. The findings related to chronic health problems in panel B are more nuanced. In some instances, the recognition of dual citizenship may increase the risk of chronic health problems. First, for a long-term residence of at least 20 years,

Table 3: Heterogeneity of the reform impacts: DID FE results (part 2)

	Country of birth		Foreign born			
	Swiss born	Foreign born	Years since migration		Age at arrival	
			YSM < 20	20 ≤ YSM	Age < 25	25 ≤ Age
A. Naturalisation						
δ_{did}	0.035* (0.020)	0.047** (0.014)	0.042** (0.020)	0.036* (0.019)	0.049** (0.019)	0.043** (0.022)
Control variables	yes	yes	yes	yes	yes	yes
Observations	1,645	5,637	3,060	2,577	2,883	3,034
Number of i	822	2,534	1,465	1,191	1,289	1,375
Within R^2	0.047	0.149	0.191	0.149	0.167	0.206
B. Chronic illness						
δ_{did}	-0.097** (0.048)	0.057** (0.029)	-0.015 (0.044)	0.127** (0.037)	0.085** (0.031)	-0.023 (0.056)
Control variables	yes	yes	yes	yes	yes	yes
Observations	1,645	5,637	3,060	2,577	2,883	3,034
Number of i	822	2,534	1,465	1,191	1,289	1,375
Within R^2	0.030	0.017	0.031	0.027	0.026	0.030

Source: Swiss Labour Force Survey 2003-2009 (data are unweighted).

Notes: Coefficient estimates (robust standard errors in parentheses); ** $p < 0.05$, * $p < 0.10$. All estimates include year fixed effects. DID FE: Difference-in-differences with individual fixed effects. YSM = years since migration.

the health effect of dual citizenship is detrimental to foreign-born Germans in comparison with foreign-born Austrians. Second, there is a positive impact of dual citizenship recognition on the risk of chronic health problems for Germans who arrived in Switzerland at younger ages (before the age of 25) compared to their Austrian peers. It should be noted that, as in the case of the age group 50 and older, the effect is very large in magnitude among the group of long-term foreign-born residents (almost 13 percentage points).

In sum, the legalisation of dual citizenship for Germans clearly increases their propensity to naturalise relative to Austrians, for which this legalisation has not been implemented yet. This positive relationship is significant across many different subgroups, with estimated effects ranging between 3 and 7 percentage points. But, contrary to Mazzolari's (2009) findings, the policy change does not appear to have affected Germans' labour market outcomes. In contrast, the reform has a considerable influence on the health of specific German groups relative to their Austrian peers. Most notably, it raises the risk of chronic health problems by about 13 percentage points for old or long-term Germans, while reducing the risk by almost 10 percentage points for Swiss-born Germans. Thus, the health effects of holding Swiss citizenship as a result of dual citizenship recognition seem to be both protective and detrimental. Put differently, integration through naturalisation may not only translate into health benefits but also convey increased likelihood of worse health in later life.

6 Conclusion

In this study, we exploit a policy reform on dual citizenship that have been implemented in Germany but not in Austria since 2007. The prime idea is to identify the causal impact of such a reform on naturalisation, health and labour market outcomes of Germans and Austrians in Switzerland. A difference-in-differences approach with fixed effects shows that Germans are more likely to acquire the Swiss nationality compared to Austrians. In parallel, the health and labour market effects of dual citizenship are not significant when the empirical analysis is based on the entire sample of the German and Austrian labour force. It means, apparently, that dual citizenship encourages naturalisation without improving health or other labour market outcomes. This first set of results thus contradict the hypothesis that naturalisation promotes human capital accumulation and protects from health problems.

We then examine heterogeneity in the effects of dual citizenship recognition. For that purpose, we estimate the difference-in-differences fixed effects model on the basis of different subsamples, according to particular individual characteristics. For most of the subsamples under consideration, the extension of dual citizenship rights has a positive causal impact on naturalisation rates, but without implications for labour market outcomes. Although the health effects remain non-significant by gender or level of education, some significant patterns emerge when the sample is disaggregated by current age, place of birth, years since migration and age at arrival in Switzerland for the foreign born.

