

Catalyst or Crown: Does Naturalization Promote the Long-Term Social Integration of Immigrants?

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ABSTRACT

We study the impact of naturalization on the long-term social integration of immigrants into the host country society. Despite ongoing debates about citizenship policy, we lack reliable evidence that isolates the causal effect of naturalization from the non-random selection into naturalization. We exploit the quasi-random assignment of citizenship in Swiss municipalities that used referendums to decide on naturalization applications of immigrants. Comparing otherwise similar immigrants who narrowly won or narrowly lost their naturalization referendums, we find that receiving Swiss citizenship strongly improved long-term social integration. We also find that the integration returns to naturalization are much larger for more marginalized immigrant groups and somewhat larger when naturalization occurs earlier, rather than later in the residency period. Overall, our findings support the policy paradigm arguing that naturalization is a catalyst for improving the social integration of immigrants rather than merely the crown on the completed integration process.

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I. INTRODUCTION

Integration of immigrant populations is an urgent and fundamental policy challenge in many countries in Europe and the Americas that have experienced dramatic increases in the size and diversity of their immigrant populations in recent decades. There is agreement that it is economically wasteful and democratically deficient if immigrants remain marginalized. From a purely economic framework, where returns to the free movement of labor are strongly positive, we should not observe integration failure once transition costs are paid. But this theoretical expectation is not uniformly realized across countries and immigrant groups (Dancygier and Laitin 2014). Instead, the extraordinary influx of migrants has led to severe social tensions and stark signals of integration failures. On the one hand, we see alienation and hardship among immigrants who face social exclusion and discrimination (Bloemraad, Korteweg and Yurdakul 2008)). On the other hand, we see anti-immigrant backlash among natives who fear that the new waves of immigrants will threaten their jobs, security, and national culture (Fetzer 2000).

Faced with this conundrum, policy makers are struggling with the design of policies to facilitate integration and ease social tensions, but we know distressingly little about their impacts. In many countries, one of the key debates involves immigrants' access to citizenship and the consequences that naturalization has on incorporating the growing immigrant populations into the social, economic, and political fabric of the host democracies. The citizenship frameworks are under much scrutiny by legislators, scholars, and members of civil society who engage in heated debates about the merits of policies that promote or limit opportunities for naturalization (Howard 2005; Dancygier 2010; Goodman 2010).

One paradigm—often advanced by parties on the left—is that naturalization should be made fairly accessible since it provides immigrants with the necessary resources and incentives to rapidly integrate and invest in a future in the host country. The acquisition of citizenship is seen as an important catalyst that propels the integration process. The opposing paradigm—often advanced by parties on the right—holds that naturalization itself does little to improve integration. In fact, once you hand over the host country passport, immigrants lose the incentive to integrate because they can no longer be excluded from the benefits that are associated with citizenship. In this logic naturalization is not a catalyst but merely a reward for immigrants who have reached the end point of the integration process. As Dutch Minister of Home Affairs Piet Hein Donner recently put it in defense of tightening naturalization rules,

“citizenship is the crown on participation and integration into society.”¹ Accordingly, there should be a high bar that restricts access to citizenship to only those immigrants who earned this reward by successfully completing the integration process.²

In this paper we contribute to the ongoing debate by providing empirical answers to three unresolved questions: Does naturalization promote the long-term social integration of immigrants into the host country society? Is naturalization more or less effective for more marginalized immigrant groups? Is naturalization more or less effective when immigrants naturalize earlier rather than later into their residency period? Answering these questions is crucial to test scholarly theories and inform ongoing debates about the design of naturalization policy. But despite the imminent importance of these questions for policy and theory there is a paucity of research that provides reliable evidence on the causal impacts of naturalization or the impact of the timing of naturalization on the social integration of immigrants. The large majority of studies of naturalization only examine its impact on economic outcomes, and the few existing studies that move beyond economic outcomes almost exclusively focus on political integration, but do not examine social integration specifically. Existing studies also only consider short-term effects and, most importantly, they are typically based on limited research designs and data that prevent them from isolating the independent effect of naturalization from the non-random selection into naturalization or the non-random selection into the timing of the naturalization (for a recent review see, for example, Hainmueller, Hangartner and Piortantuono (Forthcoming)).

The key problem affecting all studies of naturalization is that naturalized citizenship is not randomly assigned, but results from a complex double selection process where immigrants first apply for naturalization based on unobserved characteristics like motivation or information and then decision makers screen applicants based on another set of unobserved characteristics such as the immigrant’s language ability or the impression made during the application interview. As a result of this double selection bias, the group of naturalized and non-naturalized immigrants differ on a myriad of omitted variables that independently affect integration, but are difficult to measure and control for in any statistical analysis. Unless we remove the differences in the omitted variables, we cannot attribute differences in integration outcomes to the effect of naturalization.

¹“Becoming Dutch to be difficult,” *The Daily Herald*, (2011, March 29).

²For reviews of the debates see, for example, Oers and Hart (2006); Hainmueller, Hangartner and Piortantuono (Forthcoming)

In this paper we contribute to the ongoing debate by providing new causal estimates of the effects of naturalization on the long-term social integration of immigrants, estimates of how the naturalization effect varies across immigrant groups, and estimates of the effect of the timing of the naturalization. Our study design is based on a natural experiment in Switzerland where until 2003 some municipalities used secret ballot referendums to decide on the naturalization applications of its immigrant residents. Leaflets that describe the applicants were sent out to all local voters who then voted with a ‘yes’ or ‘no’ decision to accept or reject each individual applicant and immigrants that gained a majority of ‘yes’ votes received Swiss citizenship. Our data combines the leaflets and voting records with a recently administered survey that measures the current integration levels of the applicants who faced naturalization referendums prior to 2003. Given the long time gap between the referendums and our survey, immigrants in our sample received Swiss citizenship about 15 years ago on average. As we explain in detail below, this original data and unique setting allows us to get at long-term effects of naturalization and remove the bias from the double selection process using two complementary identification strategies that are based on an instrumental variable design and a fuzzy regression discontinuity design, respectively. Moreover, it allows us to apply an identification strategy to estimate the effect of an early versus late timing of the naturalization.

Our study yields three main results. First, we find that naturalization strongly improved the long-term social integration of immigrants as measured by a variety of outcomes including whether immigrants have plans to stay in Switzerland for good, are a member of a local social club, feel discriminated against, and read Swiss newspapers instead of newspapers from their origin countries. These positive effects of naturalization on social integration persist for more than a decade and a half and are robust across various robustness checks. They are also large in substantive terms. For example, when looking at our summary scale of social integration that combines all outcome measures, we find that naturalization causes about a full standard deviation unit increase in the social integration scale.

Second, we find that the naturalization effect strongly varies by the immigrant group. In particular, the estimates show that the large positive effects of naturalization on integration are concentrated almost entirely among the most marginalized immigrant groups, including immigrants from Turkey and the former Yugoslavia as well as immigrants born abroad as opposed to those born in Switzerland.

Third, we find that the integration returns are larger when immigrants naturalize earlier, rather than later into their residency. Comparing otherwise similar applicants, we find that receiving Swiss

citizenship about three years earlier translates into about one sixth of a standard deviation unit increase in the social integration scale. This suggests that receiving the host country citizenship just a few years faster can have a lasting impact on enhancing the long-term social integration of immigrants.

Our study makes four main contributions. First, our findings contribute to the ongoing heated debates about the effects of naturalization on immigrant integration. In particular, our new causal estimates are supportive of the paradigm arguing that naturalization is an important policy instrument that has a strong and lasting independent effect on improving the social integration of immigrants. Naturalization acts as a catalyst, rather than merely a crown on the completed integration process. Moreover, in stark contrast to the political rhetoric mobilizing for limiting access to host country citizenship with longer residency periods and stricter naturalization criteria, we find that the positive effects of naturalization are in fact much larger for the most marginalized groups and when immigrants naturalize earlier, rather than later, in their residency. Taken together, these findings suggest that for Switzerland—and perhaps other countries with similarly restrictive or more restrictive naturalization regimes—lowering the stringent residency requirements and naturalization criteria might well be quite beneficial to realize the full integration gains from the citizenship policy.

Second, while existing work is focused on economic integration our study broadens the scope and shows that citizenship also has important consequences for social integration of immigrants. This is an important result given the persistent marginalization of immigrants and rising social tensions between immigrants and natives that are visible in many European countries.

Third, given that the average naturalized immigrant in our sample obtained Swiss citizenship about 15 years ago, our study goes beyond short-term effects to consider the lasting impacts of naturalization. Importantly, the long-term effects of naturalization are key elements for evaluating theories and full integration gains from the citizenship policy.

Fourth, our study fills an important gap by providing evidence on the effects of naturalization in Switzerland specifically, a country where the issue of naturalization is particularly pressing: there is an unusually large immigrant population of about 27% and heated policy debates have seen right wing parties like the Swiss People's party mobilize against mass naturalization of immigrants with posters of immigrant hands depicted as stealing Swiss passports.

II. DOES NATURALIZATION LEAD TO BETTER INTEGRATION?

A. *Social Integration*

Before reviewing existing work it is useful to briefly define what we mean by integration in this study. Integration is a concept with many facets and can be measured in various ways. In the literature there are generally three broad and partly overlapping spheres of immigrant integration including social, political, and economic integration into the host country (Castles et al. 2002; Carens 2005; OECD 2012; Huddleston, Niessen and Dag Tjaden 2013; Dancygier and Laitin 2014). In this study we focus on the social integration of immigrants and define the concept to refer to the active social participation of immigrants in the host country society and the quantity and quality of social interactions between immigrants and host country nationals. Immigrant social integration has several dimensions including social inclusion and a sense of belonging, intergroup contact, social capital, and an absence of discrimination (Kymlicka 1995; Berry 1997; Castles et al. 2002).

B. *Prior Work*

Despite fierce debates about citizenship policy, there exists surprisingly little rigorous evidence on how naturalization affects social integration. Several theoretical arguments suggest that naturalization might have important effects on improving the social integration of immigrants. The logic holds that naturalization provides immigrants with the necessary resources and incentives to invest in integration (Geddes 2003; Bloemraad, Korteweg and Yurdakul 2008). There are various channels through which this might occur. Naturalized immigrants also typically obtain the right to permanently stay in the host country and this security of permanent residency might motivate immigrants to more heavily invest in a future in the host country for themselves and their children. These investments could be in the form of higher civic engagement and social capital, as immigrants can now be certain to enjoy the long terms gains from better social integration. Naturalization can also act to signal acceptance and thereby result in increased attachment to the host country because immigrants feel recognized by state authorities as on par with rooted natives. Citizenship may also increase the respect of natives towards naturalized immigrants so that they feel less discriminated against and are thus more likely to interact with natives socially and increase their community participation. And lastly, better economic integration might also lead to more social integration as immigrants can climb the social ladder and

gain access to jobs, social activities, or residential areas that are typically dominated by rooted natives.

The opposing perspective holds that handing out the host country passport will do very little to improve or even reduce the social integration of immigrants (Oers and Hart 2006). One argument for this is grounded in the premise that outcomes such as social integration are often determined by early socialization in life and therefore we would expect little change later in life just because immigrants obtain the host country passport. Another argument is that naturalization if anything knocks out the incentive of immigrants to further integrate into the host society, because once they are naturalized they enjoy the same rights as natives and are no longer incentivized to further integrate by the prospect of earning access to these rights. Finally, if discrimination against immigrants is deeply entrenched in the host country society then we expect that simply awarding immigrants the host country passport will do little to eradicate the marginalization that immigrants face. In fact, the rooted natives might not view naturalized immigrants as true equals, especially in a *jus sanguinis* citizenship regime like Switzerland where “true” citizenship is passed on by the citizenship of Swiss parents. If naturalized immigrants—like the rhetoric of some right wing parties suggests—are simply regarded as undeserving foreigners who “stole” a Swiss passport then we would not expect that barriers to social integration are easily overcome by naturalization. In fact, it might even backfire if newly naturalized immigrants grow increasingly disappointed and alienated as they learn that even with the Swiss passport they are still regarded as inferior by the mainstream host country society (Portes and Rumbaut 2001).

These theoretical perspectives have contradicting ramifications for the design of naturalization policy. In one account, naturalization is seen as an important instrument to enhance integration because it gives immigrants the resources and incentives to socially integrate into the host country society. This logic suggests that immigrants should be given fairly easy access to citizenship by having low requirements for naturalization. In the opposing account, naturalization itself does nothing to improve integration, but it is the prospect of obtaining the host country citizenship that motivates immigrants to integrate in the first place. In other words, naturalization is merely a crown awarded to immigrants for successfully completing the integration process. This reasoning suggests that there should be a high bar such that only well integrated immigrants are eligible for naturalization. As one Swiss politician recently put it, the path to naturalization should be a “marathon”, not a “short distance run” and the Swiss passport is simply the “title on the i of integration” for immigrants who

successfully completed the long and arduous integration process.³

These discussions also raise the important question of potential effect heterogeneity. It might well be that the effect of naturalization is not uniform across immigrants, but contingent upon the immigrants' characteristics. For whom might naturalization be most or least effective? On the one hand, it might be that naturalization is particularly beneficial for immigrants who are socially marginalized prior to naturalization, since they lack the necessary resources to engage in social integration and face the most severe discrimination by natives. On the other hand, it might be that naturalization is least effective for the most marginalized because such immigrants are not yet sufficiently well equipped to take advantage of the rights and benefits that come with naturalization.

Another important issue is the effect of the timing of the naturalization. Countries vary considerably in the length of the required residency period for naturalization and there are vibrant debates about the likely consequences of giving immigrants earlier or later access to the host country citizenship. One camp argues for easy access and early naturalizations, because if naturalization acts as a catalyst for integration then getting it earlier rather than later is more effective to foster the integration of immigrants because they are incentivized early on to integrate and have a longer time to benefit from having citizenship. The other camp argues for long residency requirements and a high bar for access to naturalization because only immigrants who are well integrated deserve the host country passport and are sufficiently well equipped to take advantage of host country citizenship. If citizenship simply acts to knock out the incentive for immigrants to integrate in order to earn access to naturalization, then handing out citizenship too early will if anything lower the expected integration compared to the a scenario where naturalizations are restricted to immigrants who have been in the country long enough to have gained at least some integration level.

C. Double Selection Bias

Perhaps the major shortcoming of the existing evidence is that it suffers from potentially severe selection bias. In order to isolate the causal effect of naturalization, we need to compare two groups of immigrants that differ in their naturalization status, but are otherwise similar on all other characteristics that can independently affect integration. The fundamental problem is that such a comparison is hard to come by empirically with typical observational data, because the process through which

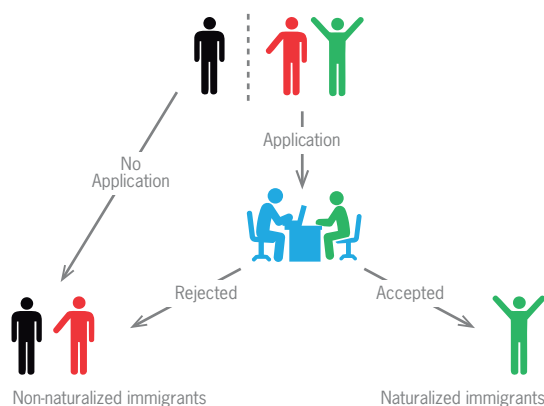
³Flückiger, J. (2013, September 17). Ständerat will die Hürden für Einbürgerungen senken. *Neue Zürcher Zeitung*.

immigrants obtain citizenship involves a complex two stage selection.

Figure 1 illustrates the two stages in the double selection process. In the first stage immigrants choose to apply for naturalization or not and this decision is based on a whole host of reasons that have independent effects on integration. For starters, only immigrants who are sufficiently motivated and have the resources to apply for naturalization will obtain citizenship, while the group of non-naturalized immigrants contains many or even a majority of immigrants who were not motivated enough or lacked the resources to apply for citizenship in the first place. Arguably, the motivation and resources to apply are among the most important confounders when trying to estimate the effects of citizenship because the motivation and resources to apply are strongly correlated with the propensity to integrate into the host society. In addition, there are many other potential differences that explain why immigrants choose to apply or not. Plenty of evidence suggests that those who choose to apply typically have resided in the country for a longer period of time (in part simply due to residency requirements), they are better informed, better integrated, perhaps more educated or more fluent in the local language (see, for example, Chiswick and Miller (2009)). Immigrants who apply might also identify more strongly with the host country and its culture or have differences in other traits like their intention to stay or political interest that lead them to seek citizenship compared to the group of immigrants who do not (see, for example, Yang (1994)). The comparison of naturalized and non-naturalized immigrants is therefore one of apples and oranges (or even worse).

