The Value of Citizenship

Experimental and Quasi-experimental Evidence from Germany and Switzerland

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Mannheim, 2016

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Dissertation thesis written at the

Center for Doctoral Studies in the Social and Behavioral Sciences (CDSS) of the Graduate School of Economic and Social Sciences (GESS)

and submitted for

the degree of Doctor of Philosophy (Ph.D.)
of the Faculty of Social Sciences

at the

University of Mannheim

March 2016

Academic Director: Prof. Dr. Edgar Erdfelder
First Reviewer: Prof. Dr. Thomas Gautschi, University of Mannheim
Second Reviewer: Prof. Dr. Marco Steenbergen, University of Zurich
Ph.D. Defence: June 1, 2016

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Abstract

Immigration is a long-simmering issue in every western democracy, and one of the most controversial aspects of immigration policy is the naturalization of immigrants. Citizenship is often tied to important rights, and right-wing political parties have extensively mobilized throughout Europe and the USA for restricting the influx of immigrants and more restrictive naturalization laws in recent years. These policy debates are likely to grow fiercer in the future. In their innovative research, Hangartner and Hainmueller (2013, forthcoming) extensively study the driving forces behind anti-immigrant sentiments in Switzerland by examining how naturalization rates vary at the local level. Building on their work my dissertation project examines another important aspect that has received almost no scholarly attention so far: the effect of naturalization on the lives of immigrants. What happens when immigrants are naturalized? Do immigrants become more politically active and engaged in their communities? Are they socially better integrated? Does citizenship lead to better labor market outcomes, and if so, through which channels does citizenship operate? Answering these questions is crucial to inform ongoing policy debates, but existing research has not provided any reliable micro-level evidence so far.

The key problem in studying the causal effect of citizenship is selection bias. Immigrants selectively apply for citizenship for reasons that are not observed by the researcher. Hence, non-naturalized immigrants and naturalized immigrants differ on a wide range of background characteristics that can potentially explain any differences in their social, political, and economic outcomes. This dissertation, for the first time, isolates the causal effect of citizenship per se by adopting (quasi-)experimental identification strategies, which allows me to obtain unbiased estimates of the effect of citizenship that are as credible as those obtained from a randomized experiment.

I study the impact of naturalization on the political, social, and economic integration of immigrants into the host country's society. I provide new evidence for the effects of citizenship with newly collected data in Switzerland and Germany. First, I exploit the quasi-random assignment of citizenship in Swiss municipalities that used referendums to decide on the naturalization applications of immigrants, in order to study the impact of citizenship on political and social integration. Balance checks suggest that for close naturalization referendums, which are decided by just a few votes, the naturalization decision is as good as random; this means that narrowly rejected and narrowly approved immigrant applicants are similar on all confounding characteristics. This allows me to remove selection effects and obtain unbiased estimates of the long-term impacts of citizenship. Second, employing a correspondence test in Germany, I study the impact of naturalization on

labor market opportunities. The correspondence test method is a sensible way to measure the initial response of employers to varying characteristics of fictitious applicants and permits me to measure discrimination in hiring. The procedure consists of sending out fictitious resumes to real job vacancies that are advertised online, in order to identify the causal effect of German citizenship on the likelihood of being invited for a job interview for applicants with Turkish-sounding names. This approach allows for collecting behavioral data and has the potential to unveil discriminatory practices in the labor market.

I find that for the immigrants who faced close referendums, naturalization considerably improved their political integration, including increases in formal political participation, political knowledge, and political efficacy. Moreover, receiving Swiss citizenship strongly improved long-term social integration. I also find that the integration returns on naturalization are much larger for more marginalized immigrant groups and somewhat larger when naturalization occurs earlier rather than later in the residency period. In addition, the analysis from the correspondence test suggests that having German citizenship considerably increases callback rates for applicants with Turkish-sounding names, but is not enough to remove the entirety of the ethnic penalty relative to native Germans. Overall, the findings support the policy paradigm which argues that naturalization helps immigrants to better integrate into the host society and thus acts as a catalyst, rather than standing at the end of the completed integration process.

By overcoming the selection problem, this series of research articles provide a comprehensive agenda on this topic, and significantly advances the theoretical and empirical literature on citizenship.

Contents

List of Figures

List of Tables

To my parents.

Acknowledgments

This dissertation was only made possible by the encouraging words, intellectual exchange and support, and helping hands of many unique people. First of all, I want to thank my personal alma mater, which is personified by Prof. Thomas Gautschi and Prof. Dominik Hangartner. I cannot express in words the gratitude I feel towards both of you. Tom took a risk and gave me the opportunity to work and study at the University of Mannheim. He offered me shelter, a position, and consistent good advice. He gave me all the freedom to pursue my goals and to follow my interests, and always had an open ear for my bigger and smaller problems alike. Dominik always believed far more than I did in my capacity to cooperate with him. He was and is my intellectual mentor and point of reference. He and Prof. Jens Hainmueller—whom I also thank deeply—involved me in cutting edge research. Thanks to Dominik, I was privileged to work on a project which triggered my curiosity and involved me personally as well as professionally. Without such a project I would never have started a Ph.D. In fact, the project started as a two-week student assistant job and ended with three years of data collection. Tom and Dominik always had a deep understanding of my weaknesses and were always ready to overlook them. I am proud to be able to call both my friends.

I am also thankful to the University of Mannheim and the Center for Doctoral Studies in Social and Behavioral Sciences (CDSS) of the Graduate School of Economics and Social Sciences (GESS). Besides offering a unique working and studying environment, the CDSS gave me the opportunity to get to know a number of extraordinary people, who supported me in a way only friends can do. I especially want to mention Marta Castela, Anita Gohdes, Jan Guijarro Usobiaga, Moritz Hess, Lars Leszczensky, Amrei Maddox, Elias Naumann, Lukas Stötzer, Adam Scharpf, and Andy White. Furthermore, my sincere thanks goes to our amazing chair, who is without a doubt by far the best looking at the University: Katrin Paula, Philipp Schütze, Alexander Scherf, Johanna Röller, and Deborah Gottinger-Würtz.

Moreover, I am grateful to the Department of Political Science of the University of Zurich. I am particularly thankful to my second supervisor Prof. Marco Steenbergen and to my friends in the department: Selina Kurer, Fabian Morgenthaler, Christian Müller, Livio "Dr. Flex" Raccuia, Stephan Schütz, Judith Spirig, and Edward Weber. Not to mention Murat Aktas and Dejan Balaban, who were the best research assistants one can wish for. I am grateful to Prof. Silja Häusermann, Prof. Fabrizio Gilardi, and all the participants of the

Ph.D. workshop, who helped improve my dissertation with their critical comments. I also want to thank my good friends in Switzerland: Christoph Darioli, Dominik Marty, Daniel Schmid, Patrick Vendrame, and Ralf Zellweger.

During my Ph.D. studies I had the opportunity to visit the London School of Economics and Political Science (LSE) and the Berlin Social Science Center (WZB), both extraordinary research institutes. In this context, I want to express my deep gratitude to the Swiss Science Foundation, who awarded me with a grant. I am very thankful to the Department of Methodology of the LSE for having given me the unique opportunity to be part of the department, which was an experience that also deeply influenced this dissertation. I also want to express my gratitude to Prof. Ruud Koopmans of the WZB, who constantly extended my stay, and to the entire Research Unit on Migration, Integration, Transnationalization, who made me feel at home from the first day onward. A special thank you goes out to Hanno Hilbig and Rolle Alho for sharing an office with me, and also to my dear friends in Berlin Oliver Strijbis, Friederike Römer, and Matthias Fiedler.