First, young foreign-born or Swiss-born Germans' health is positively affected by the legalisation of dual citizenship. For these groups of Germans, dual citizenship encourages naturalisation and improves health relative to their Austrian counterparts. Therefore, this evidence is consistent with the hypothesis that naturalisation at younger ages is an investment that protects from health problems, particularly for the second and third generations. A direct policy implication would be that naturalisation should be facilitated at younger ages in order to improve young migrants' health and thus avoid any negative financial repercussions on the health system.⁹

Second, elder Germans' health is negatively affected by the legalisation of dual citizenship and the latter also applies to long-term foreign-born Germans or foreign-born Germans who arrived at younger ages. Although these groups of (old) Germans are more likely to acquire the Swiss citizenship as a consequence of the policy change, they are negatively affected in terms of health. While intriguing, this result means that later-life adaptation to the

⁹ As there are already procedures of facilitated naturalisation for young migrants (for instance, in 2017, Swiss voters accepted an initiative to facilitate naturalization for third-generation migrants), by "facilitated naturalisation" we also mean to implement measures promoting naturalisation or measures removing institutional barriers.

host country through naturalisation leads to health deterioration. An explanation may lie in the naturalisation procedure in Switzerland which is one of the most restrictive in international comparison (Huddleston and Vink, 2015). The time of the procedure is often long (between 2 and 3 years) and applicants for naturalisation have to pass a citizenship test. While stress resulting from this procedure might contribute to health deterioration of elderly applicants, it is not very likely that this stressful situation leads to a long-term disability. Another interpretation may originate from the cultural differences in self-reported health between Austrians and Germans. For instance, using data from the SHARE project on the health of elderly Europeans,¹⁰ findings by Jürges (2007) and Pfarr et al. (2012) show that Germans largely underrate their health while Austrians' self-assessment presents very little bias. We could then suppose that, once Germans become Swiss citizens, they may tend to report their health status more objectively as being worse than before naturalisation. It is then important that further research rely on alternative and more objective measures of health to extend our findings.

Acknowledgements

We would like to thank Didier Ruedin, Bruno Lanz and Alberto Holly for their comments, as well as Sara Rellstab for her help with the data. This study also benefited from comments by participants of the 9th International Conference of Panel Data Users in Switzerland in Lausanne (Switzerland). The research leading to these results has received funding from the Swiss National Science Foundation under grant agreement number 157027 and in the context of the NCCR On the move (SNSF grant number 51NF40-142020).

References

- Abadie, A. (2010). Difference-in-difference estimators. In Durlauf, S. N. and Blume, L. E., editors, *Microeconometrics*, The New Palgrave Economics Collection. Palgrave Macmillan, London.
- Abraido-Lanza, A. F., Chao, M. T., and Florez, K. R. (2005). Do healthy behaviors decline with greater acculturation? implications for the Latino mortality paradox. *Social Science & Medicine*, 61(6):1243–1255.
- Abraido-Lanza, A. F., Dohrenwend, B. P., Ng-Mak, D. S., and Turner, J. B. (1999). The Latino mortality paradox: a test of the "salmon bias" and healthy migrant hypotheses. *American Journal of Public Health*, 89(10):1543–1548.

¹⁰ The acronym *SHARE* stands for *Survey of Health, Ageing and Retirement in Europe*.