In the second stage decision makers then review the applications and often interview the applicants to decide who gets citizenship and who is denied. The problem here is that decision makers typically have much more information about the applicants than is observed by the researcher and they would typically use this information to decide on the applicants. For example, applicants who make a “bad impression” in the application interview (in terms of appearance, lacking language skills, familiarity with the host country, etc.) might be more likely to be rejected because they are judged to have a lower integration potential. As a result of this screening, the comparison between accepted and rejected applicants is again like comparing apples and oranges because the reasons that determine why an applicant is rejected might be correlated with the integration outcomes of interest. For example, those who are judged to have a lower integration potential are less likely to integrate successfully.

Figure 1: Double Selection Bias



Note: Illustration of the double selection bias that confounds the comparison of naturalized and non-naturalized immigrants.

Overcoming this double selection bias with typical observational data is a fairly hopeless endeavor. We can never measure the myriad unobserved confounders that determine immigrants' selection into applying as well as all the unobserved confounders that determine the decision makers' selection among the applicants. In fact, we typically have little information about whether and why immigrants applied and also much less information about the applicants than the decision makers when they make their screening decisions. But unless we can control for all the confounding characteristics that determine the selection in both stages we will end up with biased estimates of the effect of citizenship since the unmeasured confounding characteristics are correlated with the outcomes and the application decision.

Note that a similar selection bias applies when trying to estimate the effect of the timing of the naturalization. The timing of when immigrants naturalize is again far from randomly assigned and there are many potential differences that explain why some immigrants choose to apply early and others chose to apply only later into their residency period. For example, more motivated or better informed immigrants might apply right after their become eligible, while less motivated or informed ones delay their naturalization until they have been in the host country for a long time.

III. EMPIRICAL STRATEGY

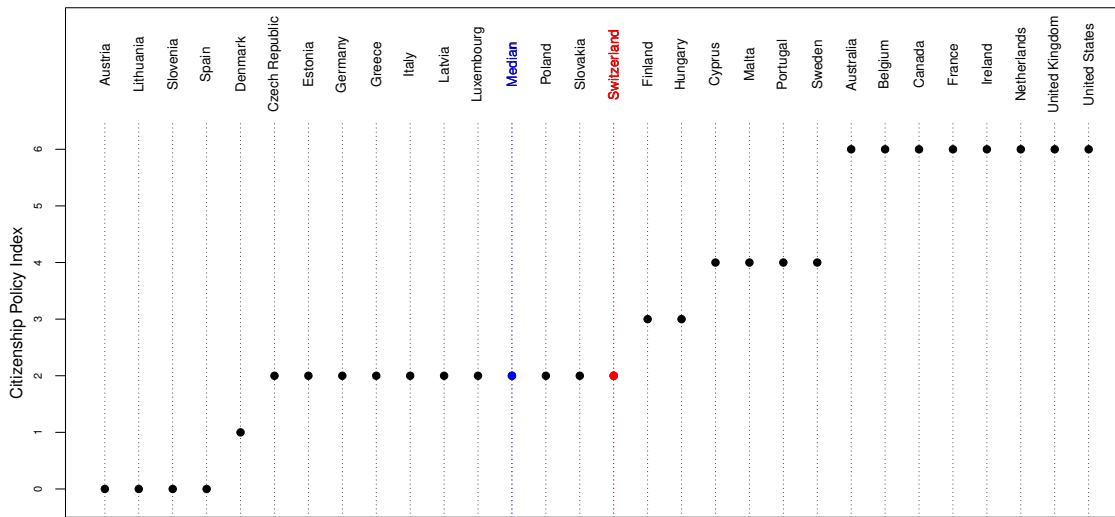
In order to eliminate the double selection bias and isolate the causal effect of citizenship from the effect of pre-existing differences in background characteristics, the ideal design would involve an experiment

where we randomly assign citizenship among a group of eligible immigrants. Random assignment forms the gold standard for causal attribution, because it ensures that the treatment group of immigrants who obtain citizenship is similar to the control group of immigrants who do not obtain citizenship on all measured and unmeasured characteristics. Our research design exploits a natural experiment in Switzerland that closely mimics this ideal experiment.

A. The Swiss Naturalization Regime in Comparative Perspective

Naturalization has long been a major divisive issue in Switzerland given its unusually large immigrant population. To put the Swiss naturalization regime in a comparative perspective Figure 2 plots, for various European and North American Countries, the Citizenship Policy Index (CPI) for the year 2005. The CPI is a standard measure developed by Howard (2005) that uses an additive formula to measure a country’s citizenship policy between very liberal (6) and highly restrictive (0). It is based on the three main components of citizenship policy: whether citizenship is granted by place of birth or by citizenship of the parents, the length of the residency requirement for naturalization, and the acceptance of dual citizenship for immigrants (see the SI appendix for details).

Figure 2: Citizenship Policy Index for European and North American Countries



Note: The Citizenship Policy Index (CPI) measures a country’s citizenship policy between very liberal (6) and highly restrictive (0) based on citizenship by birth, residency requirements, and acceptance of dual citizenship.

The plot reveals that the Swiss citizenship regime is similar to the sample median on the CPI, on par with other restrictive countries like Germany or Italy that also use the jus sanguinis principle which implies that citizenship is passed on from the citizenship of the parents. While Switzerland does require a fairly long residency period, its regime is more liberal insofar as it allows dual citizenship in contrast to many of the restrictive countries.⁴

The formal benefits of Swiss citizenship are similar to those in many other countries (see Hainmueller and Hangartner (2013)). In particular, Swiss citizenship gives immigrants the right to permanent abode and return. It also gives them the right to vote in federal, cantonal, and municipal referendums and elections and allows them to run for office and to attend municipal assemblies where political decisions are often made in Swiss municipalities. Moreover, Swiss citizenship is beneficial for immigrants because the jus sanguinis implies that their children will also get Swiss citizenship at birth while children born to non-naturalized immigrants have to apply through the regular naturalization procedure. Naturalization is also required for some specific jobs including jobs with the military, some defense companies, several cantonal police forces, the border guard corps, and or the Foreign Service.

B. Naturalization Referendums

Naturalization applications in Switzerland are decided at the municipal level. An immigrant who has cleared the eligibility requirements and seeks naturalization is required to apply with the municipality in which he or she resides. The municipal authorities then process and green light the application until it is eventually put to a vote (see Hainmueller and Hangartner (Forthcoming) for an overview). We focus on the group of so called ballot box municipalities who until 2003 used secret ballot referendums to decide on the applications. A typical naturalization referendum involved two stages. In the first stage, a voting leaflet was mailed to all Swiss voters in the municipality that informed the voters about the pending naturalization requests with a short résumé that described each applicant. The résumés typically included information about the applicant’s origin, gender, marital status, number of kids, year of arrival, education, occupation, and an assessment of their language skills and integration levels as assessed in the application interview. An example leaflet is provided in Figure A.1 in the SI . In the second stage, voters then cast a secret ballot where they voted ‘yes’ or ‘no’ on each applicant and only

⁴Switzerland requires 12 years of residence, but years between ages 10 and 20 count double; at least 3 of the 12 years must fall within the 5 years preceding the naturalization request (Bürgerrechtsgesetz §15). Notice that we focus on so called “ordinary” naturalization which is by far the most common naturalization mode in Switzerland.

applicants with a majority of ‘yes’ votes received Swiss citizenship. Note that voting on referendums occurred in regular intervals and naturalization referendums appeared on the ballot alongside other questions about municipal matters that are all typically decided via referendums in Switzerland, such as decisions about the local budget, infrastructure, urban planning, etc.. The use of naturalization referendums ended in 2003 when the Swiss federal court ruled that secret ballot referendums can no longer be used for naturalization decisions (see Hainmueller and Hangartner (Forthcoming) for details).

C. Identifying the Effect of Naturalization

The naturalization referendums allow us to devise two identification strategies that overcome the thorny double selection bias and get at the long term effects of naturalization. The identification strategies guard against selection bias in two ways. First, we can remove the selection into applying by limiting the analysis to only those motivated immigrants who applied and cleared the eligibility criteria such that they faced a naturalization referendum. Second, we can remove the second stage selection into who is accepted or rejected for naturalization using two strategies that exploit the use of voting leaflets and the occurrence of close referendums, respectively.

C.1. INSTRUMENTAL VARIABLE STRATEGY

In the first strategy we utilize the fact that we can measure and control for all the applicant characteristics that were reported to voters in the voting leaflets when they voted on the applicants and therefore rule out omitted variable bias. In contrast to the situation where an immigration official decides on the applicants based on information that is unobserved to the researcher, here we do observe all the relevant applicant characteristics that were reported to voters who decided on each request. In other words, once we control for the reported characteristics and compare applicants who applied in the same municipality, in the same time period, have the same gender, country of origin, marital status, number of kids, education, occupational skill, years of residency, assessed integration level and language proficiency, such matched applicants are observably equivalent to voters so that they cannot systematically discriminate between them based on unobserved characteristics. Therefore among such observably equivalent applicants who are matched on the characteristics that voters see on the leaflets, who wins and who loses is not driven by systematic differences in the integration potential of the individual immigrants, but by idiosyncratic shocks that affect the aggregate vote outcomes such as what

else appeared on the ballot or the weather on the day of the referendum. Hainmueller and Hangartner (2013) provide substantial evidence for this selection on observables assumption. For example, they show that the effect of the reported applicant characteristics on the vote outcomes are very similar in large and small municipalities which rules out the possibility that private information about the applicants might have a systematic effect on the outcomes of the referendums.

One remaining issue that we have to address with this strategy is the issue of non-compliance by which we mean the fact that a fraction of applicants who lost their first naturalization referendum re-applied and subsequently obtained citizenship. Fortunately, we can directly address the issue of re-applications by exploiting the exogenous variation in naturalization that comes from winning or losing the first referendum that each applicant faces. For this we apply the instrumental variable (IV) framework with heterogeneous treatment effects as developed in Angrist, Imbens and Rubin (1996) which allows us to treat the outcome of the first referendum like a randomized encouragement design experiment where those applicants who win their first referendum are encouraged to get citizenship, while those who lose their first referendum are encouraged not to get citizenship.

Following the terminology of Angrist, Imbens and Rubin (1996) the population of applicants is made up of two subgroups. The subgroup of so-called compliers are the applicants who comply with the encouragement. In other words, they get naturalized if they win their first referendum but do not get naturalized if they lose their first referendum. The other subgroup are the so-called always-takers. These are the applicants who always get naturalized, regardless of the outcome of their first referendum; if they lose their first referendum they re-apply and subsequently get citizenship.⁵

To identify the local average treatment effect of naturalization (LATE) for the subgroup of compliers we compute the intention-to-treat effect (ITT), which is the effect of winning the first referendum on social integration, and divide it by the proportion of compliers in our sample, which is given by the first stage effect of winning the first referendum on the probability of naturalization or equivalently the difference between the proportion of winning applicants who do get Swiss citizenship and the proportion of losing applicants who nonetheless get citizenship through a re-application. Following the convention in the literature we also refer to the proportion of compliers as the compliance ratio.

⁵Note that in our context the non-compliance is purely one-sided since applicants who win their first referendum automatically get citizenship. Therefore there are no so called never-takers (applicants who never get citizenship, even if they win) and also no defiers (applicants who get citizenship if they lose and do not get citizenship if they win).

To estimate the LATE, we code a binary treatment indicator that captures whether the immigrant is naturalized or not and a binary instrument that captures whether the immigrant won or lost his or her first referendum. We then run a two-stage least squares model regressing the integration outcome on the reported applicant characteristics from the leaflets, municipality and time period fixed effects, and the treatment variable which we instrument with the instrumental variable (Angrist, Imbens and Rubin 1996). Importantly, this strategy relies on the fact that we have enough compliers in our sample and therefore the first stage effect is strong enough to avoid the problem of weak instruments. Below we test this assumption and find that the instrument is indeed sufficiently strong.

C.2. FUZZY REGRESSION DISCONTINUITY DESIGN STRATEGY

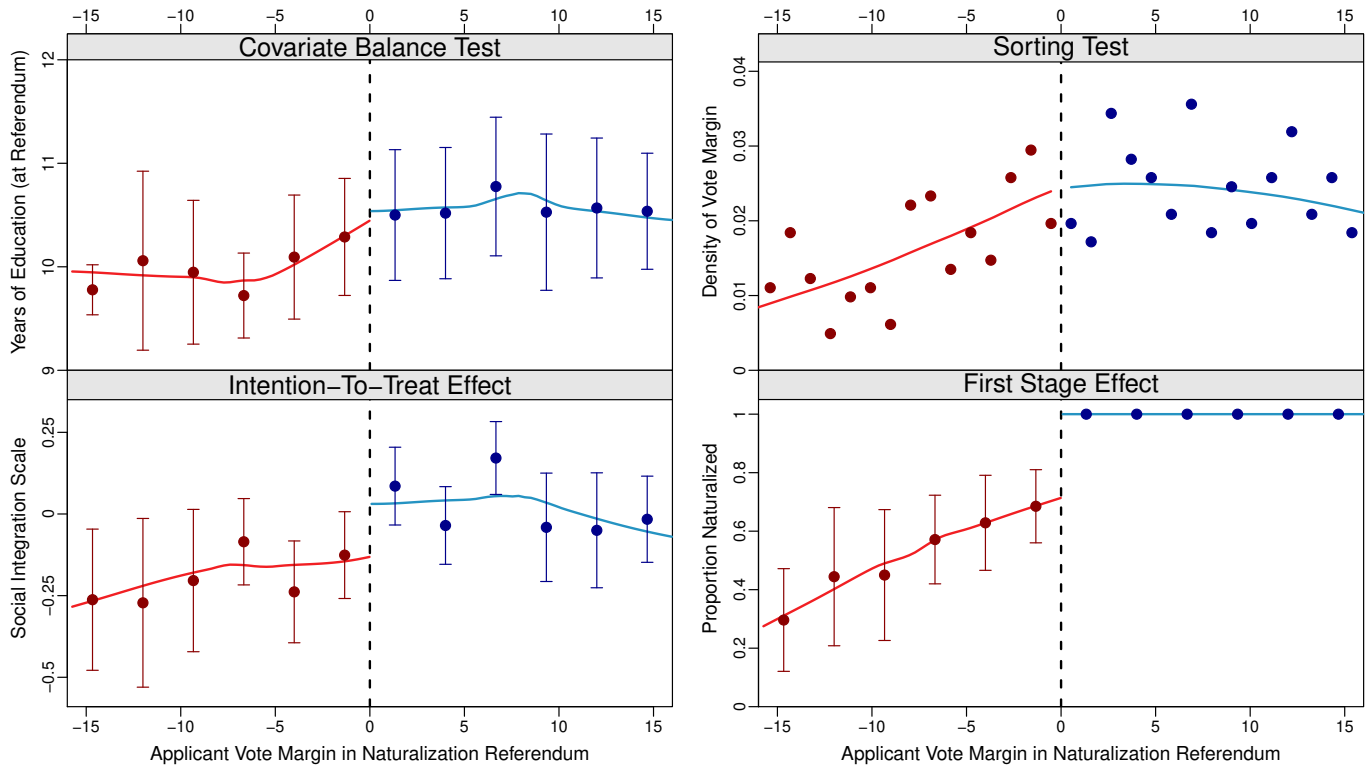
We also apply a second, complimentary, empirical strategy based on a fuzzy regression discontinuity (RD) design which similarly removes the second stage selection into who is approved for naturalization. The fuzzy RD design exploits the exogenous variation that is generated among the subset of applicants who barely won or lost their first naturalization referendum by just a few votes. In narrowly decided referendums, the outcome of the referendum is largely decided by random factors, such as the weather on election day or other agenda items that appeared on the ballot, rather than the characteristics of the applicants. In other words, who wins and who loses is as good as randomly assigned and we can therefore isolate the causal effect of citizenship on the downstream integration outcomes just like in a randomized experiment. The required identification assumption in the RD design is that the potential integration outcomes of the immigrants are continuous at the threshold (Hahn, Todd and Van der Klaauw 2001). This assumption could fail only if immigrants could sort around the threshold such that barely rejected and barely accepted applicants would differ systematically. However, sorting around the threshold would require that individual immigrants have precise control over the aggregate referendum outcome which is highly implausible in large elections such as our secret ballot referendums.⁶

Figure 3 illustrates the logic of the fuzzy RD design. The top left panel shows a balance test where we plot the applicants' years of education—as reported on the voting leaflet—against the vote share margin from the first naturalization referendum. The vote margin is computed as the difference between the applicants' share of 'yes' votes and the threshold of 50% of 'yes' votes that the applicant had to exceed to win the referendum and thereby receive Swiss citizenship. The plot is focused on the

⁶Eggers et al. (2015) show that the no sorting assumption holds in a wide variety of elections.

sample of ‘competitive’ applicants who got enough votes to come within a $\pm 15\%$ window around the threshold of winning. The red and blue line summarize the average years of education on both sides of the threshold, respectively. We see that in close referendums, which are decided by just a few votes, who wins and who loses is as good as random and therefore the education level of close winners and close losers are similar on average at the threshold. Given this local random assignment, we expect close winners and close losers to be similar on all other observed and unobserved confounders, just like in an randomized experiment and this covariate balance allows us to remove the selection bias and isolate the effect of naturalization. Figure B.2 in the SI shows that close winners and close losers are similarly balanced on other background characteristics; the distribution of p-values from the balance tests closely approximates the uniform distribution as expected given randomization at the threshold.