Last but not least, I am profoundly grateful to my parents, Carlo and Carmela, my brothers, Rocco and Antonio, and Tina. Thank you.

Preface

This dissertation consists of two parts: First, a framework paper which aims to provide a coherent research agenda in which the contribution of the work can be located introducing the main arguments and summarizing the main findings of the papers. Second, the three papers constituting the heart of the dissertation. The three papers are the following:

1. Hainmueller, Jens, Dominik Hangartner and Giuseppe Pietrantuono. 2015. "Naturalization Fosters the Long-Term Political Integration of Immigrants." *Proceedings of the National Academy of Sciences of the United States of America* 112(41):12651–12656.

2. Hainmueller, Jens, Dominik Hangartner and Giuseppe Pietrantuono. 2016. "Catalyst or Crown: Does Naturalization Promote the Long-Term Social Integration of Immigrants?", under review.

3. Pietrantuono, Giuseppe. 2016. "The Value of Citizenship: Naturalization Decreases Labor Market Discrimination of Immigrants." Manuscript.

These papers are attached to the framework paper in a slightly different form as published or submitted.

A Framework

No democratic state can tolerate the establishment of a fixed status between citizen and foreigner (though there can be stages in the transition from one of these political identities to the other). Men and women are either subject to the state's authority, or they are not; and if they are subject, they must be given a say, and ultimately an equal say, in what that authority does.

(Walzer 1983: 61)

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What is it all about?

1.1 Introduction

Immigration is and has been a culturally divisive and hotly debated political issue in almost every developed economy in recent decades. The frequent and often bitterly antagonistic debates over immigration policy expose a deep societal fault line. On the one hand, some groups and policymakers support liberal immigration policies and the removal of restrictions that exclude immigrants from access to citizenship. Immigration is seen as a cultural and economic lifeline that creates new jobs and supplies firms with skilled workers, relieves pressure from demographically strained pension systems, and culturally enriches local communities. On the other hand, opponents see immigration not as a lifeline, but as a major source of economic and social destabilization. From this viewpoint, immigrants depress wages and poach jobs from native workers, burden the welfare state by extracting more social services than they give back in taxes, and build ethnic enclaves that balkanize and disrupt local communities with crime and other social ills. Such concerns have nurtured the growth of anti-immigrant political movements in many European countries, and also in the Americas. Given increased globalization and increased migration flows, the debates about immigration are likely to continue to expand in the years ahead, and even to grow fiercer.

One of the key debates over immigration policy involves the political integration of already-settled immigrants, and in particular immigrants' access to citizenship (e.g., D'Amato 2001; Brubaker 1992; Koopmans

et al. 2005; Howard 2009). Although there is quite a bit of variability across Europe, in most countries the acquisition of citizenship is still associated with access to fundamental social, economic, and political rights, such as the right to reside in the country indefinitely, access to public sector employment and welfare benefits, rights to political participation and voting, and legal claims to family reunion.[1] Granting citizenship to immigrants can thus turn them from a temporary annoyance into more threatening economic competitors and amplify fears about lasting cultural disruptions. As Dancygier (2009: 9) puts it, natives often reject the integration of immigrants as citizens "because they believe immigrants are not fit to become co-nationals: they regard citizenship as a reward to be bestowed only on those applicants whose cultural, ethnic, or behavioral traits conform to those of the nation." In many countries anti-immigrant political movements, such as the Freedom Party in Austria, the National Front in France, the Alternative für Deutschland (AfD) in Germany, the List Pim Fortuyn in the Netherlands, the Lega Nord in Italy, or the Swiss People's Party (SVP) in Switzerland have mobilized voters by highlighting citizenship policies and the dangers of naturalizing ever increasing numbers of immigrants (e.g., Mudde 2007; Golder 2003; Dancygier 2009). Similarly, in the USA immigration and citizenship have recently become the predominant issue of the Republican presidential campaigns, with the (at the moment) front-runner candidate "The Donald" Trump promising to end birthright citizenship (which would effectively undermine the Constitution), as it would represent the biggest magnet for illegal immigration.[2] Clearly, opposition to naturalization is tightly linked to the general phenomenon of anti-immigrant sentiments.

This link becomes even clearer by defining citizenship as mean of social closure (Weber 1980). The concept of citizenship is tightly bound to the notion of a nation and its historically developed self-understanding (Gidkov 2008).[3] Accordingly, citizenship is based on the specific conception of the nation and is reflected in the respective naturalization legislation: While in the inclusive and politically oriented and therefore expansive understanding of the nation, citizenship is granted based on the territorial principle (jus soli), the restrictive operating principle of descent (jus sanguinis) takes the apolitical idea of a nation as "national community" into account. Nevertheless, on whatever grounds citizenship is based, it defines the legal membership of an individual to a specific nation. This membership is substantively significant, as citizenship grants political and social rights and is also tied to some duties. Symbolically, citizenship marks the belonging to a national orga-

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1 The Migration Integration Policy Index ranks 28 European countries, including Switzerland and Germany, according to their integration policies. A great review is provided by Fix and Laglagaron (2002).

2 See https://www.donaldjtrump.com/positions/immigration-reform, accessed February 29, 2016.

3 The notion of nation or national state is not unproblematic and controversially discussed in the literature. An excellent overview is offered by Anderson (1996) and Hall (1994). Roughly two theoretical traditions can be differentiated in regard to the definition of nation: On the one hand, nation is defined by the will of the people to constitute a nation (Renan 1996; Habermas 1991). On the other hand, nation can be defined based on (problematic) characteristics such as ethnicity, culture, language, or history. Based on these traditions we find predominantly two concepts of nation in the literature which were first formulated by Meinecke (1928): First, the "willensnation" or "state-nation" based on the French model and politically motivated. Second, the "cultural nation" identified with the German model and rooted in a common language and/or ethnicity (Brubaker 1992, for a detailed discussion on the construction of the nation see Pietrantuono 2010).

nized community and opens the possibility of identification with the country. Following Mackert (2004) and Brubaker (1992), we can understand country-specific citizenship regulations as a concept of social closure. Thus, citizenship determines individual inclusion or exclusion on a political, material, and symbolic level. However, despite these theoretical expectations and the fierce actual policy debate, we know surprisingly little about the actual effect of citizenship on immigrants.

The broad goal of the research articles presented in this dissertation is to estimate the causal effects of receiving citizenship on political participation, social integration, and economic success. The first two questions—concerned with the effects of citizenship on political and social inclusion—will be addressed by exploiting the fact that, prior to 2003, citizens in many Swiss municipalities voted on individual naturalization applications. Drawing upon a newly-collected database (see Hainmueller and Hangartner 2013) of all immigrants that applied for citizenship in these communities in recent decades, a comparison is possible between the outcomes of unsuccessful applicants that came within a few votes of approval and those of successful applicants that were approved by just a few votes. The third question—the effect of citizenship on economic success—will be addressed by making use of the advantages of a correspondence test in the German labor market to detect whether or not employers discriminate between natives, naturalized immigrants, and non-naturalized immigrants in the hiring process.