- Afable-Munsuz, A. and Pérez-Stable, E. (2017). Developing a theoretical framework for studies on acculturation and chronic disease. In Schwartz, S. J. and Unger, J., editors, *The Oxford Handbook of Acculturation and Health*, chapter 20, pages 357–377. Oxford University Press.
- Angrist, J. D., Imbens, G. W., and Rubin, D. B. (1996). Identification of causal effects using instrumental variables. *Journal of the American Statistical Association*, 91(434):444–455.
- Antecol, H. and Bedard, K. (2006). Unhealthy assimilation: Why do immigrants converge to American health status levels? *Demography*, 43(2):337–360.
- Becker, G. S. (2007). Health as human capital: Synthesis and extensions. *Oxford Economic Papers*, 59(3):379–410.
- Bevelander, P. and Pendakur, R. (2012). Citizenship, Co-ethnic Populations, and Employment Probabilities of Immigrants in Sweden. *Journal of International Migration and Integration*, 13(2):203–222.
- Biddle, N., Kennedy, S., and McDonald, J. T. (2007). Health Assimilation Patterns Amongst Australian Immigrants. *Economic Record*, 83(260):16–30.
- Bollini, P., Pampallona, S., Wanner, P., and Kupelnick, B. (2009). Pregnancy outcome of migrant women and integration policy: A systematic review of the international literature. *Social Science & Medicine*, 68(3):452–461.
- Bollini, P. and Siem, H. (1995). No real progress towards equity: Health of migrants and ethnic minorities on the eve of the year 2000. *Social Science & Medicine*, 41(6):819–828.
- Bratsberg, B., Ragan, Jr, J. F., and Nasir, Z. M. (2002). The effect of naturalization on wage growth: A panel study of young male immigrants. *Journal of Labor Economics*, 20(3):568–597.
- Chiswick, B. R., Lee, Y. L., and Miller, P. W. (2008). Immigrant selection systems and immigrant health. *Contemporary Economic Policy*, 26(4):555–578.
- Clark, L. and Hofstess, L. (1998). Acculturation. In *Handbook of immigrant health*, pages 37–59. Springer.
- Cunningham, S. A., Ruben, J. D., and Narayan, K. V. (2008). Health of foreign-born people in the United States: A review. *Health & Place*, 14(4):623–635.

- DeVoretz, D. J. (2008). The economics of citizenship: A common intellectual ground for social scientists? *Journal of Ethnic and Migration Studies*, 34(4):679–693.
- Devoretz, D. J. and Pivnenko, S. (2005). The economic causes and consequences of Canadian citizenship. *Journal of International Migration and Integration*, 6(3-4):435–468.
- Farré, L. (2016). New evidence on the healthy immigrant effect. *Journal of Population Economics*, 29(2):365–394.
- Fibbi, R., Lerch, M., and Wanner, P. (2007). Naturalisation and socio-economic characteristics of youth of immigrant descent in Switzerland. *Journal of Ethnic and Migration Studies*, 33(7):1121–1144.
- Fougère, D. and Safi, M. (2009). Naturalization and employment of immigrants in France (1968-1999). *International Journal of Manpower*, 30(1/2):83–96.
- Gathmann, C. (2015). Naturalization and citizenship: Who benefits? *IZA World of Labor*, 125.
- Giuntella, O. and Mazzonna, F. (2015). Do immigrants improve the health of natives? *Journal of Health Economics*, 43:140–153.
- Grossman, M. (1972). On the concept of health capital and the demand for health. *The Journal of Political Economy*, 80(2):223.
- Grossman, M. (2000). The human capital model. In Culyer, A. J. and Newhouse, J. P., editors, *Handbook of Health Economics*, chapter 7, pages 347–408. Elsevier.
- Grossman, M. (2006). Education and Nonmarket Outcomes. In Hanushek, E. and Welch, F., editors, *Handbook of the Economics of Education*, chapter 10, pages 577–633. Elsevier.
- Gubernskaya, Z., Bean, F. D., and Van Hook, J. (2013). (Un)Healthy immigrant citizens: Naturalization and activity limitations in older age. *Journal of Health and Social Behavior*, 54(4):427–443.
- Hainmueller, J., Hangartner, D., and Pietrantuono, G. (2017). Catalyst or crown: Does naturalization promote the long-term social integration of immigrants? *American Political Science Review*, 111(2):256–276.
- Helgertz, J., Bevelander, P., and Tegunimataka, A. (2014). Naturalization and earnings: A Denmark–Sweden comparison. *European Journal of Population*, 30(3):337–359.