Figure 3: Fuzzy Regression Discontinuity Design: Identification Checks and the Effect of Naturalization on Long-Term Social Integration



Upper left panel shows that the applicants’ (pre-treatment) years of education are well balanced at the vote threshold for winning the naturalization referendum. Lower right panel shows that there is no discontinuity in the density of the vote margin variable indicating that applicants are not sorting around the threshold of winning. Lower left and right panels show that barely winning versus barely losing the referendum increased levels of long-term social integration and the probability of naturalization, respectively. (Loess lines; 95% confidence intervals for binned averages).

The top right panel shows another important identification check for the fuzzy RD design where we follow McCrary (2008) and explicitly test for the no sorting assumption by computing the density of the vote margin variable. If applicants had precise control to manipulate their voting results we would expect them to sort around the threshold and therefore an unusually large (small) number of applicants end up just above (just below) the threshold. In other words, we would expect a jump in the density of the vote margin variable as we cross the threshold. Instead, we see that the density is smooth across the threshold which implies that there is no evidence for sorting of applicants around the threshold. This is what we expect given that it is implausible for applicants to precisely control the outcome of referendums that involve thousands of voters.

The plot in the bottom left panel previews the main result for the ITT effect. We plot the applicants' score on the social integration scale, the summary measure of social integration measured in our recently administered follow-up survey, against the vote share margin (see below for details). We see that levels of social integration jump considerably at the threshold such that applicants who barely won their first referendum and received Swiss citizenship are today much better integrated on average compared to otherwise similar applicants who barely lost their first referendum. Given the local random assignment at the threshold we can attribute this effect to winning the referendum as opposed to differences on omitted variables.

Note that this ITT effect, which amounts to about a .14 increase on the social integration scale, underestimates the actual effect of naturalization for compliers because many applicants who lost their first referendum eventually naturalized by way of re-applications and therefore also received the treatment. To correct for this non-compliance and identify the LATE of naturalization for compliers at the threshold we need to divide the intention-to-treat effect by the compliance ratio at the threshold (Hahn, Todd and Van der Klaauw 2001).

The bottom right panel visualizes the first stage effect by plotting the proportion of naturalized applicants against the vote margin. The probability of naturalization increases sharply by about .28 at the threshold and therefore the LATE of naturalization for compliers amounts to about $.14/.28=.5$. Note that the social integration index has a standard deviation of .5 so the LATE estimate implies that naturalization strongly improved the long-term social integration of immigrants by about a full standard deviation unit. In the results section below we formally estimate the fuzzy RDD effect at the threshold by fitting a similar two-stage least model which regresses the integration outcome on

the treatment indicator and instruments the treatment with the instrument that captures whether applicants won or lost their first referendum. To this regression we also add the vote margin and the interaction of the vote margin with the instrument dummy such that the LATE of naturalization is identified for compliers only right at the threshold of winning.

Note that the two empirical strategies are complementary to each other in that they identify the same naturalization effect based on slightly different assumptions. However, there is an important difference in the external validity between the two designs since they identify this effect for different subgroups of applicants. The IV design offers higher external validity because it identifies the LATE of naturalization for the subgroup of compliers in general, while the fuzzy RD design is limited in its external validity as it only identifies the LATE of naturalization for the subgroup of compliers who are right at the threshold of winning. Because of this local identification we also lose precision in the fuzzy RD design and have less power to detect potential naturalization effects.

IV. DATA

A. *Sample and Covariates*

We draw on a variety of original data to implement our empirical strategies. The basis for our sample is the data compiled by Hainmueller and Hangartner (2013) who extracted from municipal archives the voting leaflets and outcomes for all 2,225 applicants who faced naturalized referendums between 1970 and 2003 in all the 46 ballot box municipalities who used secret ballot referendums with voting leaflets (see SI for details).

Our covariates capture the applicants characteristics reported on the leaflets. They include the applicant’s gender, age, number of kids, country of origin, marital status, highest educational attainment, occupational skill, years of residency prior to the application (including an indicator for immigrants born in Switzerland), language proficiency, and integration status. The SI describes the coding of all variables used in our analysis and provides the descriptive statistics (Tables B.2 and B.3).

To measure the social integration outcomes we administered a survey of all immigrants who faced naturalization referendums. We first extracted the addresses of these immigrants at the time of their naturalization referendum and then tracked down the applicants to the best of our abilities and administered a survey by phone. As expected, several of the addresses were outdated as immigrants had moved, died, or left the country. Nonetheless, we successfully identified and interviewed 768 applicants

which corresponds to a cumulative response rate 3 (RR3) as defined by the American Association for Public Opinion Research of 34.5%. For the sample of competitive applicants who came within a ± 15 vote margin of winning the response rate was even higher and we interviewed 474 applicants for an RR3 of 45.9%. This is a higher response rate than is typically achieved by phone surveys in Switzerland or the United States, let alone for surveys of immigrants (see SI for details).

One potential concern might be that the probability of being interviewed is correlated with naturalization. In the SI we provide evidence that this is not a concern in our study. In particular, we find that the probability of being interviewed as well as the characteristics of those being interviewed are no different for immigrants who were narrowly accepted and narrowly rejected for naturalization (see Figure B.1 and Table B.1).

B. Outcome Measures

Immigrant social integration is a latent and multifaceted concept that includes several components including social inclusion and a sense of belonging, intergroup contact, social capital, and social discrimination (Castles et al. 2002; OECD 2012; Huddleston, Niessen and Dag Tjaden 2013). Researchers have long recognized that measuring such concepts with single survey questions can result in potentially serious attenuation bias due to random measurement error that typically arises in survey research for a variety of reasons (see, for example, Achen (1975)). In order to address this well-known issue in our survey we designed a social integration scale that averages responses across four standard questions that tap into the various components of social integration. Many studies have shown that averaging across multiple items offers an effective remedy to reduce random measurement error—typically at a rate of approximately $1/L$ where L is the number of questions—and improve the reliability and validity for measuring latent concepts (see, for example, Ansolabehere, Rodden and Snyder (2008)).

The four survey questions that make up the social integration scale are as follows. The first item, *Plans to stay in Switzerland*, is a question that measures whether immigrants are planning to stay in Switzerland for good or whether they have plans to leave Switzerland. It is coded with values one, zero, and minus one, for immigrants who have plans to stay forever, those who are not sure, and those who say they plan to leave Switzerland, respectively (the SI provides all the question wordings). This item captures whether naturalization has changed the long term attachment and settlement plans of immigrants and thereby increased their incentive to invest into a future in Switzerland and reduced

the uncertainty associated with potential return migration (Dustmann 1996).

The second item, *Discrimination*, is a dummy variable that is coded as one for immigrants who report that they belong to a group that experiences discrimination in Switzerland, and zero if not. Whether immigrants report less perceived discrimination by natives is an element of social inclusion and belonging because discrimination is an important barrier to social integration and a potent source of marginalization and strained intergroup relations between immigrants and host country nationals.

The third item, *Club membership*, is a dummy variable that measures whether immigrants are currently an active member of a social club such as a youth organization, volunteer firefighters, carnival club, local charter of a charitable organization, or a church. These clubs form an essential part of the social life in Swiss communities, and are a standard measure of social integration in official statistics in Switzerland and many other European countries (Kristensen 2014). This item therefore directly taps into whether naturalization increased the social capital and community engagement of immigrants and thereby their exposure to and interaction with natives which is an important component of social integration (Portes and Rumbaut 2001).

The fourth item, *Swiss newspaper*, is a question that measures whether immigrants read newspapers from Switzerland or foreign newspapers from their home country. The answers are coded on a five point scale ranging from 5 for immigrants who read exclusively Swiss newspapers to 1 for immigrants who exclusively read newspapers from their home country. This item measures whether naturalization has shifted the orientation of immigrants towards Switzerland and away from their homelands in the sense that immigrants feel the need to acquire information and knowledge about the host country environment as opposed to their country of origin (Dustmann 1996; Avitabile, Clots-Figueras and Masella 2013).

To construct the social integration scale from these four items we extract the first principal component from a polychoric principal component analysis (PCA) which has the advantage that it takes into account the binary and categorical distribution of the items (see SI for details). To aid the interpretability we rescale the first principal component, which explains about 45% of the total variance, to have a mean zero and standard deviation of .5. Note that the results of all models are virtually identical if we use a simple equal weighted average of the four items instead.

It is important to emphasize that in contrast to other studies of naturalization our outcomes capture the long-term effects of naturalization. Given that the use of naturalization referendums ended in 2003,

at the time of our survey, the average naturalized immigrant has possessed Swiss citizenship for about 15 years. Our design therefore enables us to examine whether naturalization had any lasting effects in promoting the long term social integration of immigrants, rather than resulting in only temporary short term changes.

V. RESULTS

For the effect estimations we focus on the sample of competitive applicants who obtained enough ‘yes’ votes to come within a $\pm 15\%$ window around the threshold of winning. Figures B.3 and B.4 in the SI show that the estimated naturalization effects are fairly insensitive to varying the width of the estimation window.

A. *First Stage*

To check if the instrument is strong enough to create sufficient variation in naturalizations we run the first stage regression on the estimation sample and regress the naturalization indicator on the instrument that measures whether applicants narrowly won or lost their first referendum. To mimic the IV design and the fuzzy RD design we either add the full set of reported applicant characteristics and municipality and time period fixed effects or the margin of victory and its interaction with the instrument, respectively. We find that winning the first referendum did indeed strongly increase the probability of naturalization between .28-.42 depending on the model and this first stage effect is highly significant at conventional levels (Table B.4 in the SI). In fact, the Stock and Yogo (2005) F-test against the null that the instrument had no effect on the treatment is about 94 for the IV model and 21 for the fuzzy RD model and therefore much higher than the critical threshold of 10 that we need to exceed in order to avoid the problems associated with a weak instrument. For robustness we also estimate the fuzzy RD design adding all applicant characteristics and the results are virtually identical to the fuzzy RD results without adding the extra covariates as expected, given the local random assignment at the threshold.

B. *Main Effects of Naturalization*

Figure 4 shows the effect estimates with cluster robust 90% and 95% confidence intervals for both identification strategies. The red estimates marked with filled circles refer to the IV model which

control for all the applicant characteristics reported on the leaflets (including gender, age, number of kids, country of origin, marital status, highest educational attainment, occupational skill, years of residency prior to the application, language proficiency, and integration status) as well as a full set of municipality and time period fixed effects to focus the identification on applicants who are matched on all characteristics and applied in the same municipality and time period (Tables B.5 in the SI reports the regression tables). The blue estimates marked with filled triangles refer to the fuzzy RD model where we control for the vote margin and its interaction with the treatment to identify the effect at the threshold only (Table B.6 in the SI reports the regression table).

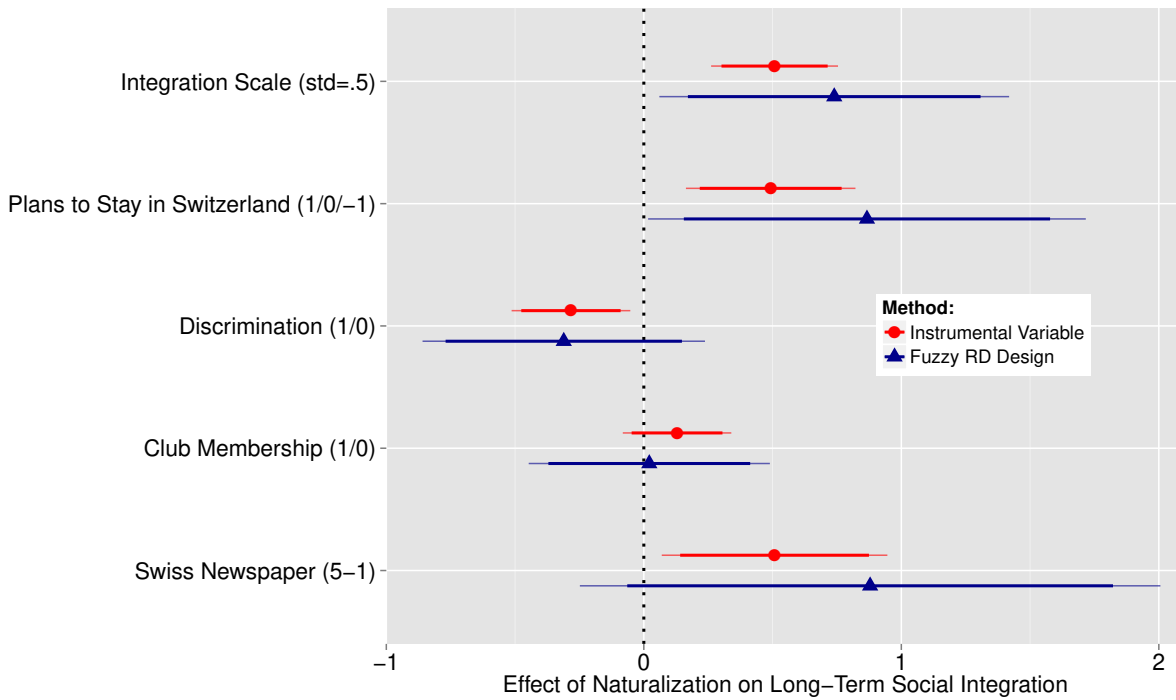
Our main finding is that naturalization strongly improved the long-term social integration of immigrants. Looking at the social integration index that combines all the integration outcomes in a single measure, we find that among otherwise identical immigrants, naturalization increases the social integration scale by about .51 according to the IV model. This effect is highly statistically significant ($p < 0.0001$) and large in substantive terms: given that the social integration scale has a mean zero and standard deviation of .5 this means that naturalization boosted long-term social integration by about a full standard deviation unit. The effect is also similar when we look at the fuzzy RD strategy that focuses only on compliers at the threshold. If anything the naturalization effect is slightly bigger at .74, although, as expected given the local identification only at the threshold, the estimate is also less precise ($p < 0.033$).

Apart from the main naturalization effect on the social integration scale, we also see that the effects are fairly consistent across the single items that make up the scale despite the fact that the single items are presumably considerably downward biased due to attenuation bias. Looking at the IV estimates we find that naturalization makes applicants much more likely to have plans to stay in Switzerland forever, a .49 increase on the three point scale ($p < 0.003$). This change in settlement plans amounts to about an 80 percent increase over the sample average of this variable. Similarly, we find that naturalization causes a 28 percentage point decrease ($p < 0.016$) in the likelihood that applicants report being the victims of discrimination which corresponds to a 140 percent decrease over the sample average. We also find that naturalization strongly shifts newspaper readership towards Swiss newspapers, as compared to home country newspapers, with an increase of about .51 on the five point scale ($p < 0.023$). This corresponds to a about a 13 percent increase over the sample average. We also see that naturalization increases the probability that applicants are members of a social club by

about 12 percentage points but the estimates are not significant at conventional levels and not robust across specifications ($p < .23$). Overall the fuzzy RD results for the single items are very similar to the IV estimates although less precise as expected.