Given the advantages in research design and the amount of new evidence collected, this dissertation will make an important contribution to our understanding of the effects of citizenship. This series of research articles will thus critically inform ongoing policy debates with the necessary empirical evidence.

1.2 State of the Art

The analysis of citizenship has had a long tradition within moral and political theory (for an overview, see Bellamy 2008). Since the early works of Aristotle and John Locke, multiple theories in political science, sociology, and economics make theoretical predictions about the effect of citizenship (see, for example, Yang 1994; Marrow 2005) and some recent papers have tried to test these empirically (e.g., Bevelander and DeVoretz 2008; Bratsberg et al. 2002; DeVoretz and Pivnenko 2006). However, empirical research on this topic is scarce and existing empirical tests have been plagued by methodological problems of endogeneity and measurement.

Several theories have linked the acquisition of citizenship to greater participation in civic life and increased political engagement in contemporary democracies. Citizenship is often seen as more than simply a legal category that confers rights; it also involves obligations and the exercise of responsibilities. This is thought to change people's attitudes about the political system and to stimulate civic engagement through a process of socialization and interaction with governmental authorities. Moreover, citizenship may increase the respect of natives towards naturalized immigrants, so that immigrants feel less discriminated against and are more likely to interact with natives socially and increase their community participation. Therefore, naturalization

may improve the quality of democracy. Some have argued that these social and political effects of citizenship are contingent upon the immigrant's own characteristics (Bevelander and DeVoretz 2008; Just and Anderson 2012). For example, the effect of citizenship on political involvement may be weaker for immigrants from more repressive regimes than immigrants from more democratic systems, since the latter are more likely to have acquired the skills and knowledge necessary for political involvement. Similarly, the effect of citizenship on perceived social discrimination may be higher for immigrants that are socially more excluded prior to naturalization, such as immigrants from countries that are culturally more distant from the host country (e.g., immigrants from Turkey or the former Yugoslavia arriving in Switzerland). Age is likely to be an important mediating factor, since many patterns of civic engagement are formed during the process of socialization in the early years of life.

Despite much theorizing, very few studies have so far examined the impact of citizenship on political participation and social inclusion. To the best of my knowledge, the most comprehensive analysis so far is Just and Anderson (2012). Drawing upon data from the European Social Survey, they compare the outcomes from naturalized immigrants and foreign-born non-naturalized immigrants and find that "citizenship matters and enhances participation, but not for everyone and not for every kind of political act" (Just and Anderson 2012: 507). They also find that the effects are smaller for more recent arrivals and immigrants from more repressive regimes. They key problem with these results is that they are potentially plagued by a large selection bias. By the authors' own admission, they cannot accurately control for the fact that immigrants self-select into citizenship based on private information (see discussion below). The study is also limited because the small sample sizes prevent the authors from conducting within-country analysis. They also control for civic attitudes, which introduces post-treatment bias. Lastly, this study only considers the effect of citizenship on political participation, but not on other important aspects, such as social inclusion and economic outcomes.

Another analysis of political outcomes is provided by Bevelander and Pendakur (2011). They draw upon administrative data for turnout in federal and municipal elections for Swedes, including non-naturalized immigrants who are eligible to vote. They find that immigrants participate at lower rates than Swedes, but that in comparing naturalized to non-naturalized immigrants, citizenship has a large effect on increasing turnout: Obtaining citizenship increases the odds of voting in a municipal election by two and a half times, compared to a foreign-born non-citizen. While comprehensive in scale, the study suffers from similar problems arising from selection bias. Also, the outcome data is limited to turnout.

Apart from the under-studied effects of citizenship on political participation and social inclusion, the area that has attracted most testing so far is the impact of citizenship on economic outcomes. Several theoretical mechanisms may explain why citizenship may affect economic outcomes. For example, citizenship can be a signal to employers that someone possesses higher levels of human capital, such as language skills and a lower risk of return migration. Employers may also be more willing to invest in training for these workers because it reduces uncertainty, and so citizenship makes naturalized immigrants better candidates for long-term jobs. Furthermore, in several countries, citizenship is required for certain jobs (for example, in the U.S., it is necessary in many federal agencies and in the public safety industry). Survey data from the U.S. suggest that immigrants think citizenship helps on the job market (Chiswick 1978).

Empirically, a number of papers have tried to estimate the effect of citizenship on economic outcomes in different European countries (Bevelander 2000; DeVoretz and Pivnenko 2006; Fougère and Safi 2008; Ohlsson 2008; Scott 2008; Steinhardt 2012) and in the U.S. (Chiswick 1978; Bratsberg et al. 2002; Mazzolari 2009). The results are not conclusive and somewhat mixed; nevertheless, a majority of the studies finds that naturalization has a significantly positive effect on immigrants' wages and employment. Several of these studies rely on cross-sectional data, which makes it very difficult to control for selection bias. The exceptions to this are studies by Bratsberg et al. (2002), Ohlsson (2008), and Steinhardt (2012) which utilize panel data to consider effects on wages and employment over time. However, even with panel data it remains difficult to control for the selection effect. When we can control for pre-naturalization outcome data, the estimates may still be biased due to the presence of shocks in time-varying unobserved characteristics. Hence, even conditional on prior outcomes, the unobserved reasons why some immigrants decide to seek naturalization may be highly correlated with post-naturalization outcomes (e.g., more talented or motivated immigrants select to seek citizenship).

Taken together, the review of existing literature suggests that we still know very little about the causal effects of citizenship on political, social, and economic outcomes. There is a fundamental methodological problem that needs to be solved in order to estimate the causal effect of citizenship: selection bias.

1.3 Selection Bias

Selection bias is the key problem in estimating the causal effect of citizenship on economic success, and political and social integration. These outcomes can potentially be explained by a wide range of background characteristics in which naturalized and non-naturalized immigrants differ. For example, more talented immigrants may be more likely to obtain citizenship, but more talented immigrants would attain better labor market outcomes even in the absence of citizenship. So any difference in outcomes could be driven not by the effect of citizenship, but simply by pre-existing differences in talent. Talent is difficult to measure empirically, but even if it could be measured and statistically controlled for, there could still be many other differences in other observable and unobservable characteristics (such as motivation, identification with the host country's values, etc.) that could never be ruled out as confounding variables.

In order to isolate the effect of citizenship from the effect of pre-existing differences in background characteristics, ideally an experiment should be run where citizenship is randomly assigned among a group of immigrants. Random assignment forms the gold standard for causal attribution, because it ensures that the treatment group of immigrants that obtain citizenship is similar to the control group of immigrants that do not obtain citizenship in all measured and unmeasured characteristics. Selection bias would disappear because assignment to citizenship is now based on a coin flip alone, and does not depend on the characteristics of the immigrants who self-select into citizenship. In this way, the effect of citizenship could be tested using a clinical trial just as one would judge the effect of a drug.

1.4 Research Strategies

Of course, such an experiment as the one described above is not feasible, and would also be highly unethical. However, the series of research articles presented here exploit a natural experiment in Switzerland and a field experiment in Germany that very closely mimic the experimental ideal.