- Huddleston, T. and Vink, M. P. (2015). Full membership or equal rights? The link between naturalisation and integration policies for immigrants in 29 European States. *Comparative Migration Studies*, 3(1):8.
- Jasso, G., Massey, D. S., Rosenzweig, M. R., and Smith, J. P. (2004). Immigrant health: Selectivity and acculturation. In Anderson, N. B., Bulatao, R. A., and Cohen, B., editors, *Critical perspectives on racial and ethnic differences in health in late life*, pages 227–266. National Academy Press: Washington, DC, USA.
- Johnston, D. W. and Lordan, G. (2012). Discrimination makes me sick! An examination of the discrimination–health relationship. *Journal of Health Economics*, 31(1):99–111.
- Jürges, H. (2007). True health vs response styles: Exploring cross-country differences in self-reported health. *Health Economics*, 16(2):163–178.
- Just, A. and Anderson, C. J. (2012). Immigrants, citizenship and political action in Europe. *British Journal of Political Science*, 42(3):481–509.
- Kwak, K. (2016). An evaluation of the healthy immigrant effect with adolescents in Canada: Examinations of gender and length of residence. *Social Science & Medicine*, 157:87–95.
- Lara, M., Gamboa, C., Kahramanian, M. I., Morales, L. S., and Hayes Bautista, D. E. (2005). Acculturation and Latino health in the United States: A review of the literature and its sociopolitical context. *Annu. Rev. Public Health*, 26:367–397.
- Leung, L. A. (2014). Healthy and unhealthy assimilation: Country of origin and smoking behavior among immigrants. *Health Economics*, 23(12):1411–1429.
- Liebig, T. and Von Haaren, F. (2011). Citizenship and the socio-economic integration of immigrants and their children: An overview across European Union and OECD countries. *Naturalisation: A Passport for the Better Integration of Immigrants?*, pages 23–64.
- Lu, Y. and Zhang, A. T. (2016). The link between migration and health. In Felicity, T., editor, *Handbook of Migration and Health*, chapter 2. Edward Elgar Publishing, Cheltenham, UK.
- Mazzolari, F. (2009). Dual citizenship rights: Do they make more and richer citizens? *Demography*, 46(1):169–191.
- McDonald, J. T. and Kennedy, S. (2004). Insights into the ‘healthy immigrant effect’: Health status and health service use of immigrants to Canada. *Social Science & Medicine*, 59(8):1613 – 1627.

- Minsart, A.-F., Englert, Y., and Buekens, P. (2012). Naturalization of immigrants and perinatal mortality. *The European Journal of Public Health*, 23(2):269–274.
- Moullan, Y. and Jusot, F. (2014). Why is the ‘healthy immigrant effect’ different between European countries? *The European Journal of Public Health*, 24(suppl 1):80–86.
- Newbold, B. (2005). Health status and health care of immigrants in Canada: A longitudinal analysis. *Journal of Health Services Research & Policy*, 10(2):77–83A.
- Pecoraro, M. (2012). Devenir Suisse. Les facteurs intervenant dans le choix de se naturaliser. In Wanner, P., editor, *La démographie des étrangers en Suisse*, pages 156–173. Zurich et Genève : Seismo.
- Pfarr, C., Schmid, A., and Schneider, U. (2012). Reporting heterogeneity in self-assessed health among elderly Europeans. *Health Economics Review*, 2(1):21.
- Riosmena, F., Everett, B. G., Rogers, R. G., and Dennis, J. A. (2015). Negative acculturation and nothing more? Cumulative disadvantage and mortality during the immigrant adaptation process among Latinos in the United States. *International Migration Review*, 49(2):443–478.
- Steinhardt, M. F. (2012). Does citizenship matter? The economic impact of naturalizations in Germany. *Labour Economics*, 19(6):813–823.
- Steinhardt, M. F. and Wedemeier, J. (2012). The labor market performance of naturalized immigrants in Switzerland – new findings from the Swiss labor force survey. *Journal of International Migration and Integration*, 13(2):223–242.
- Tsiachristas, A., Dijkers, C., Boland, M. R., and Rutten-van Mólken, M. P. (2016). Impact of financial agreements in European chronic care on health care expenditure growth. *Health Policy*, 120(4):420–430.
- Turra, C. M. and Elo, I. T. (2008). The impact of salmon bias on the Hispanic mortality advantage: New evidence from social security data. *Population research and policy review*, 27(5):515.
- Wooldridge, J. M. (2010). *Econometric Analysis of Cross Section and Panel Data*. MIT Press Books. The MIT Press.