As a robustness check we also replicated the fuzzy RD strategy while adding the full set covariates and the full set of municipality and period fixed effects to control for any common shocks and unobserved factors that vary at the level of the municipalities (Table B.7 in the SI). The estimates are very similar to the fuzzy RD design without the covariates with naturalization improving long term social integration by about .63 ($p < 0.045$) on the social integration scale. This check strongly corroborates the identification strategy and suggests that the covariates are controlled for by design—just like in a randomized experiment—given that the local random assignment of citizenship in close referendums resulted in two groups of applicants, those who barely won and those who barely lost, that are otherwise similar on all observed covariates.

Figure 4: Estimates of Effect of Naturalization on Long-Term Social Integration



Note: Effect estimates with robust 95% (thin) and 90% (bold) confidence intervals based on the instrumental variable design and the fuzzy RD design. Standard errors are clustered by the municipality. See text for details.

In stark contrast to the view that naturalization itself does little to foster integration, these results overall suggest that naturalization in fact has a substantial and lasting causal impact on improving the long-term social integration of immigrants. The estimates are similar in both identification strategies. Two immigrants who are just separated by a few 'yes' votes in their naturalization referendum, but otherwise identical in terms of their pre-referendum characteristics (including motivation, resources, origin, residency, language skills, integration status, age, gender, marital status, education, occupation, etc.) develop remarkably different integration outcomes such that more than a decade and a half later, those who barely won and received Swiss citizenship are much better integrated into the social fabric of the Swiss society than those who barely lost and therefore did not get Swiss citizenship. This boost in integration outcomes is especially striking given that the applicants had spent a long time in Switzerland already prior to their application.

C. Alienation versus Integration

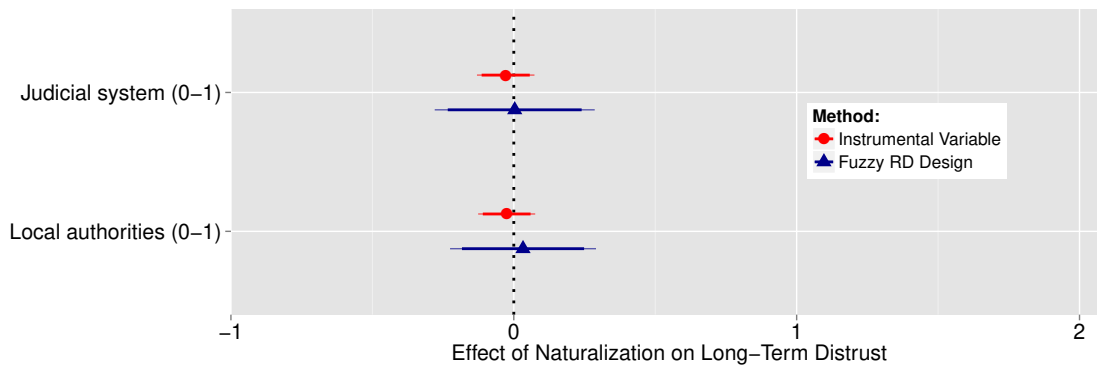
What mechanisms might drive this positive effect of naturalization on integration? Several of the mechanisms outlined in the theoretical discussion are likely at play and distinguishing between all the specific mechanisms is nearly impossible empirically unless we can obtain (quasi)-randomized variation for each of the mechanisms. That said, it is worth trying to distinguish between two broad classes of mechanisms that would lead us to interpret the effects differently. The first class of mechanisms is based on the idea that naturalization gives immigrants the incentives and resources to invest into a future in Switzerland and this translates into increased social integration in the long run. The second class of mechanisms holds that the effects of naturalization are driven by those immigrants whose naturalization applications are denied. In other words, it might be that applicants who are denied became more alienated from Swiss society than they would have become had they never applied for naturalization in the first place. Distinguishing between these two mechanisms is not trivial given that both mechanisms are two sides of the same coin, i.e. they are possible effects of the same causal treatment which is the ultimate naturalization decision. Conditional on applying, naturalization decisions always involve either an acceptance or a denial of the application.

From a theoretical standpoint one might argue that it is implausible to expect that an alienation effect, even if it exists for some applicants, would be powerful enough to explain both the large magnitude and long-term nature of the naturalization effects that we find. In stark contrast to the

accepted applicants who do experience a fundamental change in the sense that they acquire a new nationality and all the rights associated with it, being denied does not change anything about the applicants' legal status compared to a situation where they never had applied in the first place. And even though denied applicants presumably are initially annoyed at the decision, it seems unlikely that this would impact their long-term social integration more than a decade and a half later which is what our integration measure is capturing.

From an empirical standpoint, one way we can distinguish which of the two broad mechanisms can best account for our findings is to consider alternative outcomes which are especially sensitive to one specific mechanism. In particular, if applicants become alienated because their applications have been denied, then we could expect that they would develop a much higher level of distrust of the local authorities who processed the applications and did nothing to prevent potentially discriminatory rejections. We also expect that they would develop a higher level of distrust of the judicial system more broadly because the courts did nothing to overturn a discriminatory rejection upon appeal. In order to test for this alienation mechanism we replicated the models using measures of distrust of the local authorities and distrust of the judicial system accordingly (see the SI for the question wording).

Figure 5: Estimates of Effect of Naturalization on Long-Term Distrust



Note: Effect estimates with robust 95% (thin) and 90% (bold) confidence intervals based on the instrumental variable design and the fuzzy RD design. See text for details.

The results, shown in Figure 5, suggest that naturalization had no effect whatsoever on raising levels of distrust for both measures. The point estimates are very close to zero and precisely estimated. The fact that accepted and denied applicants show identical levels of distrust long after the application decision suggests that the naturalization effects are mainly driven by accepted immigrants becoming

more socially integrated, rather than an alienation effect among the denied applicants.

D. Naturalization Effects by Immigrant Group

As explained above, one important question for policy design and theory is how the effects of naturalization on integration might differ across different types of immigrants, in particular groups of immigrants who are more or less marginalized to begin with. To investigate this question we now replicate the analysis and estimate the naturalization effects while splitting the sample in two ways.

First, we consider how the naturalization effects vary by the immigrants' origin, distinguishing between applicants from Turkey and the former Yugoslavia with those from other origins. The other origins mostly include applicants from western, northern, and southern European countries like Germany, Austria, and Italy. These two groups differ strongly on their levels of marginalization. As many policy reports and studies have consistently documented, immigrants from Turkey and the former Yugoslavia face the most severe discrimination and native backlash in Switzerland (Hainmueller and Hangartner 2013).

Second, we consider how the naturalization effects vary for immigrants who are born in Switzerland and those who are born abroad. Recall that immigrants who are born in Switzerland to foreign parents do not automatically obtain Swiss citizenship at birth, but have to apply through the regular naturalization procedure. However, since these immigrants are born and raised in Switzerland they are typically much better integrated and less marginalized on average compared to immigrants who are born abroad and arrive in Switzerland later in life (Hainmueller and Hangartner 2013).

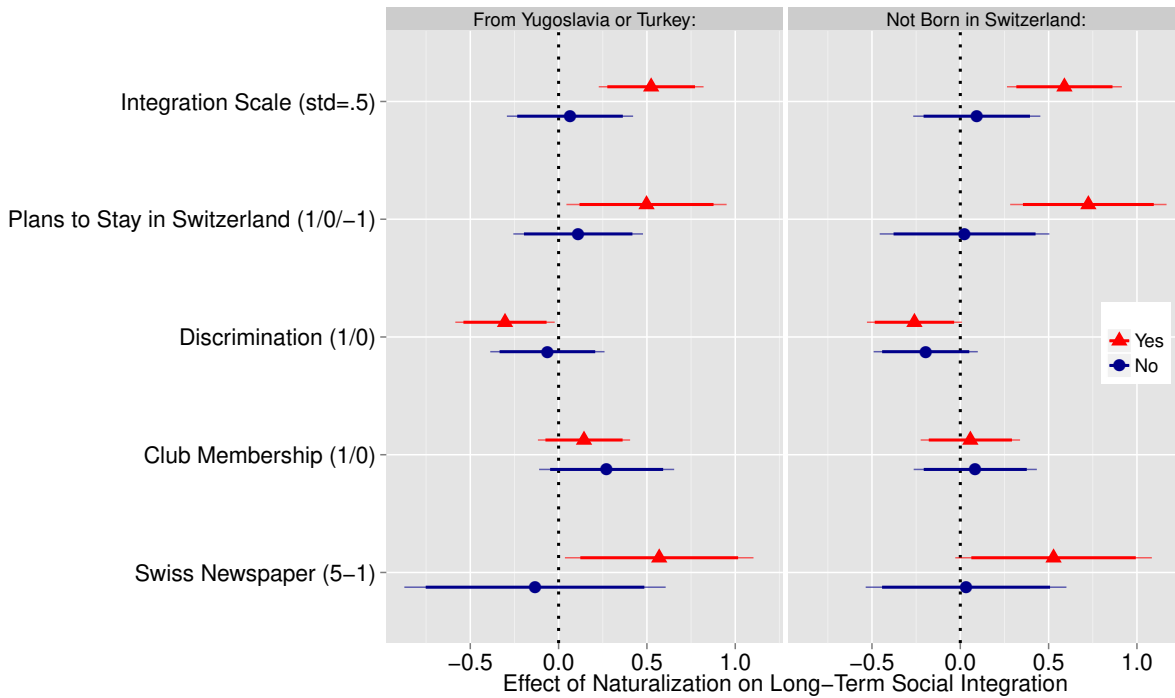
The results for these subgroup analyses are shown in Figures 6.⁷ Strikingly, we find that the positive effects of naturalization on long-term social integration are much larger for the more marginalized groups. Looking at the origin subgroups, we find that the naturalization effects are much larger for immigrants from Turkey and the former Yugoslavia as compared to those from the other origins. For example, naturalization increases the social integration scale by about .52 ($p < .001$) for immigrants from Turkey and the former Yugoslavia, while the effect is .06 ($p < .723$) for immigrants from the other origins; the difference between the two effects is statistically significant ($p < .053$).

Looking at the effects by whether immigrants are born in Switzerland or not we see a similar picture

⁷Note that there is almost no correlation between the two subgroups. For example, the fraction of applicants who are born in Switzerland is 18 percent among applicants from Turkey and the former Yugoslavia and 21 percent among those not from Turkey and the former Yugoslavia.

in the sense that the naturalization effects are much bigger for the group of immigrants who are born abroad. For example, naturalization increases the social integration scale by about .59 ($p < .001$) for immigrants who are born abroad while the effect is .09 ($p < .611$) for immigrants born in Switzerland and the difference between the effects is again statistically significant ($p < .045$).

Figure 6: Effects of Naturalization on Long Term Social Integration by Origin Group and Place of Birth



Note: Effect estimates with robust 95% (thin) and 90% (bold) confidence intervals based on the instrumental variable design.

Taken together, these results suggest that the long-term social integration returns to naturalization are much bigger for the more marginalized origin group of immigrants from Turkey and former Yugoslavia as well as those born abroad, who might otherwise lack the necessary resources to engage in social integration and face the most severe discrimination by natives. The fact that the positive effects of naturalization are concentrated among the most marginalized groups starkly contrasts with the view that naturalization should be restricted to only the most well integrated immigrants since only they are well equipped to take advantage of citizenship. Quite to the contrary, we find that for these groups the effects of naturalization on integration are, if anything, much more modest.

E. Early versus Late Naturalization

As explained above, another important question apart from the effect heterogeneity is whether naturalization is more or less effective when immigrants naturalize earlier or later into their residency period. Testing for an effect of early versus late naturalization is difficult empirically because the timing of the naturalization is typically endogenous. The ideal experiment would be to consider a group of immigrants and to randomly assign the time at which they receive Swiss citizenship such that the group of immigrants who get it earlier are identical to the group of immigrants who get it later in terms of all confounding characteristics. This would allow one to isolate the effect of having Swiss citizenship for a longer period on the subsequent integration.

Fortunately, in our setting we can conduct an empirical strategy that closely approximates this ideal experiment. We focus on the group of naturalized applicants and exploit the fact that the outcome of the first referendum provides an exogenous shock to the timing of the naturalization. Among applicants who are otherwise similar in their characteristics—including the year they arrived in Switzerland, the year in which they faced their first naturalization referendum, and the total number of years in Switzerland—those who get lucky and win their first referendum immediately become Swiss while those who get unlucky and lose their first referendum are denied and have to re-apply to subsequently get Swiss citizenship years later. We can exploit this exogenous variation by using an IV design where winning or losing the first referendum is used as an instrument for the number of years that applicants have possessed Swiss citizenship.⁸

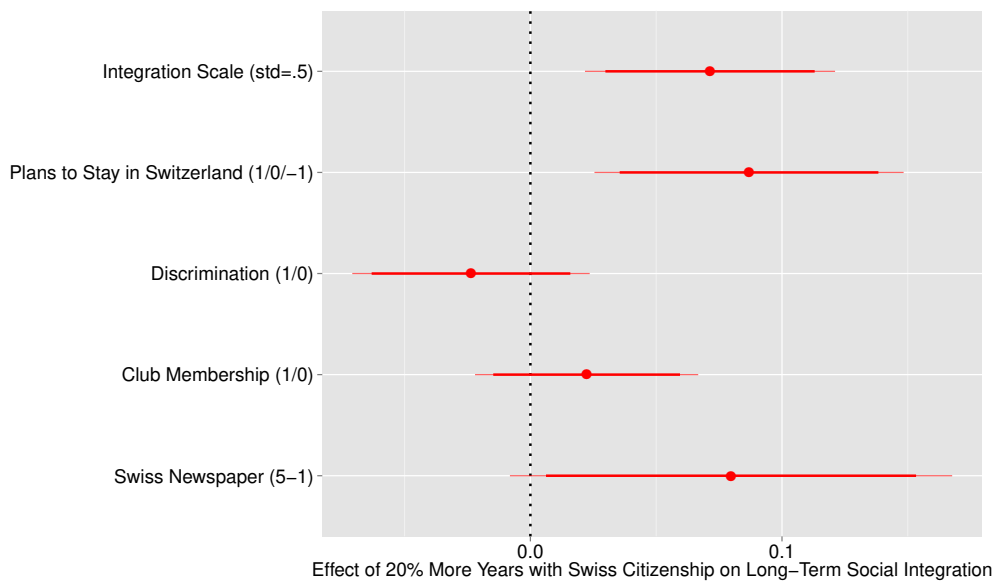
As a first step run the first-stage regression where the (logged) number of years with Swiss citizenship is regressed on the full set of covariates (applicant characteristics plus municipality and time period fixed effects) and our instrument that captures whether applicants won or lost their first referendum. We also add six categorical indicators to flexibly control for the total prior residency in Switzerland. We find that winning the first referendum strongly increases the number of years with Swiss citizenship by about 60 percent—roughly nine more years on average—and this effect is highly

⁸One potential concern with this identification strategy is that the group of immigrants that was naturalized in the first referendum consists of both always-takers and compliers, while the group of rejected applicants that was naturalized in a later attempt consists of only always-takers. We believe that this bias is negligible since we expect the potential integration outcome to be larger for always-takers than compliers. In the SI we derive and conduct a formal sensitivity analysis that shows that the outcome for compliers would have to be more than three times larger than for always-takers in order to render the early versus late naturalization effect on the social integration scale insignificant (and more than 8 times larger to change the sign of the relationship).

significant with a Stock and Yogo (2005) F-value of about 48 (see Table B.13 in the SI).