1.4.1 Political and Social Integration: Naturalization Decisions in Swiss Municipalities

In the first two papers I study the political and social integration of immigrants. I exploit the fact that, prior to 2003, several municipalities in Switzerland voted on naturalization applicants using a secret ballot process.[4] This unique Swiss naturalization practice allows for two identification strategies. First, the effect of citizenship can be identified based on a selection on observable assumptions. The data enables me to control for the applicant characteristics that voters had when they voted on the naturalization requests. In this setup, controlling for the observable characteristics should be sufficient to remove almost all the omitted variable bias (see Hainmueller and Hangartner 2013 for further evidence on the selection on observable assumptions).

Second, since many votes are very close, we can obtain an unbiased estimate of the effect of citizenship by comparing the outcomes of unsuccessful applicants that came within a few votes of approval with successful applicants that were approved by similarly few votes. In the region around the threshold of approval, the approval decision is largely based on random factors. Although approved immigrant applicants may generally be different from rejected immigrant applicants at the time of the election (e.g., a higher proportion of Germans, higher skills, higher income, better integrated, etc.), there is no reason to expect that immigrants that are approved or rejected in elections that are decided by razor-thin margins will systematically differ in any way. Narrowly rejected and narrowly approved applicants are essentially identical on all observable and unobservable confounding characteristics. This design, which is often referred to as a regression discontinuity design (Thistlethwaite and Campbell 1960; Lee 2008), allows for an unbiased estimation of the effect of citizenship that can be as credible as estimates from a randomized experiment.

The analysis draws on the data collected by Hainmueller and Hangartner (2013), who extracted voting and applicant data for all immigrants whose naturalization requests were decided by such referendums between 1970 and 2003. These data offer a rich set of pre-treatment covariates that determine the selection into citizenship (conditional on applying). To measure the outcome variables for political and social integration, a survey of the immigrants included in the Hainmueller and Hangartner (2013) sample was conducted. The original sampling frame includes 2,225 unique applicants. I successfully identified and interviewed 768 (for-

4 For excellent accounts of Switzerland's integration and citizenship policies see for example Benz (1986), D'Amato (2001), Wanner and Piguet (2002), and Helbling (2008).

mer) applicants. The outcome data was collected between October 3, 2011 and September 19, 2014 (details are provided in Hainmueller et al. 2015).

1.4.2 Economic Inclusion: Discrimination in the German Labor Market

The third paper examines whether naturalization is linked to better labor market opportunities. It does so by measuring the discrimination rate in the hiring process. I use the correspondence test method to measure the behavioral responses of employers to fictitious job applicants with varying characteristics and signals (see i.e., Riach and Rich 2002). The procedure comprises sending out fictitious resumes in response to real job vacancies that are advertised online, and tracking the callback rates. This procedure allows me to identify the causal effect of citizenship on the likelihood that applicants with Turkish-sounding names will be called for a job interview. In the applications I randomly vary the applicant's name, citizenship status, place of birth, photographs, signals of social integration (membership in clubs/associations), and religion, and the inclusion of reference letters, in order to not only estimate the overall effect of citizenship on callback rates but also disentangle statistical from taste-based discrimination.[5]

The data was collected between August and December 2015. I relied on online advertised job vacancies by the Federal Employment Agency. In total, I applied to 316 open positions with three applications for a total of 948 applications.

1.5 Findings and Implications

Citizenship indeed matters. Summarizing the main results, we find substantial and large effects of citizenship on all three areas under scrutiny. First, naturalization has a strong effect on improving the long-term political integration of immigrants. Comparing among otherwise similar immigrants, those immigrants who were successful and received the Swiss passport developed high levels of turnout, efficacy, and political knowledge similar to that of rooted natives, whereas those immigrants who did not succeed in their referendums and were therefore rejected for the Swiss passport remained fairly disengaged from the political process. These effects are robust across the different identification strategies, large in substantive terms, and persist for more than a decade.

Second, naturalization strongly improves the long-term social integration of immigrants, as measured by whether immigrants have plans to stay in Switzerland permanently, are a member of a local social club, feel

5 Two dominant economic theories explain labor market discrimination: statistical discrimination theory (Arrow 1972; Phelps 1972) and the taste-based or animus-based interpretation of discrimination (Becker 1957). The former theory is based on the fact that employers have incomplete information on the applying candidates and thus, resort to generalizations based on observable characteristics (e.g., race or gender) to infer the expected productivity of the applicants. The more productivity-related information employers have, the less this group average matters. The latter theory suggests that employers dislike minorities. This type of discrimination is independent of uncertainties regarding the applicant's productivity.

discriminated against, and read Swiss newspapers instead of newspapers from their origin countries. These lasting effects are robust across two identification strategies and across a variety of robustness checks. The integration returns of 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, the integration returns from naturalization are larger if immigrants naturalize earlier rather than later in their residency period.

Third, naturalization improves labor market opportunities for immigrants. Having German citizenship considerably increases callback rates for applicants with Turkish-sounding names. However, holding citizenship is not enough to remove the whole of the ethnic penalty relative to native Germans. Based on the analysis, there is no evidence that statistical discrimination is at work in the German labor market. The findings suggest that the returns on naturalization are higher for immigrants who state lower performance levels (i.e., lower grades).

The political implications drawn from these findings are important for both theory and policy. First, the findings clearly support those who argue that naturalization has important independent effects in accelerating integration, and helps turn immigrants into "citizens" in the Tocquevillian sense by providing immigrants with the resources and incentives to invest in a future in the host country society. Second, the fact that the returns on naturalization are much larger for more marginalized groups and somewhat larger when naturalization occurs earlier in the residency period suggests that lowering the stringent residency requirements might be beneficial to realize the full integration gains from naturalization. The social returns for the host country society are larger for giving access to citizenship to those marginalized immigrants who face higher barriers to integration. While the optimal requirements for integration policy are beyond the discussion in this dissertation, the results suggest that if the goal is to maximize integration, the current legislation in Switzerland and Germany appears to be too restrictive. This is especially true in regards to the long residency period, which acts to strongly reduce the period that naturalized immigrants can hold host country citizenship and reap the social integration benefits associated with it.

1.6 Summary and Conclusion

The integration of rising immigrant populations poses a significant and urgent challenge for policymakers in Europe and North America. There are fierce debates within the academic and policy world about whether giving immigrants access to the host country citizenship fosters or dampens the successful integration of immigrants into the host country society. Despite its imminent policy relevance, we still know little systematically about the empirical impact that the acquisition of citizenship has on the social, economic, and political outcomes of naturalized immigrants. Empirical studies have been rare, and existing tests are plagued by methodological problems, in particular, the failure to deal with selection bias. Immigrants selectively ap-

ply for citizenship for reasons that are unobserved by the researcher. Hence, non-naturalized immigrants and naturalized immigrants differ on a wide range of background characteristics that can potentially explain any difference in their social and economic outcomes. Selection bias makes it extremely difficult to isolate the effect of citizenship per se. This problem is compounded by measurement issues, since reliable data on immigrants is often not available.

The following series of research articles deals with the central methodological problem of self-selection into citizenship by exploiting (quasi-)experimental research designs. By overcoming this problem, the studies have the potential to significantly advance the theoretical and empirical literature on citizenship. The findings suggest that citizenship has an immanent role for the integration of already-settled immigrants. Clearly, more work is needed to better ascertain the mechanisms through which naturalization increases immigrants' integration into the host society and to better examine how the effects of naturalization vary across immigrant groups and across the host country context. While the results have high internal validity due to the (quasi-) random assignment to citizenship, the generalizability of the results beyond Switzerland and Germany is more difficult to assess.