A Appendix

Table A.1: Summary statistics before and after the policy change

	Pre-shock (2003-2007)				Post-shock (2008-2009)							
	Austrians		Germans		Austrians		Germans					
<i>Employed or unemployed</i>												
Naturalisation	0.012 (0.110)	[0.129]	{0.033}	0.024 (0.154)	[0.157]	{0.062}	0.030 (0.171)	[0.174]	{0.061}	0.071 (0.257)	[0.242]	{0.111}
Chronic illness	0.082 (0.275)	[0.239]	{0.128}	0.069 (0.254)	[0.241]	{0.129}	0.107 (0.310)	[0.301]	{0.122}	0.070 (0.256)	[0.245]	{0.096}
Unemployment	0.052 (0.222)	[0.211]	{0.122}	0.037 (0.189)	[0.186]	{0.106}	0.030 (0.171)	[0.161]	{0.087}	0.027 (0.163)	[0.150]	{0.075}
Observations	1,152			4,107			401			1,622		
Number of i	547			2,016			280			1,095		
<i>Only employed</i>												
Self-employment	0.157 (0.364)	[0.361]	{0.108}	0.148 (0.355)	[0.345]	{0.119}	0.159 (0.367)	[0.365]	{0.102}	0.144 (0.352)	[0.340]	{0.093}
Observations	1,092			3,955			389			1,578		
Number of i	526			1,954			274			1,074		
<i>Employed with valid earnings observation</i>												
$\log(w)$	11.215 (0.512)	[0.529]	{0.173}	11.333 (0.521)	[0.508]	{0.210}	11.179 (0.616)	[0.595]	{0.222}	11.313 (0.580)	[0.583]	{0.177}
Observations	915			3,404			330			1,365		
Number of i	463			1,732			238			956		

Source: Swiss Labour Force Survey 2003-2009 (data are unweighted).

Notes: (...): Overall standard deviation; [...] between standard deviation; {...} within standard deviation.

Table A.2: Test of common trend assumption: DID FE results

	Naturalisation	Chronic illness	Labour market (LM) outcomes		
			Unemployment	Self-employment	$\log(w)$
δ_{did04}	-0.005 (0.009)	-0.021 (0.024)	-0.005 (0.020)	-0.005 (0.020)	-0.002 (0.036)
δ_{did05}	0.006 (0.007)	-0.035 (0.023)	0.014 (0.028)	-0.002 (0.022)	0.001 (0.037)
δ_{did06}	0.009 (0.008)	-0.027 (0.022)	0.023 (0.024)	-0.013 (0.026)	0.047 (0.042)
δ_{did07}	0.033** (0.010)	-0.013 (0.029)	0.024 (0.028)	-0.013 (0.024)	0.029 (0.053)
δ_{did08}	0.055** (0.014)	-0.000 (0.034)	0.037 (0.029)	-0.018 (0.030)	0.055 (0.073)
δ_{did09}	0.097** (0.021)	0.011 (0.040)	0.008 (0.035)	0.010 (0.034)	-0.039 (0.076)
Control variables	yes	yes	yes	yes	yes
Observations	7,282	7,282	7,282	7,014	6,014
Number of i	3,295	3,295	3,295	3,205	2,857
Within R^2	0.128	0.015	0.020	0.010	0.023

Source: Swiss Labour Force Survey 2003-2009 (data are unweighted).

Notes: Coefficient estimates (robust standard errors in parentheses); ** $p < 0.05$, * $p < 0.10$. All estimates include year fixed effects. DID FE: Difference-in-differences with individual fixed effects.

Table A.3: Heterogeneity of the reform impacts: DID FE results (part 3)

	Gender		Education		Current age		
	M	F	Less than tertiary	Tertiary	Age < 35	35 ≤ Age < 50	50 ≤ Age
C. Unemployment							
δ_{did}	-0.023 (0.020)	0.030 (0.028)	0.016 (0.021)	-0.055 (0.035)	0.053 (0.059)	0.020 (0.023)	-0.049 (0.040)
Control variables	yes	yes	yes	yes	yes	yes	yes
Observations	3,594	3,688	4,469	2,813	1,158	4,031	2,093
Number of i	1,615	1,680	2,058	1,270	619	1,874	1,011
Within R^2	0.033	0.041	0.025	0.053	0.081	0.025	0.015
D. Self-employment							
δ_{did}	0.038 (0.030)	-0.027 (0.027)	0.014 (0.023)	-0.035 (0.044)	0.038 (0.055)	-0.031 (0.030)	0.012 (0.014)
Control variables	yes	yes	yes	yes	yes	yes	yes
Observations	3,451	3,563	4,281	2,733	1,092	3,925	1,997
Number of i	1,569	1,636	1,993	1,243	597	1,837	974
Within R^2	0.015	0.020	0.013	0.019	0.046	0.026	0.010
E. $\log(w)$							
δ_{did}	0.066 (0.073)	-0.072 (0.097)	-0.019 (0.079)	0.019 (0.069)	0.144 (0.260)	-0.068 (0.082)	0.070 (0.130)
Control variables	yes	yes	yes	yes	yes	yes	yes
Observations	2,942	3,072	3,617	2,397	879	3,464	1,671
Number of i	1,383	1,474	1,753	1,131	501	1,681	851
Within R^2	0.016	0.047	0.040	0.027	0.055	0.048	0.037