Next, we examine how this exogenous increase in the number of years with Swiss citizenship affects social integration. To do so we fit a two-stage least square model where we regress the integration outcome on the full set of covariates, the six categorical indicators to flexibly control for the total prior residency, and the (logged) number of years with Swiss citizenship and this endogenous variable is instrumented for by winning or losing the first referendum. From the perspective of those who advocate for early naturalizations we would expect a positive effect of naturalizing early versus late, while from the perspective of those who advocate for late naturalizations we expect a negative effect.

Figure 7: Effects of Early versus Late Naturalization on Long Term Social Integration



Note: Effect estimates with robust 95% (thin) and 90% (bold) confidence intervals based on a two-stage least squares regression.

Figure 7 shows the estimated effects of naturalizing early versus late as measured by a 20% increase in the years with Swiss citizenship. Strikingly, we find that the integration returns to having Swiss citizenship earlier, rather than later, are mostly positive. Comparing applicants who are otherwise identical in their characteristics—including the year of arrival, year of the first application, and the total number of years in Switzerland—a 20% increase in the number of years being Swiss increases the social integration index by about .08 ($p < .005$), so about a one sixth of a standard deviation unit. This is a substantively big effect given that a 20% increase is roughly equivalent to only three more years being Swiss.

In the SI we present a variety of additional checks that underscore the robustness of these findings. In particular we show that the results are not driven by an unwarranted linearity assumption for the (logged) number of years with Swiss citizenship (see Figure B.5 and Figure B.6). Taken together these results suggest that naturalization earlier, rather than later, is more effective in terms of increasing the long term social integration of immigrants and this effect is strong in the sense that even a few years earlier can make a real difference for long-term integration.

VI. CONCLUSION

In this study, we contribute to the ongoing debates about the theories and design of citizenship policies by providing new causal evidence about the effect of naturalization on the long-term social integration of immigrants in Switzerland. We exploit the quasi-random assignment to citizenship that occurs in naturalization referendums to isolate the effect of naturalization from the non-random selection into naturalization. We find that naturalization strongly improved the long-term social integration of immigrants. Comparing otherwise identical immigrants who only differ in that they barely won or lost naturalization referendums a decade and a half ago, we find that those who won and therefore received Swiss citizenship develop much higher levels of social integration such that today they are about one standard deviation higher on our summary measure of the social integration scale. These lasting effects are robust across two identification strategies and across a variety of robustness checks. Turning to the questions of effect heterogeneity we find that the integration returns to naturalization are much larger for more marginalized immigrant groups, such as immigrants from Turkey and the former Yugoslavia and those who are not born in Switzerland. In fact, the positive effects of naturalization on long-term social integration are almost entirely concentrated among these most marginalized groups. Last but not least, we exploit exogenous variation in the timing of the naturalization and find that the integration returns from naturalization are larger if immigrants naturalize earlier rather than later in their residency period.

These findings have important implications for theory and policy. First, the findings run counter to the paradigm that argues that naturalization is merely a reward for successfully completing the integration process. Instead, the findings support those who argue that naturalization acts as an important catalyst for integration by providing immigrants with the resources and incentives to invest in a future in the host country society. Second, contrary to those who argue for high hurdles for access

to naturalization, the findings demonstrate that the returns to naturalization are much larger for more marginalized groups and somewhat larger when naturalization occurs earlier, rather than later in the residency period. This suggests that lowering the stringent naturalization criteria might be beneficial to realize the full integration gains from naturalizations. Rather than restricting citizenship to those immigrants who have successfully integrated, our finding suggests that the social returns for the host country society are larger for giving access to citizenship for those marginalized immigrants who face higher barriers to integration. While it remains an open question what the optimal requirements for integration policy are, our results suggests that if the goal is to maximize integration, the current Swiss requirements appear to be too restrictive, especially the long residency period which acts to strongly reduce the number of years that naturalized immigrants can enjoy host country citizenship and reap the social integration benefits associated with it. Third, the fact that the effects of naturalization are rather heterogeneous suggests that more work is needed to better examine how the effects of naturalization vary across immigrant groups and across the host country context. While our results have high internal validity due to the quasi-random assignment to citizenship, the generalizability of our results beyond Switzerland is more difficult to assess.

One guide to assess the external validity is to examine how the Swiss citizenship regime compares to the regimes in other European and North American countries like we did in the section on the empirical setting above. There we found that the Swiss regime was just about at the sample median in terms of the Citizenship Policy Index, with many countries having similarly restrictive regime like Germany or Italy and some even more restrictive regimes like Austria or Denmark. Our results therefore might well generalize to these other important cases where the citizenship rules are similarly or even more restrictive.

At this point we can only speculate how the results might generalize to other countries with much more liberal citizenship regimes where the eligible population includes many immigrants who have been in the country much shorter. On the one hand, one might argue that our results from Switzerland could provide a lower bound for the effects of naturalization on integration. Since the requirements in Switzerland are higher, most immigrants who naturalize have already reached some threshold level of integration so that there should be less room for further improvements in integration. But despite such a possible ceiling effect, we still find sizable impacts of naturalization. This suggests that the effects might be more pronounced in more liberal countries where the pre-naturalization levels of

integration are lower on average and therefore there is more room for improvement. Moreover, the higher residency requirements mean that naturalized immigrants have fewer years as naturalized Swiss and as our results show, there are large integration returns to getting naturalized earlier rather than later into the residency period, at least in the Swiss context. This suggests that in more liberal regimes, where immigrants tend to naturalize earlier and they therefore have more time with the host country citizenship, the returns to integration could be even larger.

On the other hand, it could be that there exists a critical threshold in terms of restrictiveness of the citizenship regime below which the naturalization effects become very different. If that is the case, then the results might be quite different in the countries that have much more liberal regimes than Switzerland. In the end, we advise against over- or under-generalizing our results from Switzerland to other contexts. External validity is best examined by replicating the results from multiple internally valid studies in other countries and other time periods, and so we hope that our study will stimulate future research that examines the causal effects of citizenship on economic, political, and social outcomes.

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SUPPORTING INFORMATION APPENDICES (NOT FOR PUBLICATION)

APPENDIX A: DATA SOURCES

Table 1: Question wording and codebook for outcome variables

Variable	Question	Values
Integration index	First principal component of polychoric PCA of the four outcome variables	standardized with mean = 0 and standard deviation = .5
Plans to stay in Switzerland	Are you planning to stay in Switzerland for good or do you plan to leave Switzerland at some point?	1 plan to stay in Switzerland for good 0 don't know -1 plan to leave Switzerland
Discrimination	Would you describe yourself as being a member of a group that is discriminated against in Switzerland?	1 yes, 0 no
Club membership	Are you currently a member of a social club or association in which you attend meetings regularly?	1 yes, 0 no
Swiss newspaper	When you read newspapers, do you read	1 exclusively newspapers from your home country? 2 mainly newspapers from your home country? 3 both, Swiss newspapers as well as newspapers from your home country? 4 mainly Swiss newspapers? 5 exclusively Swiss newspapers?
Distrust judicial system	How much do you trust [the judicial system]?	11-point scale, rescaled to 0 – 1
Distrust local authorities	How much do you trust [local authorities]?	11-point scale, rescaled to 0 – 1

Figure A.1: Sample leaflet sent out to voters (names redacted)

Aufnahme von [REDACTED], 1965, italienischer Staatsangehöriger, wohnhaft in Steinen, in das Bürgerrecht der Gemeinde Steinen

A. BERICHT

Mit Eingabe vom 6.12.1984 stellt [REDACTED], 1965, italienischer Staatsangehöriger, das Gesuch um Aufnahme in das Bürgerrecht der Gemeinde Steinen.

Der Gesuchsteller wurde am 25.2.1965 in Schwyz als Sohn des [REDACTED] und der [REDACTED] geboren, die damals bereits in Steinen wohnten.

Seit der Geburt hält sich [REDACTED] bei seinen Eltern in Steinen, Sonnenbergli, auf, und verbrachte seine Jugendzeit in Steinen.

Er besuchte in Steinen die Primarschule und die Sekundarschule.

Nach dem Schulabschluss trat [REDACTED] bei der Berner Allgemeinen Versicherungsgesellschaft in Schwyz in die kaufmännische Lehre ein, welche er im Frühjahr 1984 mit der Abschlussprüfung erfolgreich abgeschlossen hat.

Nach der Abschlussprüfung setzte der Gesuchsteller seine Tätigkeit bei der Direktion der Berner Versicherung in Bern fort, wo er gegenwärtig als Unfallschaden-Sachbearbeiter tätig ist.

Er ist in Bern als Wochenaufenthalter gemeldet, wobei der gesetzliche Wohnsitz nach wie vor bei seinen Eltern in Steinen ist.

Nach Abschluss seiner beruflichen Weiterbildung und Absolvierung der Rekrutenschule beabsichtigt [REDACTED] seine Tätigkeit in unserer Umgebung fortzusetzen, und weiterhin in Steinen zu wohnen.

Translation for leaflet shown in Figure A.1:

Application of APPLICANT, 1965, Italian citizen, domiciled in Steinen, for naturalization in the municipality of Steinen.

A. Report

On December 6, 1984, APPLICANT, 1965, Italian citizen, applied for naturalization in the municipality of Steinen.

The applicant was born on February 25, 1965 in Schwyz as the son of APPLICANT's FATHER and APPLICANT's MOTHER who at the time already lived in Steinen. Since his birth APPLICANT has been living with his parents in Steinen, Sonnenbergli, and also

lived there during his youth. He attended the primary school and secondary school in Steinen.

After completing school, APPLICANT took up an apprenticeship in business administration with the Bern Insurance Company in Schwyz. He successfully graduated from the apprenticeship in early 1984.

Following the completion of his degree he continued to work for Bern Insurance in Bern where he is currently employed as an accident insurance agent.

Even though he is registered as working in Bern during the week, his permanent legal residence is still in Steinen with his parents. Following the completion of his on the job training and the completion of his vocational training school he plans to continue his work in our area and to continue to live in Steinen.

APPENDIX B: ADDITIONAL RESULTS

In this appendix we present additional results that are referenced in the main paper.

A. Citizenship Policy Index

The Citizenship Policy Index (CPI) is a standard measure developed by Howard (2005) that uses a simple additive formula to measure a country's citizenship policy between very liberal (6) and highly restrictive (0). It is based on the three main components of citizenship policy: whether citizenship is granted by place of birth or by the citizenship of the parents, the length of the residency requirement for naturalization, and the acceptance of dual citizenship for immigrants. To generate the index, each country is allocated points if citizenship by birth is allowed (2 points) or not allowed (0 points), if residency requirements for naturalization are five years or less (2 points), between six and nine years (1 point) or ten years or higher (0 points), and if dual citizenship is accepted (2 points) or not accepted (0 points). We use the CPI for the year of 2005⁹ to code selected European countries, as well as Australia, Canada, and the United States, to place Switzerland in a comparative perspective.

Figure 2 reveals that there are roughly four groups of countries. The most restrictive countries have a CPI of zero and include countries like Spain, Austria, or Slovenia. These countries use the *jus sanguinis* principle which implies that citizenship is passed on from the citizenship of the parents. They also require at least 10 years of residency before immigrants become eligible for naturalization and they do not allow for dual citizenship which means that immigrants who naturalize have to renounce their home country citizenship. The second group of less restrictive countries cluster around a CPI value of two and include Switzerland, Germany, Italy, Poland, and or Greece. These countries all use the *jus sanguinis* principle, but they are more liberal insofar as they either have shorter residency periods (between 5 and 8 years) but prohibit dual citizenship, like Germany and Poland, or they have a long residency period (10 or more years) but allow for dual citizenship, like Switzerland and Italy. The third group of countries, including Sweden and Finland, is more liberal with a CPI value of around four. They still maintain the *jus sanguinis* principle but have shorter residency requirements (typically 5 years) and allow dual citizenship. Finally, the very liberal countries have a CPI value of six and include the United States, the United Kingdom, or Australia. They feature citizenship by place of birth, shorter residency requirements, and allow for dual citizenship.

B. Sample

We draw on a variety of original data to implement our empirical strategies. The basis for our sample is the data compiled by Hainmueller and Hangartner (2013) who extracted from municipal archives the voting leaflets and outcomes for all 2,225 applicants who faced naturalized referendums between 1970 and 2003 in all the 46 ballot box municipalities who used secret ballot referendums with voting leaflets. The municipalities are located in seven different cantons in the German-speaking region. As shown in Hainmueller and Hangartner (2013) the municipalities are fairly typical of municipalities in the German speaking region of Switzerland. The time period covered varies somewhat due to differences in data availability, but for most municipalities, the data contains all naturalization referendums from 2003 going back to the 1970s and 1980s.

⁹The only difference to Howard's (2005) coding is that we allocate Germany 1 point for its partial allowance of birthright citizenship.

The interviews were conducted between October 3, 2011 and September 19, 2014. The survey was conducted by native speakers in multiple languages including all of Swiss official languages and all the major immigrant languages including Turkish, Serbo-Croatian, Italian, Portuguese, and English. All interviewers completed a standardized training that included mock interviews and recruitments to assure a high quality of the data.

We obtained a cumulative response rate 3 (RR3) as defined by the American Association for Public Opinion Research of 34.5% (45.9% for the sample of competitive applicants who came within a ± 15 vote margin of winning).

C. Attrition

Figure B.1 displays the non-response rate across the vote share margin. The dots display binned averages with 95% confidence intervals. The red and blue fitted lines from a Loess smoother summarize the average non-response rate for a given vote share margin on the left and the right side of the threshold, respectively. For all competitive applicants, the response rate is highly constant and between about 40% and 55% for most bins. Importantly, there is no noticeable difference between applicants who barely lost and barely won their first referendum. Note that this response rate is much higher than for comparable surveys. A recent phone survey conducted among voters in Switzerland yielded a response rate (RR3) of 12.8% (Bechtel et al. 2015). A typical study conducted via Knowledge Networks, widely regarded as one of the best probability based online panels in the United States, yields an RR3 of 2.8% (Hainmueller and Hopkins 2015). In our case the primary reason for non-response was that we could not get a valid address. Of the cases where we could get a valid address and therefore were able to contact the applicant, 88% participated in the survey

Figure B.1: Response Rate across the Vote Margin (95% Confidence Intervals)

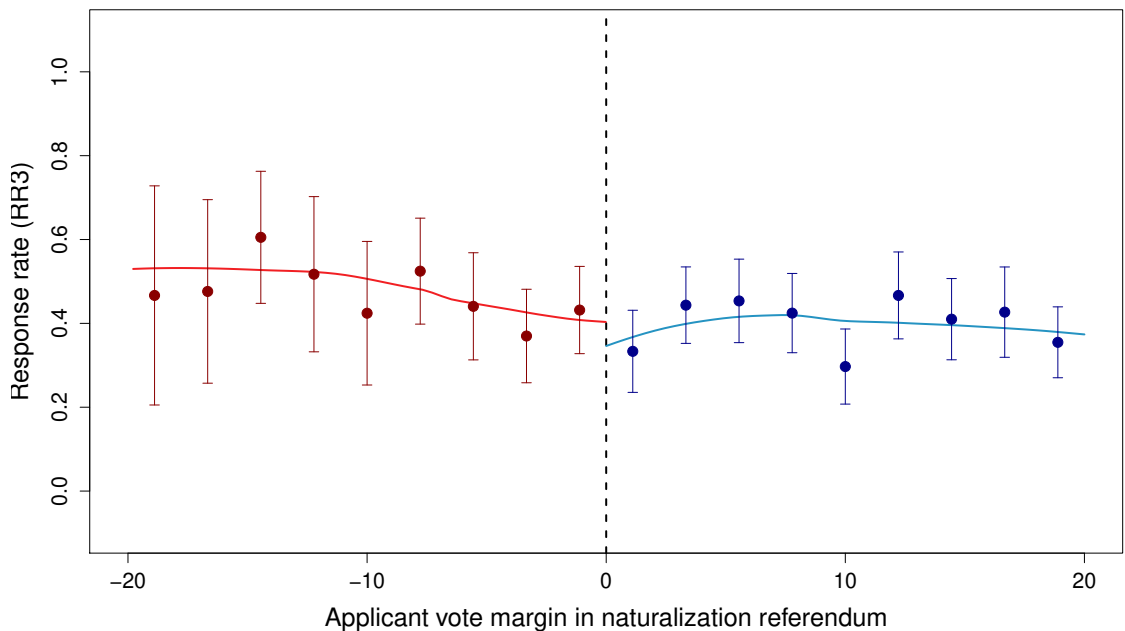


Table B.1 provides further evidence that applicants who were successfully interviewed are not different from those that we could not contact, have died, emigrated, or declined to be interviewed. In particular, we examine whether the interaction of baseline covariates and the instrument (more than 50% vote share in first referendum) predicts attrition. We do not find that scoring above 50% in the first referendum led to a sample selection bias in terms of the characteristics of individuals who completed the interview.