Moreover, the results are also important from a policy perspective. Many of the contemporary debates about citizenship laws revolve around the question of incorporation and integration of foreign-born residents into the social, economic, and political fabric of democracies. Immigration and naturalization are important policy issues in all western democracies, especially given the demographic challenges that exert pressure on the pension system. While populist parties continues to mobilize citizens against naturalizations, watchdog groups and journalists have fiercely criticized the process as discriminatory and pointed to incidents of xenophobic outbursts against particular types of minority groups. But despite these frequent and heated debates, there exists almost no systematical empirical evidence that could inform these policy discussions. This dissertation aims to fill this void by collecting critical evidence and conducting a comprehensive analysis of the impacts of naturalization.

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Articles

1

Naturalization Fosters the Long-Term Political Integration of Immigrants

Hainmueller, Jens, Dominik Hangartner and Giuseppe Pietrantuono. 2015. "Naturalization Fosters the Long-Term Political Integration of Immigrants." *Proceedings of the National Academy of Sciences of the United States of America* 112(41):12651–12656. (DOI: 10.1073/pnas.1418794112)

Does naturalization cause better political integration of immigrants into the host society? Despite heated debates about citizenship policy, there exists almost no evidence that isolates the independent effect of naturalization from the non-random selection into naturalization. We provide new evidence from a natural experiment in Switzerland where some municipalities used referendums as the mechanism to decide naturalization requests. Balance checks suggest that for close naturalization referendums, which are decided by just a few votes, the naturalization decision is as good as random so that narrowly rejected and narrowly approved immigrant applicants are similar on all confounding characteristics. This allows us to remove selection effects and obtain unbiased estimates of the long-term impacts of citizenship. Our study shows that for the immigrants who faced close referendums, naturalization considerably improved their political integration, including increases in formal political participation, political knowledge, and political efficacy.

1.1 Introduction

One of the key debates over immigration policy involves the political integration of immigrants and their access to citizenship. Some argue that immigrants should be given easy access to citizenship and encouraged to naturalize because naturalization provides immigrants with the necessary resources and incentives to rapidly integrate and invest in a future in the host country. In this view the acquisition of citizenship is an important catalyst that has an independent effect on accelerating and deepening the process of political integration. In contrast, others argue that access to citizenship should be highly restricted because naturalization itself does little to foster integration. In fact, naturalization is likely to dampen the incentives to integrate since once immigrants are given the passport of the host society, they can no longer be motivated to integrate by the promise of obtaining the benefits that come with citizenship (e.g., access to welfare benefits or the right to stay in the country indefinitely). From this perspective citizenship is not an instrument to improve integration but merely a reward that is promised to immigrants in exchange for successfully completing the integration process. Yet, others argue that pressuring immigrants to naturalize might backfire and simply reinforce immigrant identities.[1]

Does naturalization promote political integration? Despite the importance of this question for the design of immigration and citizenship policy and much theorizing among social scientists and pundits, there exists little rigorous causal evidence on the impacts of naturalization on the political integration of immigrants. Most studies only examine the impact of naturalization on economic integration (see, for example, OECD 2011), and the few existing studies that consider effects on political integration by comparing the political participation of naturalized and non-naturalized immigrants are based on limited research designs and data that prevent them from isolating the independent effect of naturalization from a plethora of confounding factors (see, for example, Just and Anderson 2012 and references therein).

When trying to isolate the effect of naturalization, the key problem for causal inference is that naturalization is far from randomly assigned. Instead, the process through which immigrants obtain citizenship involves a complex *double selection process*. In the first stage, immigrants selectively apply for naturalization, and this decision often depends on characteristics that are not observed by the researcher. For example, immigrants who are more motivated, have more resources, or are better informed are more likely to apply (see, for example, Portes and Curtis 1987; Yang 1994). In the second stage, decision makers carefully select who among the applicants is approved or rejected for citizenship. This screening is also based on characteristics that are typically unobserved by the researcher. For example, applicants who make a bad impression in the application interview, have a low perceived integration potential, or lack sufficient language skills might be more likely to be rejected.

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1 For reviews of these debates and theoretical perspectives see, for example, Bauböck et al. (2006); Bloemraad (2006); Hochschild and Mollenkopf (2009); Dancygier and Laitin (2014).

This double selection process severely confounds the existing comparisons of naturalized and non-naturalized immigrants. For example, if we find that naturalized immigrants are politically more informed or earn higher wages than non-naturalized immigrants, we cannot conclude that these differences are caused by naturalization because the double selection ensures that the two groups differ on the many important confounding characteristics. Eliminating the bias from this double selection process is a rather hopeless endeavor with typical observational data because researchers cannot possibly measure and statistically control for the myriad reasons that determine why immigrants apply and why decision makers approve or reject applications.

We provide new evidence that takes advantage of a natural experiment to identify the long-term effects of naturalization on the political integration of immigrants in Switzerland. Prior to 2003, some Swiss municipalities used secret ballot referendums as the mechanism to decide on naturalization applications. Voters received voting leaflets that informed them about the applicants and then cast a secret ballot to approve or reject each applicant. Immigrants who gained a majority of "yes" votes received the Swiss passport. This setting allows us to remove the bias from the double selection process.

In contrast to previous studies that do not measure whether immigrants applied for citizenship or not, we can remove the first-stage bias from selection into applying because we can restrict the comparison to only those immigrants who applied for naturalization and faced referendums, thereby removing from the control group those immigrants who were not motivated or lacked the resources to apply. We can also remove the second-stage bias from selection into approval using two different identification strategies. First, since we measure the same applicant characteristics that were reported to voters when they voted on the applicants, we can control for the characteristics that determined the approval of applicants and identify the effect of naturalization under a selection on observables assumption. In other words, once we control for their reported characteristics, the applicants are observably equivalent to voters and therefore they can no longer screen applicants based on unobservable attributes, such as their integration potential. Second, we can apply a regression discontinuity design that compares the outcomes of immigrants whose naturalization requests were barely approved or barely rejected by voters. Balance checks suggest that in close referendums that are decided within a narrow vote margin, who gets the Swiss passport and who does not is essentially as good as randomly assigned. Therefore, lucky applicants who are narrowly approved and unlucky applicants who are narrowly rejected are similar on all confounding characteristics, and any differences in their integration outcomes can be attributed to the independent effect of naturalization.

What we find is that naturalization has a strong independent effect on improving the long-term political integration among the competitive immigrant applicants in our sample, including increases in formal political participation, political knowledge, and political efficacy. These effects are robust across the different identification strategies and also large in substantive terms. For example, when looking at our summary index of political integration that combines all outcomes, we find that naturalization causes more than a full standard deviation unit increase in the political integration index.

Our study makes four main contributions. First, we provide new evidence of the effects of citizenship on the integration of immigrants that takes advantage of a natural experiment where naturalization is as good as

randomly assigned. The results suggest that naturalization can act as a catalyst that helps to turn immigrants into "citizens" in the Tocquevillian sense. Second, since the average naturalized immigrant in our sample obtained the Swiss passport 13 years ago, we examine whether naturalization has any long-term effects on incorporating immigrants into the democratic process. Existing work typically only considers short-term outcomes. Third, while most studies have looked at the economic integration of immigrants, we provide new evidence on the effect of naturalization on the political integration of immigrants. The political integration of immigrants is a major challenge for many countries that face rising immigrant populations and anti-immigrant backlash among natives. Successfully incorporating immigrants into the political process matters not only for the immigrants, but also for the quality of the democracy in the host country as it enables immigrants to voice their grievances through legitimate electoral and non-electoral means rather than sporadic violence and terror. Finally, our study fills a gap by examining the effect of naturalization on political integration in Switzerland specifically, a country where immigrant integration is a particularly thorny issue given the exceptionally large immigrant population (24%) and rather divisive immigration debates in recent decades.