Source: Swiss Labour Force Survey 2003-2009 (data are unweighted).

Notes: Coefficient estimates (robust standard errors in parentheses); All estimates of δ_{did} are not significantly different from zero ($p > 0.10$). Year fixed effects are controlled for. DID FE: Difference-in-differences with individual fixed effects. M = males and F = females. Tertiary education includes cantonal universities, federal institutes of technology, universities of applied sciences, universities of teacher education and advanced professional education & training.

Table A.4: Heterogeneity of the reform impacts: DID FE results (part 4)

	Country of birth		Foreign born			
	Swiss born	Foreign born	Years since migration		Age at arrival	
			YSM < 20	20 ≤ YSM	Age < 25	25 ≤ Age
C. Unemployment						
δ_{aid}	0.002 (0.016)	0.009 (0.022)	-0.004 (0.023)	0.020 (0.037)	0.009 (0.029)	-0.007 (0.017)
Control variables	yes	yes	yes	yes	yes	yes
Observations	1,645	5,637	3,060	2,577	2,883	3,034
Number of i	822	2,534	1,465	1,191	1,289	1,375
Within R^2	0.044	0.021	0.049	0.016	0.026	0.025
D. Self-employment						
δ_{aid}	0.086 (0.055)	-0.017 (0.021)	-0.062 (0.043)	0.016 (0.017)	-0.008 (0.023)	-0.021 (0.039)
Control variables	yes	yes	yes	yes	yes	yes
Observations	1,568	5,446	2,971	2,475	2,773	2,942
Number of i	790	2,475	1,431	1,162	1,260	1,342
Within R^2	0.021	0.015	0.027	0.035	0.032	0.020
E. $\log(w)$						
δ_{aid}	-0.074 (0.277)	0.022 (0.041)	0.047 (0.058)	-0.042 (0.046)	-0.016 (0.044)	0.130 (0.083)
Control variables	yes	yes	yes	yes	yes	yes
Observations	1,345	4,669	2,542	2,127	2,362	2,525
Number of i	706	2,201	1,269	1,035	1,103	1,205
Within R^2	0.025	0.032	0.067	0.029	0.042	0.052

Source: Swiss Labour Force Survey 2003-2009 (data are unweighted).

Notes: Coefficient estimates (robust standard errors in parentheses); All estimates of δ_{aid} are not significantly different from zero ($p > 0.10$). Year fixed effects are controlled for. DID FE: Difference-in-differences with individual fixed effects. YSM = years since migration.

Table A.5: Heterogeneity of the reform impacts: DID FE results based on the entire sample (part 1)

	Naturalisation	Chronic illness	Labour market (LM) outcomes		
			Unemployment	Self-employment	log(w)
I. Gender					
δ_{did}	0.069** (0.013)	0.032 (0.035)	0.028 (0.027)	-0.026 (0.027)	-0.069 (0.096)
δ_{did}^{Males}	-0.041* (0.024)	-0.016 (0.049)	-0.051 (0.034)	0.065 (0.040)	0.131 (0.120)
Observations	7,282	7,282	7,282	7,014	6,014
Number of i	3,295	3,295	3,295	3,205	2,857
Within R^2	0.077	0.017	0.021	0.013	0.014
II. Education					
δ_{did}	0.038** (0.016)	0.034 (0.032)	0.017 (0.021)	0.013 (0.022)	-0.027 (0.079)
$\delta_{did}^{Tertiary}$	0.032 (0.022)	-0.043 (0.050)	-0.076* (0.040)	-0.047 (0.046)	0.049 (0.103)
Observations	7,282	7,282	7,282	7,014	6,014
Number of i	3,295	3,295	3,295	3,205	2,857
Within R^2	0.073	0.017	0.017	0.009	0.014
III. Current age					
δ_{did}	0.053* (0.030)	-0.023* (0.014)	0.050 (0.055)	0.018 (0.053)	0.114 (0.246)
$\delta_{did}^{35 \leq Age < 50}$	-0.006 (0.034)	0.021 (0.036)	-0.038 (0.058)	-0.030 (0.059)	-0.157 (0.256)
$\delta_{did}^{50 \leq Age}$	-0.008 (0.034)	0.127** (0.047)	-0.091 (0.067)	0.006 (0.057)	-0.116 (0.258)
Observations	7,282	7,282	7,282	7,014	6,014
Number of i	3,295	3,295	3,295	3,205	2,857
Within R^2	0.080	0.022	0.021	0.018	0.023