Table B.1: Instrument Interaction Test for Selective Attrition

Model	(1)	(2)	(3)	(4)
Outcome	Interviewed	Interviewed	Interviewed	Interviewed
Above 50%	0.02 (0.04)	-0.55 (0.35)	0.03 (0.06)	-0.57 (0.36)
Margin			-0.00 (0.01)	-0.00 (0.01)
Margin \times Above 50%			0.01 (0.01)	0.01 (0.01)
Controls				
Applicant Characteristics				
Country of Origin	✓	✓	✓	✓
Sociodemographics	✓	✓	✓	✓
Interactions with Above 50 %				
Country of Origin		✓		✓
Sociodemographics		✓		✓
Fixed Effects				
Time period	✓	✓	✓	✓
Municipality	✓	✓	✓	✓
Parameters tested	1	35	1	35
<i>F</i> -test	0.20	1.33	0.18	1.31
<i>p</i> -value	0.65	0.10	0.67	0.11
Observations	1025	1025	1025	1025

Note: Ordinary least squares regression of an indicator for interviewed applicants on a binary instrument (=1 if vote share margin above 50%). Model (1) tests for a significant effect of the instrument and controls for country of origin, sociodemographics and fixed effects for each time period and municipality. Model (2) similarly tests for a significant effect of the instrument and adds all 34 interactions of the instrument with the applicant characteristics. Model (3) uses the same specification as model (1) but additionally controls for the vote share margin and the interaction of the margin with the instrument. Model (4) uses the same specification as model (2) but additionally controls for the vote share margin and the interaction of the margin with the instrument. Sample: all applicants within a window $\pm 15\%$. Robust standard errors in parentheses.

D. Social Integration Scale

To construct the social integration scale from the four items we use a polychoric principal component analysis (PCA). Polychoric PCA has the advantage that it takes into account the binary and categorical distribution of the items by using linear combinations of the polychoric correlation matrix of the items, rather than the items themselves, to extract the principal components (Olsson 1979). To create the social integration scale we extract the first principal component which explains 45% of the total variance (Eigenvalue = 1.80). The explanatory power drops sharply and flattens for the higher components: it is 22 % (Eigenvalue = 0.89) for the second, 20% (Eigenvalue = 0.79) for the third, and 13% of the total variance (Eigenvalue = 0.52) for the fourth component. For interpretability of the effect magnitude we rescale the first principal component to have a mean zero and standard deviation of .5.

E. Descriptive Statistics

Tables B.2 and B.3 display the descriptive statistics for key covariates and outcome items for the sample of all applicants and the main estimation sample of competitive applicants who obtained enough ‘yes’ votes to come within a $\pm 15\%$ window around the threshold of winning. Most of the applicants in the competitive sample are immigrants from the former Yugoslavia and Turkey who are often considered to be among the most marginalized immigrant groups in Switzerland. On average, applicants have been living in Switzerland for about 19 years at the time of their naturalization referendum, but there is a wide variation ranging from 12 to 44 years. The average age at the time of the survey is about 35 years, with a range of 17 to 72 years.

Looking at the social integration items we see that the majority of immigrants have plans to stay in Switzerland for good, but there is also a sizable fraction of immigrants who have plans to leave or are unsure about their long term settlement plans. About 20% of immigrants report being discriminated against in Switzerland and on average only 21% report being a member of a social club. For the newspaper readership the average is about four on the five point scale, so slightly skewed towards immigrants reading mostly Swiss as opposed to foreign newspapers from their home country.

Table B.2: Descriptive Statistics for all Interviewed Applicants

Variable	Observations	Mean	SD	Min	Max
Male	768	0.71	0.45	0.00	1.00
Age	765	51.36	14.95	23.00	89.00
Residency years at time of referendum	654	20.16	6.72	12.00	47.00
Residency years at time of survey	767	36.83	10.50	17.00	82.00
Northern & Western Europe	768	0.17	0.37	0.00	1.00
Southern European Countries	768	0.15	0.35	0.00	1.00
Central & Eastern Europe	768	0.05	0.21	0.00	1.00
(former) Yugoslavia	768	0.37	0.48	0.00	1.00
Turkey	768	0.20	0.40	0.00	1.00
Other Non-European Countries	768	0.02	0.14	0.00	1.00
Asian Countries	768	0.05	0.23	0.00	1.00
Percent yes votes	768	58.69	14.70	12.16	95.74
Above 50%	768	0.71	0.45	0.00	1.00
Naturalized	768	0.86	0.34	0.00	1.00
Integration Scale	740	0.00	0.50	-1.60	0.76
Plans to stay in Switzerland	762	0.66	0.61	-1.00	1.00
Perceived discrimination	758	0.16	0.37	0.00	1.00
Club membership	768	0.24	0.43	0.00	1.00
Newspaper readership	754	4.05	0.88	1.00	5.00
Distrust for the local authorities	757	0.25	0.19	0.00	1.00
Distrust for the judicial system	748	0.25	0.21	0.00	1.00

Note: Male, age, residency years at time of referendum, and origin are measured at the time of the referendum from the voting leaflets and the percent yes votes and above 50 % from the municipal voting records. Residency years at time of survey, naturalized, integration scale, plans to stay in Switzerland, perceived discrimination, club membership, newspaper readership, and distrust are measured in our immigrant survey.

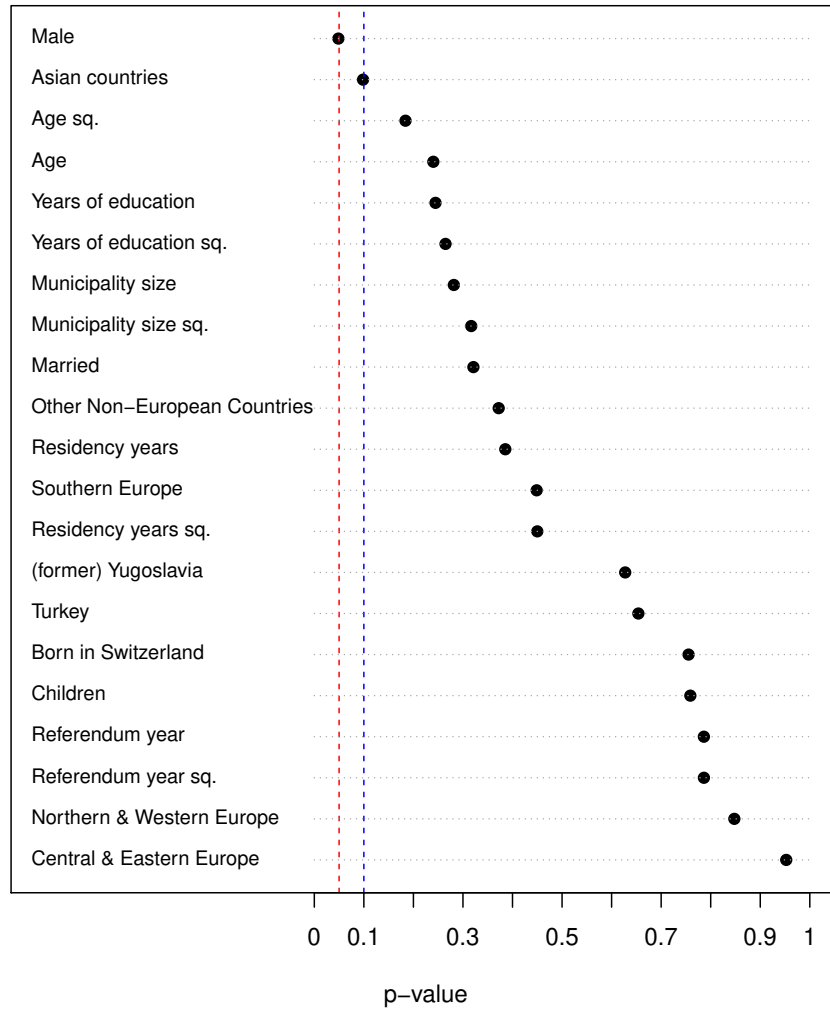
Table B.3: Descriptive Statistics for Competitive Applicants

Variable	Observations	Mean	SD	Min	Max
Male	474	0.72	0.45	0.00	1.00
Age	472	49.72	14.49	23.00	84.00
Residency years at time of referendum	428	19.20	5.70	12.00	44.00
Residency years at time of survey	474	34.91	9.05	17.00	72.00
Northern & Western Europe	474	0.11	0.32	0.00	1.00
Southern European Countries	474	0.06	0.23	0.00	1.00
Central & Eastern Europe	474	0.06	0.24	0.00	1.00
(former) Yugoslavia	474	0.42	0.49	0.00	1.00
Turkey	474	0.25	0.44	0.00	1.00
Other Non-European Countries	474	0.02	0.15	0.00	1.00
Asian Countries	474	0.07	0.25	0.00	1.00
Percent yes votes	474	52.02	8.02	35.13	64.94
Above 50%	474	0.60	0.49	0.00	1.00
Naturalized	474	0.83	0.38	0.00	1.00
Integration Scale	459	-0.05	0.51	-1.48	0.76
Plans to stay in Switzerland	470	0.62	0.64	-1.00	1.00
Perceived discrimination	469	0.20	0.40	0.00	1.00
Club membership	474	0.21	0.41	0.00	1.00
Newspaper readership	467	4.00	0.89	1.00	5.00
Distrust for the local authorities	468	0.24	0.19	0.00	1.00
Distrust for the judicial system	462	0.25	0.21	0.00	1.00

Note: Male, age, residency years at time of referendum, and origin are measured at the time of the referendum from the voting leaflets and the percent yes votes and above 50 % from the municipal voting records. Residency years at time of survey, naturalized, integration scale, plans to stay in Switzerland, perceived discrimination, club membership, newspaper readership, and distrust are measured in our immigrant survey.

F. Balance Tests for Fuzzy RD Design

Figure B.2: Balance Tests for Fuzzy RD Design



Every dot shows the p-value of a placebo fuzzy RD effect estimated for each pre-treatment covariate at the threshold of winning obtained from our benchmark local linear regression within a $\pm 15\%$ vote share margin. The red line indicates the 5% and the blue line the 10% level of significance, respectively.

G. First Stage Results

Table B.4 shows that the effect of winning or losing the first referendum on the probability of naturalization. We find that winning versus barely losing the first referendum increased the probability of naturalization by about .30-.43. The F-stat for the strength of the instrument is much higher than the standard threshold of 10 for weak instruments.

Table B.4: First Stage Regression Estimates

Model	(1)	(2)	(3)
Outcome	Naturalized	Naturalized	Naturalized
Above 50%	0.42 (0.04)	0.28 (0.06)	0.29 (0.06)
Country of Origin	✓		✓
Sociodemographics	✓		✓
Time period Fixed Effects	✓		✓
Municipality Fixed Effects	✓		✓
Margin		✓	✓
Margin		✓	✓
<i>F</i> -test	94.66	20.66	20.21
Observations	471	474	471

Note: Ordinary least squares regression of naturalization measure on the binary instrument (=1 if vote share margin above 50%). Model (1) shows the first stage results for the IV model where we adjust for country of origin, all sociodemographics (gender, age, children, marital status, education, occupation skill level, years since immigration, refugee status, language competencies, integration status), and fixed effects for each time period and municipality. Model (2) shows first stage results for the fuzzy RD model without covariates where we just include the vote share margin. Model (3) shows first stage results for the fuzzy RD model with covariates where we add country of origin, all sociodemographics, fixed effects for each time period and municipality, and the vote share margin. Sample: all applicants within a vote margin window of $\pm 15\%$. Robust standard errors in parentheses.

H. Main Results

Table B.5: 2SLS Estimates of the Effect of Naturalization on Long-Term Social Integration

Model	(1)	(2)	(3)	(4)	(5)
Outcomes	Integration Scale	Stay in Switzerland	Report Discrimination	Club Membership	Swiss Newspapers
Naturalized	0.51 (0.13)	0.49 (0.17)	-0.28 (0.12)	0.13 (0.11)	0.51 (0.22)
Country of Origin	✓	✓	✓	✓	✓
Sociodemographics	✓	✓	✓	✓	✓
Time period FE	✓	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓	✓
Observations	456	467	466	471	464

Note: Instrumental variables regression of outcomes (1) – (5) on naturalization status, instrumented by getting more (less) than 50 % of “yes” votes in first referendum, for all applicants within a $\pm 15\%$ window. All models control for country of origin, all sociodemographics (gender, age, children, marital status, education, occupation skill level, years since immigration, refugee status, language competencies, integration status), and fixed effects for each time period and municipality. Robust standard errors in parentheses.

Table B.6: Fuzzy RDD Estimates of the Effect of Naturalization on on Long-Term Social Integration (without Covariates)

Model	(1)	(2)	(3)	(4)	(5)
Outcomes	Integration Scale	Stay in Switzerland	Report Discrimination	Club Membership	Swiss Newspapers
Naturalized	0.74 (0.35)	0.87 (0.43)	-0.31 (0.28)	0.02 (0.24)	0.88 (0.58)
Margin	-0.01 (0.02)	-0.01 (0.02)	0.01 (0.01)	0.00 (0.01)	-0.02 (0.03)
Margin \times Above 50%	0.00 (0.02)	-0.02 (0.02)	-0.01 (0.01)	0.01 (0.01)	0.01 (0.03)
Observations	459	470	469	474	467

Note: Instrumental variables regression of outcomes (1) – (5) on naturalization status, instrumented by getting more (less) than 50 % of “yes” votes in first referendum, for all applicants within a $\pm 15\%$ window. All models control for the vote margin and the interaction of the vote margin with the instrument. Robust standard errors in parentheses.

Table B.7: Fuzzy RDD Estimates of the Effect of Naturalization on on Long-Term Social Integration (with Covariates)

Model	(1)	(2)	(3)	(4)	(5)
Outcomes	Integration Scale	Stay in Switzerland	Report Discrimination	Club Membership	Swiss Newspapers
Naturalized	0.63 (0.31)	0.63 (0.41)	-0.37 (0.27)	0.05 (0.22)	0.63 (0.52)
Margin	0.01 (0.02)	0.02 (0.02)	0.00 (0.01)	-0.00 (0.01)	0.01 (0.03)
Margin \times Above 50%	-0.02 (0.02)	-0.04 (0.02)	0.00 (0.01)	0.01 (0.01)	-0.02 (0.03)
Country of Origin	✓	✓	✓	✓	✓
Sociodemographics	✓	✓	✓	✓	✓
Time period FE	✓	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓	✓
Observations	456	467	466	471	464

Note: Instrumental variables regression of outcomes (1) – (5) on naturalization status, instrumented by getting more (less) than 50 % of “yes” votes in first referendum, for all applicants within a $\pm 15\%$ window. All models control for the vote margin and the interaction of the vote margin with the instrument, country of origin, all sociodemographics (gender, age, children, marital status, education, occupation skill level, years since immigration, refugee status, language competencies, integration status), and fixed effects for each time period and municipality. Robust standard errors in parentheses.