1.2 Materials and Methods

1.2.1 Setting

In Switzerland, naturalization requests are typically decided at the local level, and municipalities use different procedures for these decisions (Hainmueller and Hangartner 2013; forthcoming). Our study exploits that some municipalities, which we refer to as "ballot box" municipalities, for several decades used popular votes with secret ballots to decide on citizenship applications (Hainmueller and Hangartner 2013 describe this institution in detail). Immigrants seeking naturalization had to apply with their local municipality, and if deemed eligible their naturalization request was put to a popular vote. Resident citizens received an official voting leaflet with résumés that detailed information about each applicant, and voters then cast a secret ballot to reject or approve each naturalization request. Applicants who received a majority of "yes" votes were granted Swiss citizenship (see the appendix for further details about the process).

1.2.2 Identification Strategies

The use of naturalization referendums allows us to address the double selection bias and thereby improve over existing research. The first improvement is that we can remove the potent confounding that comes from the selection into applying because we can restrict our comparison to immigrants who were all sufficiently motivated enough to apply for Swiss citizenship in the first place. The second improvement is that in the naturalization referendums, we actually know the assignment mechanism that determines why applicants are accepted and can exploit this for identification.

In particular, the unique situation allows for two identification strategies. First, we can identify the effects of citizenship based on a selection on observables assumption because we know and control for the applicant characteristics that voters saw on the voting leaflets when they voted on the naturalization requests. In other words, because voters base their decisions on the applicant characteristics that we observe, once these covariates are controlled for, applicants are observably equivalent to voters such that they cannot strategically and systematically screen applicants for citizenship based on their integration potential or other unobserved characteristics that would confound the comparison. So in our unique setup, controlling for the observable characteristics should be sufficient to remove almost all the omitted variable bias (see Hainmueller and Hangartner 2013 for further evidence on the selection on observables assumptions).

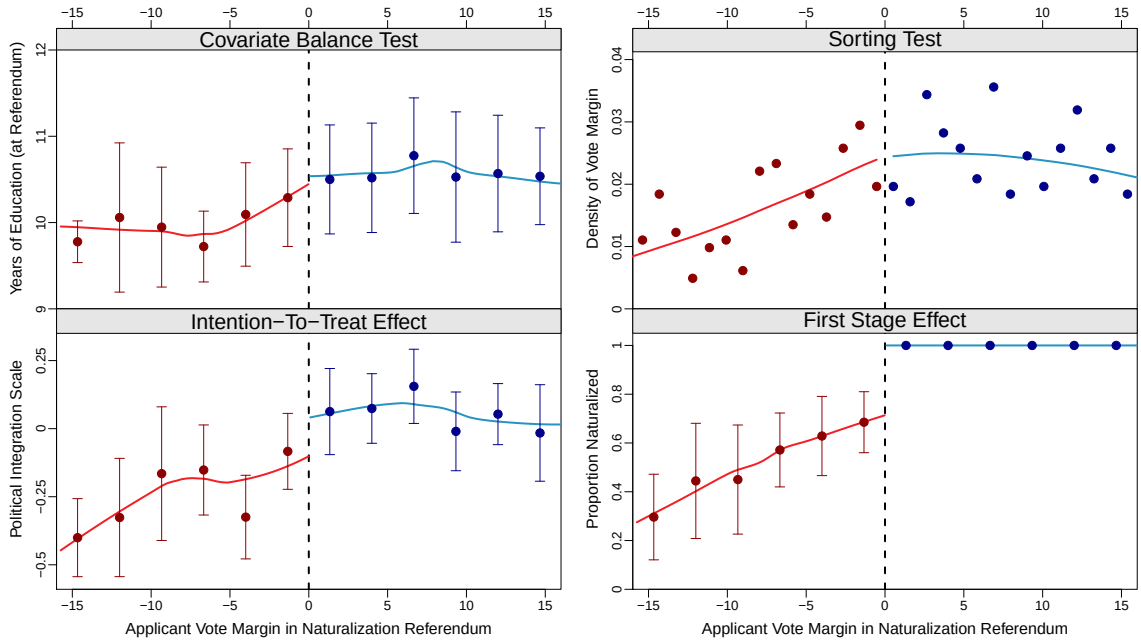
One remaining caveat with this identification strategy is that a fraction of applicants who were rejected in their first referendum subsequently re-applied and secured citizenship. Simply excluding these successful re-applicants from the analysis would compromise the identification because the decision to re-apply is partially endogenous; more motivated immigrants might be more likely to re-apply. In addition, there is a possibility that decision makers screen the re-applicants based on unobserved confounding characteristics. Many of the re-applications occurred after 2003 and were therefore not decided in referendums but by politicians in the municipality council. In these cases, we cannot be sure that our covariates capture all the relevant characteristics that determined the decisions on the re-applications.

Fortunately, we can address this problem using an instrumental variable (IV) approach where identification relies solely on the exogenous variation in naturalization that comes from whether applicants won their first referendums. We follow the IV framework developed by Angrist et al. (1996) that allows for heterogeneous treatment effects. We can view the outcome of the first referendum as an exogenous "encouragement" where winning applicants are encouraged to obtain citizenship and losing applicants are discouraged from obtaining citizenship. Since applicants who win their first referendum automatically get citizenship, we only have two types of applicants in our sample: "compliers" and "always takers" (Angrist et al. 1996). Compliers are those applicants who are motivated to apply only once. They get Swiss citizenship when they win their first referendum but do not re-apply and subsequently naturalize when they lose their first referendum. In other words, such applicants "comply" with the encouragement and therefore their naturalization status is exogenously determined by the outcome of their first referendum. Always takers are applicants who do not comply with the encouragement because they always get Swiss citizenship, regardless of the outcome of their first referendum. If they win they get Swiss citizenship, but if they loose they re-apply and subsequently naturalize nonetheless. The IV strategy addresses this non-compliance by taking the (covariate adjusted) difference in the outcomes between accepted and rejected applicants (the so called intention-to-treat effect) and scaling it by the fraction of compliers (the so called compliance ratio) in order to isolate the local average treatment effect (LATE) of naturalization among compliers (Angrist et al. 1996).[2]

2 Non-compliance can only occur in the group of applicants who lost their first referendum and therefore there are no never takers (i.e., applicants who never get citizenship) or defiers (i.e., applicant who get citizenship if they lose, but not if they win). The one-sided non-compliance also implies that the LATE is equal to the average treatment effect on the untreated.