Source: Swiss Labour Force Survey 2003-2009 (data are unweighted).

Notes: Coefficient estimates (robust standard errors in parentheses); ** $p < 0.05$, * $p < 0.10$. All estimates include year fixed effects, control variables, and interactions between controls and the characteristic of interest (or the set of related characteristics). The reference category is *Females* in Panel I, *Less than tertiary* in Panel II and *Age < 35* in Panel III. DID FE: Difference-in-differences with individual fixed effects. Tertiary education includes cantonal universities, federal institutes of technology, universities of applied sciences, universities of teacher education and advanced professional education & training.

Table A.6: Heterogeneity of the reform impacts: DID FE results based on the entire sample (part 2)

	Naturalisation	Chronic illness	Labour market (LM) outcomes		
			Unemployment	Self-employment	log(w)
IV. Country of birth					
δ_{did}	0.037*	-0.089*	0.011	0.085	-0.073
	(0.019)	(0.048)	(0.014)	(0.054)	(0.271)
$\delta_{did}^{\text{Foreign born}}$	0.012	0.144**	-0.003	-0.100*	0.090
	(0.024)	(0.055)	(0.026)	(0.058)	(0.275)
Observations	7,282	7,282	7,282	7,014	6,014
Number of i	3,295	3,295	3,295	3,205	2,857
Within R^2	0.076	0.023	0.014	0.009	0.018
V. Years since migration					
δ_{did}	0.037*	-0.089*	0.009	0.084	-0.075
	(0.019)	(0.048)	(0.014)	(0.054)	(0.272)
$\delta_{did}^{\text{YSM} < 20}$	0.025	0.080	-0.014	-0.144**	0.179
	(0.029)	(0.063)	(0.026)	(0.068)	(0.290)
$\delta_{did}^{\text{YSM} \geq 20}$	0.004	0.189**	0.008	-0.068	0.026
	(0.026)	(0.060)	(0.037)	(0.057)	(0.275)
Observations	7,282	7,282	7,282	7,014	6,014
Number of i	3,295	3,295	3,295	3,205	2,857
Within R^2	0.076	0.032	0.018	0.018	0.028
VI. Age at arrival					
δ_{did}	0.039**	-0.090*	0.009	0.085	-0.073
	(0.019)	(0.048)	(0.014)	(0.054)	(0.271)
$\delta_{did}^{\text{Age} < 25}$	0.011	0.167**	0.000	-0.097	0.044
	(0.028)	(0.056)	(0.032)	(0.059)	(0.275)
$\delta_{did}^{\text{Age} \geq 25}$	0.021	0.066	-0.019	-0.124*	0.210
	(0.030)	(0.081)	(0.025)	(0.073)	(0.297)
Observations	7,282	7,282	7,282	7,014	6,014
Number of i	3,295	3,295	3,295	3,205	2,857
Within R^2	0.080	0.027	0.016	0.014	0.022

Source: Swiss Labour Force Survey 2003-2009 (data are unweighted).

Notes: Coefficient estimates (robust standard errors in parentheses); ** $p < 0.05$, * $p < 0.10$. All estimates include year fixed effects, control variables, and interactions between controls and the characteristic of interest (or the set of related characteristics). The reference category is *Swiss born* in Panel IV, Panel V and Panel VI. DID FE: Difference-in-differences with individual fixed effects. YSM = years since migration.