I. Secondary Outcomes

Table B.8: Effect of Naturalization on Long-Term Distrust

Model	(1)	(2)	(3)	(4)	(5)	(6)
Outcome: Distrust for the	judicial	local au-	judicial	local au-	judicial	local au-
	system	thorities	system	thorities	system	thorities
Naturalized	-0.03 (0.05)	-0.03 (0.05)	0.00 (0.14)	0.03 (0.13)	0.01 (0.13)	0.03 (0.12)
Margin			0.00 (0.01)	-0.00 (0.01)	0.00 (0.01)	-0.00 (0.01)
Margin \times Above 50%			-0.00 (0.01)	0.00 (0.01)	-0.01 (0.01)	0.00 (0.01)
Country of Origin	✓	✓			✓	✓
Sociodemographics	✓	✓			✓	✓
Time period FE	✓	✓			✓	✓
Municipality FE	✓	✓			✓	✓
Observations	459	465	462	468	459	465

Note: Instrumental variables regression of distrust measures on naturalization status, instrumented by getting more (less) than 50 % of “yes” votes in first referendum, for all applicants within a $\pm 15\%$ window. Models 1 & 2 are the IV regressions that control for country of origin, all sociodemographics (gender, age, children, marital status, education, occupation skill level, years since immigration, refugee status, language competencies, integration status), and fixed effects for each time period and municipality. Models 3 & 4 are the fuzzy RDD regressions without covariates that control for the vote margin and the interaction of the vote margin with the instrument. Models 5 & 6 are the fuzzy RDD regressions with covariates that control for country of origin, all sociodemographics, fixed effects for each time period and municipality, and the vote margin and the interaction of the vote margin with the instrument. Robust standard errors in parentheses.

J. Subgroup Analysis

Table B.9: 2SLS Estimates of the Effect of Naturalization for Applicants from (Former) Yugoslavia or Turkey

Model	(1)	(2)	(3)	(4)	(5)
Outcomes	Integration Scale	Stay in Switzerland	Report Discrimination	Club Membership	Swiss Newspapers
Naturalized	0.52 (0.15)	0.50 (0.23)	-0.30 (0.14)	0.14 (0.13)	0.57 (0.27)
Country of Origin	✓	✓	✓	✓	✓
Sociodemographics	✓	✓	✓	✓	✓
Time period FE	✓	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓	✓
Observations	311	316	315	318	315

Note: Instrumental variables regression of outcomes (1) – (5) on naturalization status, instrumented by getting more (less) than 50 % of “yes” votes in first referendum, for all applicants from (former) Yugoslavia or Turkey and within a $\pm 15\%$ window. All models control for country of origin, all sociodemographics (gender, age, children, marital status, education, occupation skill level, years since immigration, refugee status, language competencies, integration status), and fixed effects for each time period and municipality. Robust standard errors in parentheses.

Table B.10: 2SLS Estimates of the Effect of Naturalization for Applicants not from (Former) Yugoslavia or Turkey

Model	(1)	(2)	(3)	(4)	(5)
Outcomes	Integration Scale	Stay in Switzerland	Report Discrimination	Club Membership	Swiss Newspapers
Naturalized	0.06 (0.18)	0.11 (0.19)	-0.06 (0.17)	0.27 (0.20)	-0.13 (0.38)
Country of Origin	✓	✓	✓	✓	✓
Sociodemographics	✓	✓	✓	✓	✓
Time period FE	✓	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓	✓
Observations	145	151	151	153	149

Note: Instrumental variables regression of outcomes (1) – (5) on naturalization status, instrumented by getting more (less) than 50 % of “yes” votes in first referendum, for all applicants not from (former) Yugoslavia or Turkey and within a $\pm 15\%$ window. All models control for country of origin, all sociodemographics (gender, age, children, marital status, education, occupation skill level, years since immigration, refugee status, language competencies, integration status), and fixed effects for each time period and municipality. Robust standard errors in parentheses.

Table B.11: 2SLS Estimates of the Effect of Naturalization for Applicants born in Switzerland

Model	(1)	(2)	(3)	(4)	(5)
Outcomes	Integration Scale	Stay in Switzerland	Report Dis- crimination	Club Membership	Swiss Newspapers
Naturalized	0.09 (0.18)	0.02 (0.25)	-0.20 (0.15)	0.08 (0.18)	0.03 (0.29)
Country of Origin	✓	✓	✓	✓	✓
Sociodemographics	✓	✓	✓	✓	✓
Time period FE	✓	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓	✓
Observations	95	95	95	95	95

Note: Instrumental variables regression of outcomes (1) – (5) on naturalization status, instrumented by getting more (less) than 50 % of “yes” votes in first referendum, for all applicants who are born in Switzerland and within a $\pm 15\%$ window. All models control for country of origin, all sociodemographics (gender, age, children, marital status, education, occupation skill level, years since immigration, refugee status, language competencies, integration status), and fixed effects for each time period and municipality. Robust standard errors in parentheses.

Table B.12: 2SLS Estimates of the Effect of Naturalization for Applicants not born in Switzerland

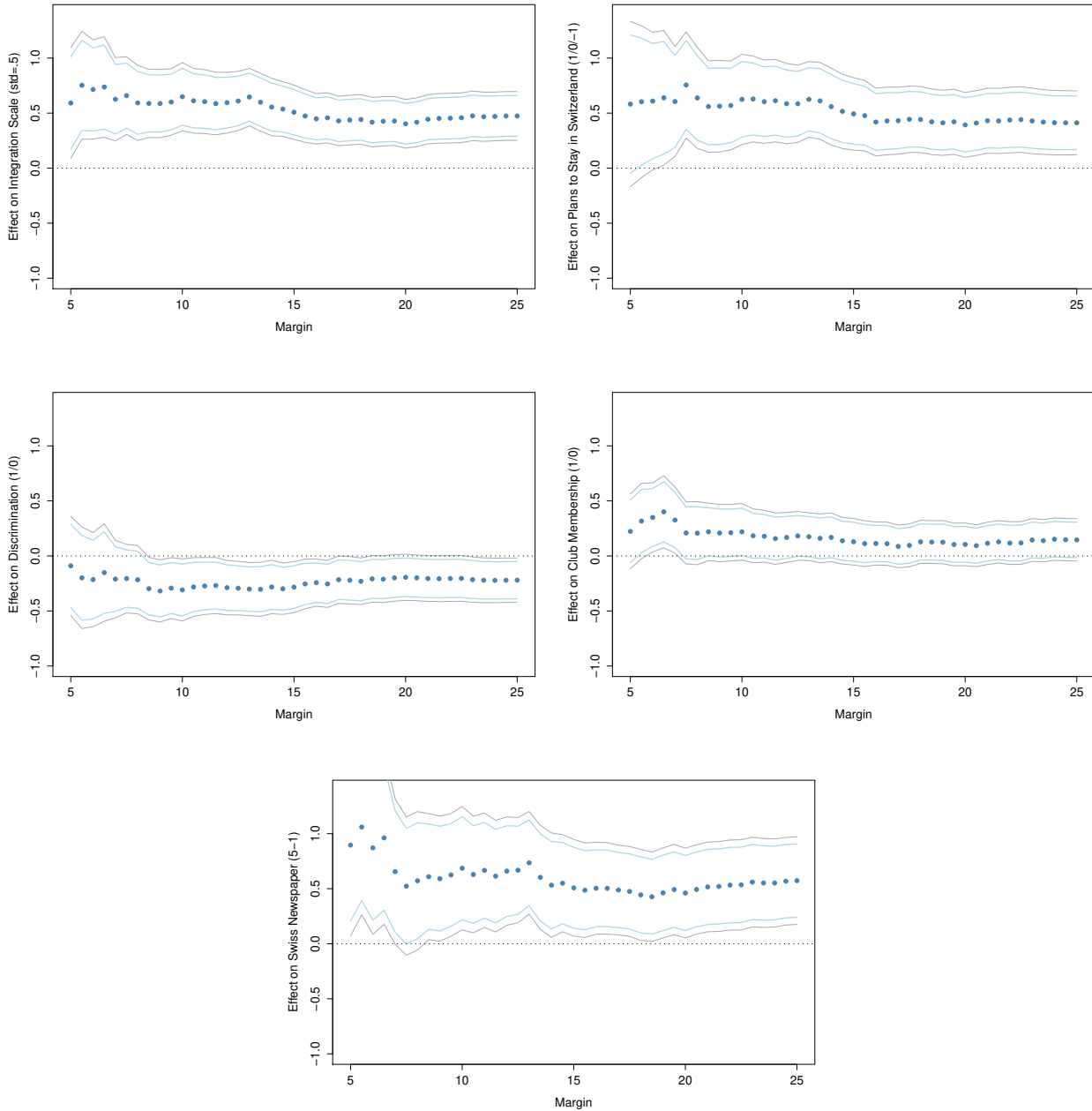
Model	(1)	(2)	(3)	(4)	(5)
Outcomes	Integration Scale	Stay in Switzerland	Report Dis- crimination	Club Membership	Swiss Newspapers
Naturalized	0.59 (0.17)	0.72 (0.23)	-0.26 (0.14)	0.06 (0.14)	0.53 (0.28)
Country of Origin	✓	✓	✓	✓	✓
Sociodemographics	✓	✓	✓	✓	✓
Time period FE	✓	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓	✓
Observations	361	372	371	376	369

Note: Instrumental variables regression of outcomes (1) – (5) on naturalization status, instrumented by getting more (less) than 50 % of “yes” votes in first referendum, for all applicants who are not born in Switzerland and within a $\pm 15\%$ window. All models control for country of origin, all sociodemographics (gender, age, children, marital status, education, occupation skill level, years since immigration, refugee status, language competencies, integration status), and fixed effects for each time period and municipality. Robust standard errors in parentheses.

K. Robustness tests for different bandwidths

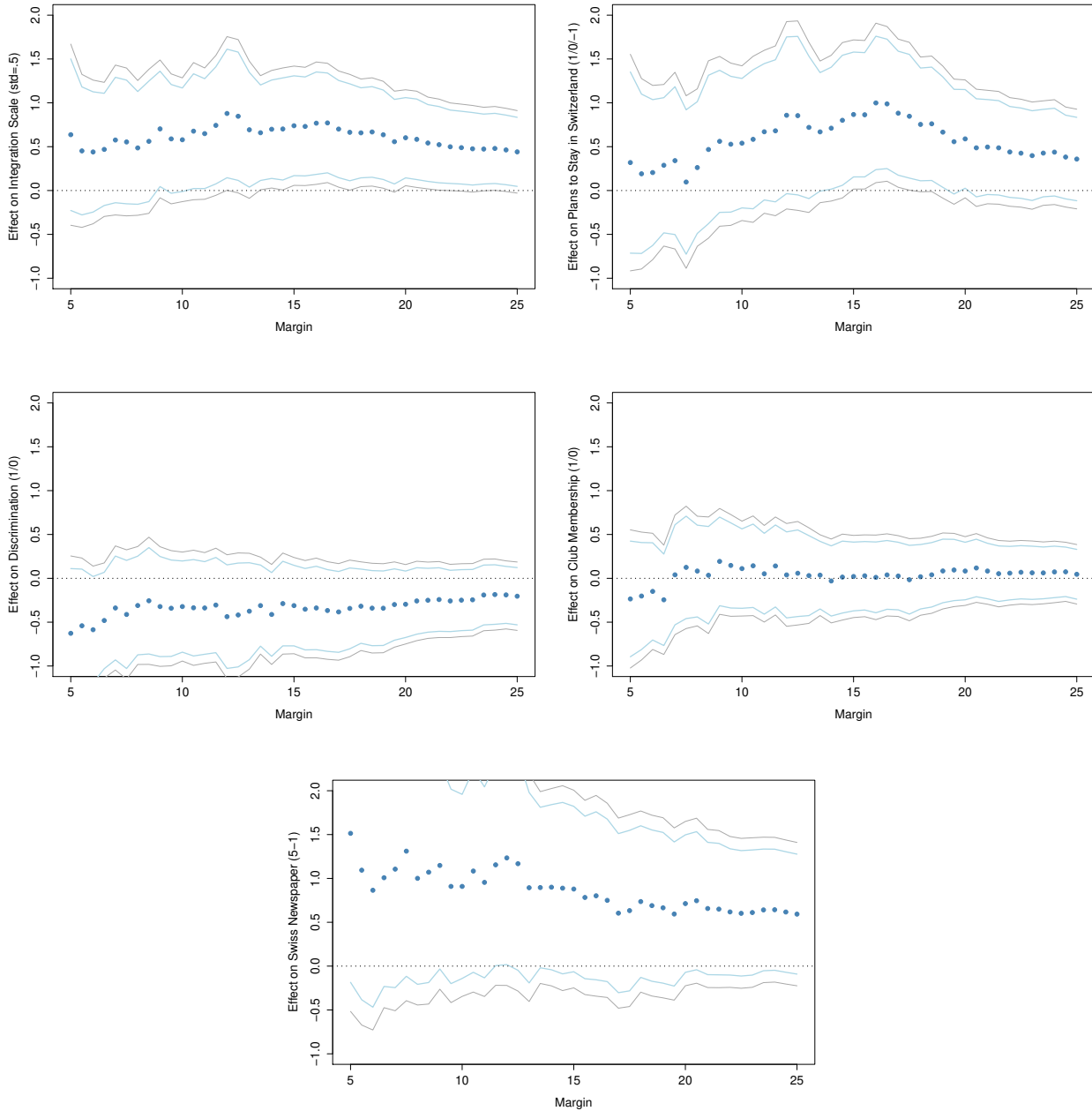
Figures B.3 and B.4 shows the estimated effects for various bandwidth to trim the estimation sample based on the margin of victory.

Figure B.3: Robustness Tests for Different Bandwidths IV



For each outcome, this figure shows the estimated effect of naturalization on the outcome as a function of the bandwidth for the IV regression. Dots show the point estimates based on the sample within the corresponding value of the forcing variable (margin), and blue and dark grey lines the 90% and 95% confidence intervals, respectively. Outcomes: social integration scale (std=0.5); plans to stay in Switzerland (1/0/-1); discrimination (1/0); membership in social club (1/0); proportion of Swiss friends (0-1); reading Swiss newspapers (5-1) The following covariates are used as controls: gender, age, children, marital status, education, occupation skill level, years since immigration, refugee status, language competencies, integration status, country of origin, and fixed effects for each municipality and time period.

Figure B.4: Robustness Tests for Different Bandwidths Fuzzy RDD



For each outcome, this figure shows the estimated effect of naturalization on the outcome as a function of the bandwidth for the fuzzy RDD regression. Dots show the point estimates based on the sample within the corresponding value of the forcing variable (margin), and blue and dark grey lines the 90% and 95% confidence intervals, respectively. Outcomes: social integration scale (std=0.5); plans to stay in Switzerland (1/0-1); discrimination (1/0); membership in social club (1/0); proportion of Swiss friends (0-1); reading Swiss newspapers (5-1) The following covariates are used as controls: gender, age, children, marital status, education, occupation skill level, years since immigration, refugee status, language competencies, integration status, country of origin, and fixed effects for each municipality and time period.

L. Early vs Late Naturalization

L.1. FIRST STAGE: EARLY VS LATE NATURALIZATION

Table B.13 shows that the effect of narrowly winning or losing the first referendum on early versus late naturalization. We find that winning over losing the first referendum increases the number of years that applicants are Swiss by about 48 percent (which amounts to roughly four more years over the average) and a decrease of .27 in the probability of being Swiss for more than 13 years (the sample median used as the cutpoint).

Table B.13: First-Stage Effect of Winning First Referendum on Number of Years with Swiss Citizenship

Mean outcome	.48	2.59
	(1)	(2)
Outcome	Years Swiss ≥ 13	Years Swiss (Logged)
Above 50%	0.27 (0.06)	0.48 (0.07)
Country of Origin	✓	✓
Sociodemographics	✓	✓
Residency in Switzerland	✓	✓
Time period Fixed Effects	✓	✓
Municipality Fixed Effects	✓	✓
Window size	±15%	±15%
Stock and Yogo <i>F</i> -test	20.73	48.81
<i>p</i> -value	0.00	0.00
Observations	390	390

Note: Two-stage least squares regression of the number of years with the Swiss passport on a binary instrument (=1 if vote share margin above 50 %). Model (1) shows the first stage results for the log of the years with the Swiss passport, model (2) shows the same regression but uses a binary indicator for more (less) than 13 years with the Swiss passport. Both models control for applicant's country of origin, sociodemographics, a categorical indicator for residency at time of interview, and fixed effects for each time period and municipality. Sample: all applicants within a window ± 15%. Robust standard errors in parentheses.