Our second identification strategy is a regression discontinuity (RD) design that takes advantage of close referendums and compares lucky applicants who won their naturalization referendum by a few votes and obtained the Swiss passport with unlucky applicants who lost their referendum by a few votes and did not get the Swiss passport (Lee 2008). In close referendums the outcome is largely decided by random factors (e.g., the weather on the day of the referendum, current events, etc.) so that lucky immigrants who are narrowly approved are on average similar to unlucky immigrants who are narrowly rejected, and therefore differences in their integration outcomes can be attributed to the effect of citizenship as opposed to differences in unobserved background factors. In other words, in this quasi-experimental comparison the applicant characteristics are controlled for "by design" because in close referendums citizenship is as if it were randomly assigned in an experiment. The key RD identification assumption is that the potential outcomes are continuous at the threshold (Hahn et al. 2001). This assumption would fail if immigrants had precise control over their referendum outcomes and could sort around the threshold, but this is implausible in large elections such as our secret ballot referendums where the outcome is clearly beyond the control of the individual applicants.

Figure 1.1: Fuzzy Regression Discontinuity Design: Identification Checks and the Effect of Naturalization on Political Integration



Fuzzy RD design: identification checks and the effect of naturalization on political integration. Upper Left shows that the applicants' (pretreatment) years of education are well balanced at the vote threshold for winning the naturalization referendum. Upper Right 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 Lower Right show that barely winning versus barely losing the referendum increased levels of political integration and the probability of naturalization, respectively. Loess lines; 95% confidence intervals for binned averages (dots).

Figure 1.1 illustrates the RD logic and previews the main result. In the upper left panel we plot the applicants' years of education, as reported on the leaflets at the time of the referendums, against the vote share margin

from the applicants' first naturalization referendum. The vote margin is the difference between the share of "yes" votes and the 50% victory threshold that applicants had to exceed to win their referendum. Applicants with positive (negative) margins to the right (left) of the threshold reached a majority (minority) of "yes" votes and were granted (denied) Swiss citizenship. The red and blue fitted lines from a Loess smoother summarize the average years of education for a given vote share on both sides of the threshold, respectively. The dots are binned averages with 95% confidence intervals.

In close referendums that are decided by just a few votes, who wins and who loses is as good as randomly assigned, and therefore, just as in a truly randomized experiment, close winners and close losers have similar levels of education. Figures 1.D.1–1.D.4 in the appendix report similar balance checks that show that barely accepted and barely rejected applicants are similar on many other pre-treatment characteristics, including the year of the referendum, their age, gender, prior residency in Switzerland, country of origin, or the average municipality size.

The upper right panel in Figure 1.1 shows another key identification check where we plot the estimated density of the vote margin on both sides of the threshold. If naturalization is beneficial and applicants had precise control over the outcome of their referendums then we would expect them to sort around the threshold and we should therefore see an unusually large (small) number of applicants with vote shares just above (below) the threshold (McCrary 2008). Instead, we find that there is no discontinuity in the density at the threshold indicating that applicants were not able to sort around the threshold.

The lower left panel in Figure 1.1 previews one of the main findings. We plot the applicants' score on the political integration scale, our summary measure that combines all integration outcomes, against the vote margin. We see that levels of political integration as measured by the political integration scale sharply increase by about 0.15 right at the threshold. This intention-to-treat effect, which amounts to about a third of a standard deviation unit increase on the integration scale, is causally attributable to the effect of winning the referendum, given that who wins and who looses in close referendum is as good as randomly assigned.

Note that this intention-to-treat effect underestimates the actual effect of naturalization since a sizable share of those who barely lost subsequently re-applied and received Swiss citizenship. We can correct for this non-compliance by using a fuzzy RD design where, similar to the IV strategy, the intention-to-treat effect is scaled by the compliance ratio at the threshold to isolate the LATE of naturalization for compliers in close referendums (Hahn et al. 2001). The lower right panel in Figure 1.1 shows the first stage effect where we plot the proportion of naturalized applicants against the vote share margin. We see that the probability of naturalization jumps by about 0.28 at the threshold. Accordingly, the LATE of naturalization for compliers at the threshold is estimated at about 0.15/0.28=0.53 which implies that naturalization caused more than a full standard deviation unit increase on the political integration scale.

The two identification strategies are complementary. The IV strategy provides more precision because it identifies the LATE for compliers in the whole estimation sample, but we have to statistically adjust for the covariates. The RD strategy is more non-parametric because we control for the covariates by design, but we lose precision and external validity because we identify the LATE for compliers in close referendums.

1.2.3 Sample

Our study draws on the data collected by Hainmueller and Hangartner (2013) who extracted from municipal archives all the voting and applicant data for all immigrants whose naturalization requests were decided by such referendums in all 46 ballot box municipalities between 1970 and 2003. In 2003, the Swiss court ruled that secret ballot naturalization referendums could no longer be used (Tables 1.C.1 and 1.C.2 in the appendix provide details on the sample). These data give us a rich set of pre-treatment covariates that determine the selection into citizenship conditional on applying. The covariates include the immigrants' age, education, country of origin, years since arrival in Switzerland, and time period and municipality fixed effects.

To measure political integration we conducted a survey of the immigrants included in the Hainmueller and Hangartner (2013) sample. The survey was conducted at the University of Zurich according to its policy for human subjects research. Informed consent was obtained from each participant at the beginning of the survey. Overall, we successfully identified and interviewed 768 immigrants, which corresponds to a cumulative response rate (RR3) as defined by the American Association for Public Opinion Research of 34.5% (45.9% among the competitive applicants with vote margins within $\pm$ 15% around the threshold of winning). As we explain in the appendix, this response rate is much higher than typical response rates for similar surveys.

One possible concern is that the probability of being interviewed is correlated with naturalization. Figure 1.C.1 and Table 1.C.3 in the appendix show that this is not the case in our study. In fact, the probability of being interviewed and the characteristics of those interviewed are virtually identical for closely accepted and closely rejected immigrants.

1.2.4 Outcomes

For the outcomes we measured four standard indicators of political integration. The first outcome captures formal political participation and consists of a binary indicator coded as one for immigrants who report that they voted in the last federal parliamentary election in Switzerland and zero otherwise. Note that in Switzerland and most other democratic countries, a central feature of naturalization is that naturalized immigrants acquire the right to vote in federal elections (Just and Anderson 2012). Since non-naturalized immigrants do not have the right to vote, their turnout is legally constrained to be zero. Therefore the effect of naturalization on turnout is constrained to be non-negative and so for this outcome we are purely interested in the magnitude of the potential effect rather than the sign. In other words, the question is how commonly naturalized immigrants who are otherwise similar to non-naturalized immigrants do actually exercise their newly acquired right to vote in Swiss federal elections or not.

The second outcome captures political efficacy using a standard question that asks respondents whether they agree with the statement that "people like me don't have any influence on the government." Answers are recorded on a five-point scale ranging from 'strongly agree' to 'strongly disagree', and we standardized the codings to vary from 0-1 for comparability.

The third outcome captures political knowledge and is measured using the number of correct answers to two standard knowledge questions about the name of the current Swiss Federal President and the number of signatures required for a federal initiative. We again standardized the number of correct answers to vary from 0-1 for comparability.

The fourth outcome captures informal political participation. It consists of a binary indicator that measures whether immigrants report that they participated in any of the following activities in the last 12 months: contacted a politician, worked in a political party, displayed a campaign sticker, participated in a political demonstration, collected signatures for a petition, boycotted a product for political reasons, donated money to a political party, or persuaded others to vote.