L.2. TREATMENT EFFECTS: EARLY VS LATE NATURALIZATION

Table B.14: 2SLS Estimates of the Effect of Early Versus Late Naturalization (Continuous Treatment)

Model	(1)	(2)	(3)	(4)	(5)
Outcomes	Integration Scale	Stay in Switzerland	Report Discrimination	Club Membership	Swiss Newspapers
Years Swiss (Logged)	0.36 (0.13)	0.43 (0.16)	-0.12 (0.12)	0.11 (0.11)	0.40 (0.22)
Country of origin	✓	✓	✓	✓	✓
Sociodemographics	✓	✓	✓	✓	✓
Residency in Switzerland	✓	✓	✓	✓	✓
Time period FE	✓	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓	✓
Observations	379	387	387	390	384

Note: Instrumental variables regression of outcomes (1) – (5) on log of the number of years with the Swiss passport, instrumented by getting more (less) than 50 % of “yes” votes in first referendum, for all naturalized applicants within a $\pm 15\%$ window. All models control for country of origin, sociodemographic, a categorical indicator for residency at time of interview, and fixed effects for each time period and municipality. Robust standard errors in parentheses.

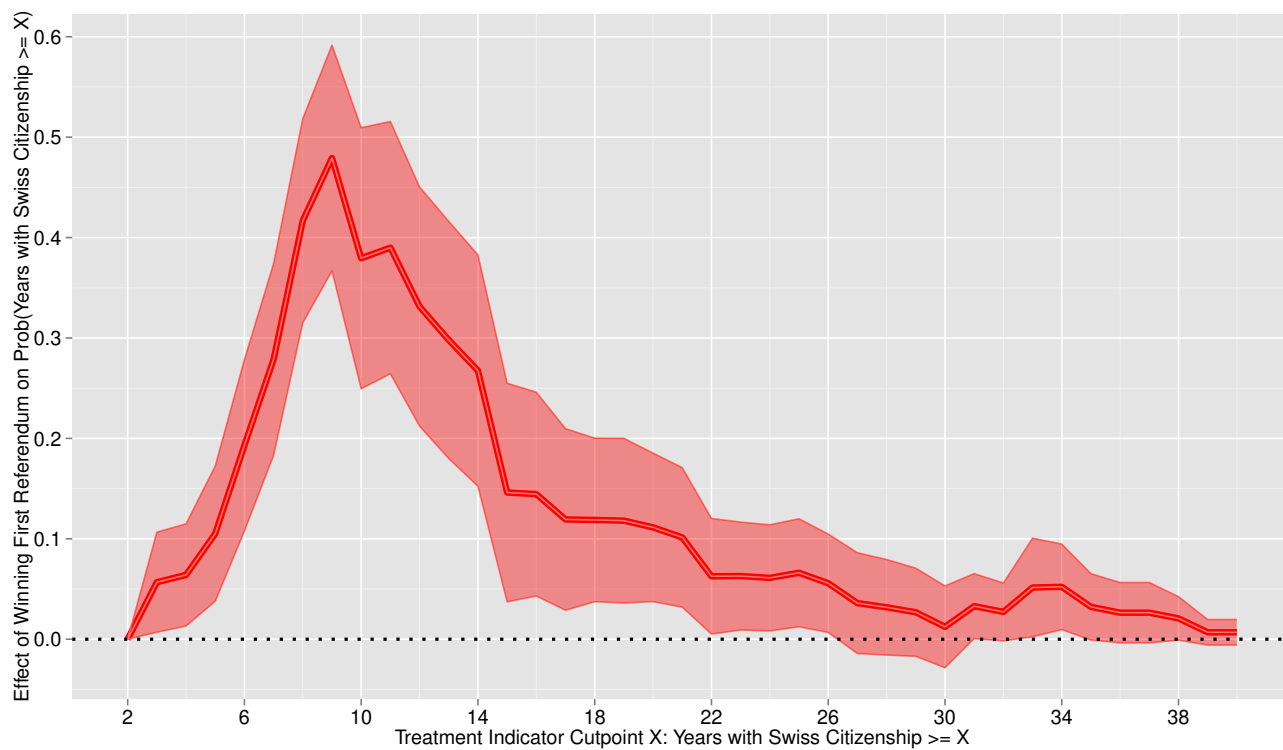
Table B.15: 2SLS Estimates of the Effect of Early Versus Late Naturalization (Binary Treatment)

Model	(1)	(2)	(3)	(4)	(5)
Outcomes	Integration Scale	Stay in Switzerland	Report Discrimination	Club Membership	Swiss Newspapers
Years Swiss ≥ 13	0.64 (0.25)	0.76 (0.31)	-0.21 (0.22)	0.20 (0.21)	0.72 (0.42)
Country of origin	✓	✓	✓	✓	✓
Sociodemographics	✓	✓	✓	✓	✓
Residency in Switzerland	✓	✓	✓	✓	✓
Time period FE	✓	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓	✓
Observations	379	387	387	390	384

Note: Instrumental variables regression of outcomes (1) – (5) on a binary indicator for more (less) than 13 years with the Swiss passport, instrumented by getting more (less) than 50 % of “yes” votes in first referendum, for all naturalized applicants within a $\pm 15\%$ window. All models control for country of origin, sociodemographic, a categorical indicator for residency at time of interview, and fixed effects for each time period and municipality. Robust standard errors in parentheses.

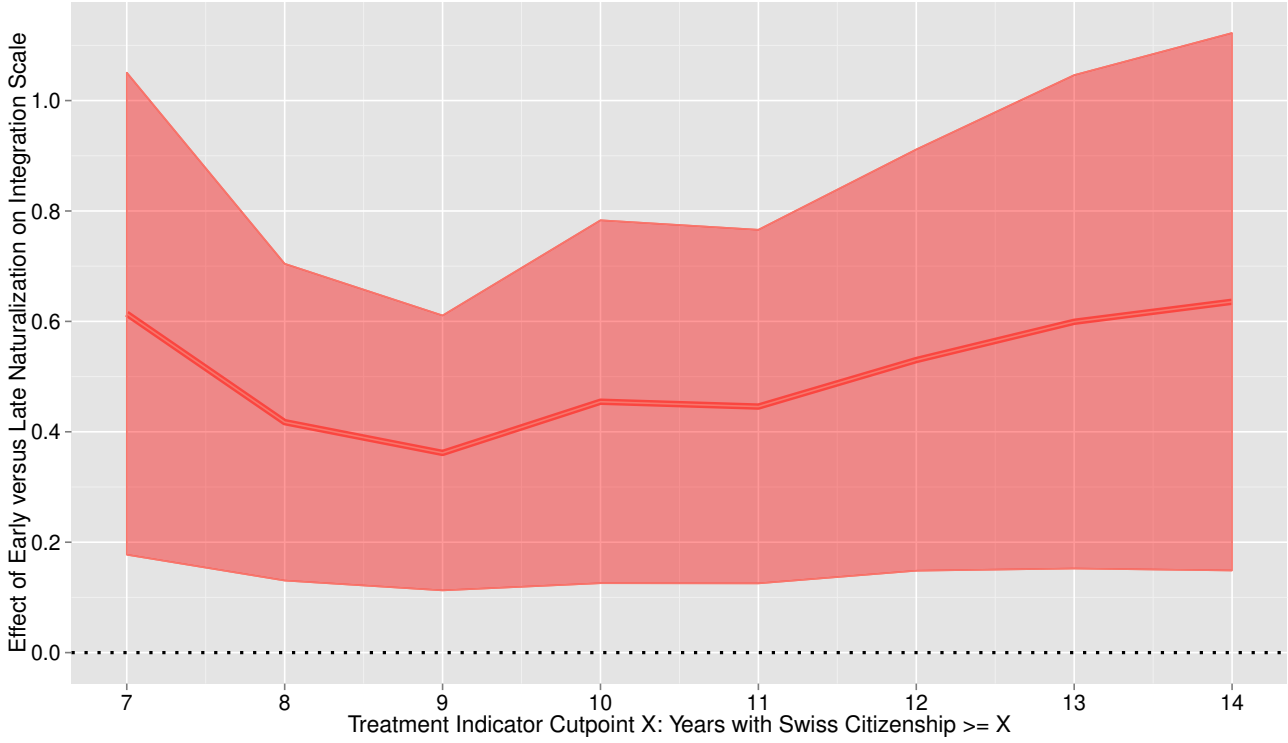
Figure B.5 displays the first-stage estimates of the difference in the probability of being naturalized for a given number of years for immigrants who won or lost their first referendum. We can see that the first stage estimates are strongest for the years 7 to 14, where the compliance rate is between 25 % and 45 %. For this period, Figure B.6 displays the second-stage estimates of the effect of being naturalized for a given number of years on the social integration scale. We find that the effects of these binary indicators of early versus late naturalization are very similar regardless of the precise cut-point we use and are significant and large in substantive terms; the equivalent of a full standard deviation increase on the social integration scale.

Figure B.5: Effect of Winning First Referendum on Early vs Late Naturalization



Note: The figure shows the first stage estimates of the difference in the probability of being naturalized for longer or equal to the number of years on the x -axis for immigrants who won or lost their first naturalization referendum. The solid black line shows the point estimates, and the shaded area the 95 % confidence interval based on robust standard errors.

Figure B.6: Effect of Early vs Late Naturalization on Social Integration Index



Note: The figure shows second stage estimates of the effect of being naturalized for longer or equal to the number of years on the x-axis on the social integration index. The solid black line shows the point estimates, and the shaded area the 95 % confidence interval based on robust standard errors.

L.3. SENSITIVITY ANALYSIS: EARLY VS LATE NATURALIZATION

One potential concern with our identification strategy to estimate the effect of early versus late naturalization is that the group of immigrants that was naturalized in the first referendum consists of both always-takers, i.e. immigrants that if rejected the first time would successfully apply later, and compliers, i.e. immigrants that remain unnaturalized if rejected the first time, while the group of rejected applicants that was naturalized in a later attempt consists, by definition, of only always-takers. Note that the compliance groups here are defined with regard to naturalization per se, not early versus late naturalization. In order to gauge the sensitivity of our results to differences between the potential outcomes of compliers and always-takers, we inspect the standard two-stage least-squares IV estimator:

$$\alpha = \frac{E[Y|Z = 1, X] - E[Y|Z = 0, X]}{E[D|Z = 1, X] - E[D|Z = 0, X]}, \quad (1)$$

where Y is the social integration scale, D is the log of the years with the Swiss passport, and $Z = 1$ if applicant passed the first naturalization referendum and 0 otherwise. While $E[Y|Z = 1, X]$ and $E[D|Z = 1, X]$ consist of both compliers, C , and always-takers, A , that were naturalized in their first referendum, $E[Y|Z = 0, X]$ and $E[D|Z = 0, X]$ consist only of always-takers that were naturalized in a later attempt. Immigrants that were rejected in the first referendum but have obtained citizenship

by the time of interview are, by definition, always-takers, hence $E[Y|Z = 0, X] = E[Y|Z = 0, X, A]$ and $E[D|Z = 0, X] = E[D|Z = 0, X, A]$. If the potential outcomes are different for always-takers and compliers, α may exhibit bias. To inspect the sensitivity to this bias, we rewrite the first term $E[Y|Z = 1, X]$ as a weighted average of always-takers and compliers:

$$E[Y|Z = 1, X] = E[Y|Z = 1, X, A] \Pr(A) + E[Y|Z = 1, X, C] \Pr(C) \quad (2)$$

and express this equation in terms of always-takers:

$$E[Y|Z = 1, X, A] = \frac{E[Y|Z = 1, X] - E[Y|Z = 1, X, C] \Pr(C)}{\Pr(A)} \quad (3)$$

Under the simplifying assumption that the first stage effect of naturalization in the first attempt on post-naturalization residency years is the same for both always-takers and compliers, i.e. $E[D|Z = 1, X, A] = E[D|Z = 1, X, C]$, we can write equation 1 in terms of always-takers only:

$$\begin{aligned} \tilde{\alpha} &= \frac{E[Y|Z = 1, X, A] - E[Y|Z = 0, X, A]}{E[D|Z = 1, X, A] - E[D|Z = 0, X, A]} \\ &= \frac{\frac{E[Y|Z=1,X] - E[Y|Z=1,X,C] \Pr(C)}{\Pr(A)} - E[Y|Z = 0, X, A]}{E[D|Z = 1, X, A] - E[D|Z = 0, X, A]} \end{aligned} \quad (4)$$

Since we cannot distinguish always-takers and compliers in the group that passed the first referendum, we also cannot identify $E[Y|Z = 1, X, C]$ or $\tilde{\alpha}$ directly. However, we can employ a sensitivity analysis that tells us how much bigger (smaller) $E[Y|Z = 1, X, C]$ than $E[Y|Z = 1, X, A]$ would have to be in order to render $\tilde{\alpha}$ i) insignificant or ii) equal to 0. We incorporate the sensitivity parameter

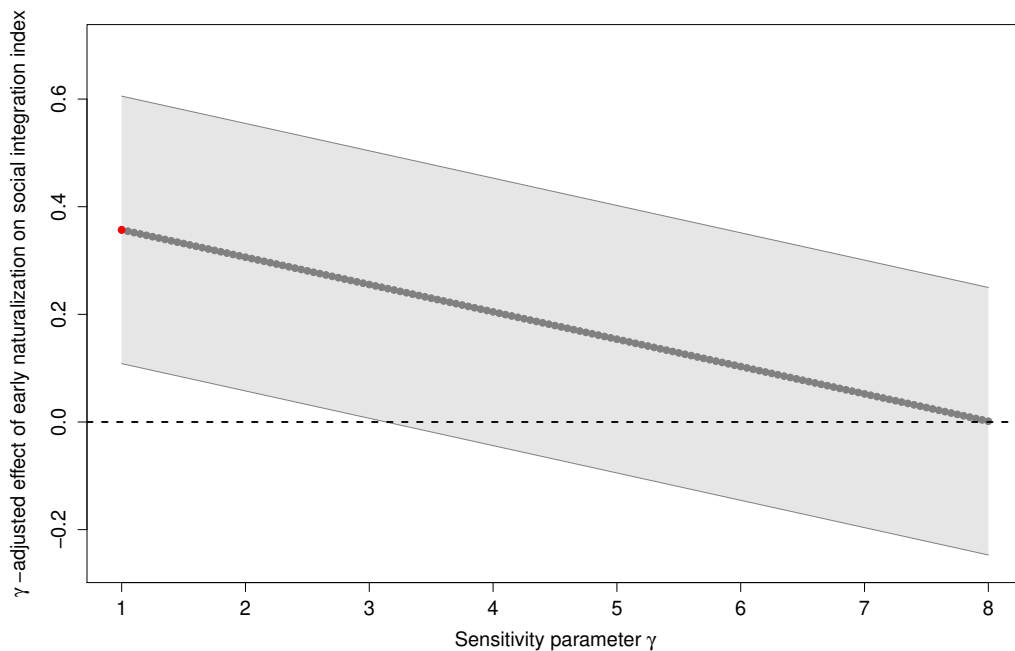
$$\gamma = \frac{E[Y|Z = 1, X, C]}{E[Y|Z = 1, X, A]} \quad (5)$$

directly into equation 4:

$$\tilde{\alpha}(\gamma) = \frac{\frac{E[Y|Z=1,X] - \gamma E[Y|Z=1,X,A] \Pr(C)}{\Pr(A)} - E[Y|Z = 0, X, A]}{E[D|Z = 1, X, A] - E[D|Z = 0, X, A]} \quad (6)$$

such that we can calculate the value of γ that gives us $\tilde{\alpha}(\gamma)/SE(\tilde{\alpha}) = 1.96$ and $\tilde{\alpha}(\gamma) = 0$, respectively. By plugging in the sample analogues (of subsection E) in equation 6, we produce Figure B.7 and find that it would take $\gamma > 3.15$ to render $\tilde{\alpha}(\gamma)$ insignificant and $\gamma > 8$ to turn $\tilde{\alpha}(\gamma) = 0$.

Figure B.7: Sensitivity Analysis for the Effect of Early versus Late Naturalization on Long Term Social Integration



Note: Sensitivity analysis for the adjusted effect estimates with robust 95% confidence intervals based on a two-stage least squares regression for different values of *gamma*.

We believe the integration potential of always-takers to be, if anything, higher than that of compliers, such that $\gamma \leq 1$, because unlike compliers, always-takers were willing to repeatedly invest in their naturalization. Therefore, we think that it is extremely unlikely that the average of the social integration index is more than three times larger for the latter compared to the former group.

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