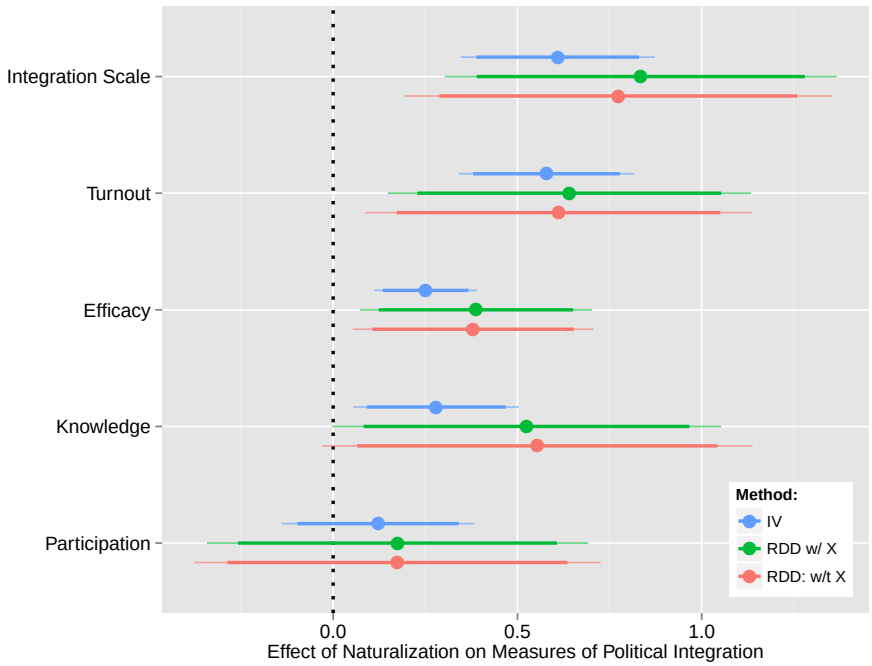
As a final outcome we also build a political integration scale that combines the four outcomes by extracting the first component of a polychoric principal component analysis (PCA) (Olsson 1979). This first component explains 51% of the total variance (Eigenvalue = 2.04). The appendix provides details on the PCA (see 1.C.5). Averaging responses across multiple items is an effective strategy to reduce bias from random measurement error that is common in survey research. It also provides a succinct summary measure for the multiple metrics of political integration. We calibrate the scale to have mean zero and a standard deviation of 0.5 to make it comparable to the other outcomes.

It is worth emphasizing that one unique feature about our design is that it allows us to measure the long-term effects of naturalization. Since our survey was conducted in 2011-2014 and the use of naturalization referendums ended in 2003, there is for most applicants a long gap between the time of the measure of the outcomes and the time of the receipt of Swiss citizenship (13 years on average). Our estimates, therefore, will pick up only lasting effects that naturalization might have on integrating immigrants into the political fabric of the host society. This rules out the possibility that our findings are driven by pure short-term effects, such as, for example, a temporary increase in political knowledge that results from applicants studying Swiss politics just to pass the application interview. To the best of our knowledge, there currently exists no causal evidence on the long-terms effects of naturalization.

1.3 Results

In Figure 1.2 we present the effect estimates from the different identification strategies. The regression tables are reported in the appendix (Tables 1.E.2–1.E.4). For all estimations, we restricted the sample to include only competitive applicants who obtained enough "yes" votes to come within a 15% window around the threshold of winning (i.e., applicants who scored between 35 and 65 percent of "yes" votes). In Figures 1.E.1–1.E.3 in the appendix we show that the estimates are fairly similar for different windows ranging from 10% to 25%. For smaller windows, our sample size is too limited to reliably estimate the treatment effect at the threshold with the fuzzy RD design.

Figure 1.2: Effects of Naturalization on Political Integration



Naturalization improves the political integration of immigrants. The figure shows point estimates and robust 95% (thin) and 90% (bold) confidence intervals from instrumental variable and fuzzy RD design models. Outcomes were as follows: political integration scale (mean, 0; SD, 0.5); voted in last election (0/1); political efficacy (0–1); political knowledge (0, 0.5, 1); and informal political participation (0/1). Covariates include reported applicant characteristics and fixed effects for municipality and time period. The sample includes all applicants within a window ±15% margin of the threshold.

1.3.1 Instrumental Variable Estimates.

To estimate the effect of naturalization we fit two-stage least-squares models in which we regress the outcomes on a binary naturalization indicator, coded one for immigrants who received Swiss citizenship and zero for those who did not, and also control for the applicant background characteristics reported in the voting leaflets as well as a full set of municipality and time period fixed effects. We instrument the naturalization dummy with a binary instrument that codes whether immigrants won or lost their first naturalization referendum and are therefore encouraged or discouraged from getting Swiss citizenship.

We fit the first-stage equation by regressing naturalization status on the covariates, the vote margin, and the instrument (Table 1.E.1 in the appendix). Consistent with the lower left panel in Figure 1.1, we find that the instrument has a strong effect on naturalization. Closely winning versus closely losing the first referendum increased the probability of getting Swiss citizenship by about 30 percentage points, and this finding is robust across a variety of specifications. This compliance ratio, which implies that there are about 30 percent compli-

ers and about 70 percent always takers, is sufficiently high so that we avoid the problem of weak instruments (the F-statistic for the relevance of the instrument is 20 for the preferred specification—which far exceeds the standard threshold of 10, see Stock and Yogo (2005)).

The blue estimates in Figure 1.2 show the IV estimates of the effect of citizenship for compliers. We find that naturalization strongly improved the political integration of immigrants in our estimation sample. Comparing naturalized and non-naturalized immigrants who were otherwise similar on the reported characteristics and therefore observably equivalent to voters, naturalization results in about a 0.61 increase in the political integration index that combines all the integration outcomes ($p<0.00$, two tailed). This effect is large in substantive terms: given that the index has a standard deviation of 0.5 this means that naturalization boosted long-term political integration by about a full standard deviation unit.

Looking at the outcomes separately we see that the effects are consistent across measures. We find that newly naturalized immigrants who are otherwise similar to non-naturalized immigrants, had a turnout of 58 percentage points in the last parliamentary election in Switzerland. This level of voting is striking considering that the reported average turnout among rooted natives who have been Swiss since birth was 52% according to the Swiss election survey. This suggests that newly naturalized immigrants voted at similar rates as Swiss natives. We also find that naturalization has a strong effect on improving the political efficacy of immigrants with a 0.25 increase on the 0-1 scale of believing that one has an influence on the government. Given that the average level of efficacy among non-naturalized immigrants is 0.44, this effect corresponds to about a 57% increase over the baseline level. Similarly, we find that naturalization resulted in immigrants becoming much more politically informed with an increase of 0.28 on the 0-1 scale of answering the knowledge questions; this corresponds to about half of a question more answered correctly or about a 104% increase over the average level of political knowledge among the non-naturalized immigrants, which is 0.27. This increase is remarkable given that we interviewed respondents on the phone and put them on the spot by the political quiz; they could not easily look up the answers as in a self-completion survey. It is also remarkable given that naturalization raises immigrants' average political knowledge to a level that is similar to that measured for rooted natives who have been Swiss since birth (which is about 0.52 according to the 2011 Selects survey that asked similar questions). Finally, we find that naturalization led to a 12 percentage point increase in informal political participation but this effect is far from being statistically significant at conventional levels ($p<0.36$). This is partly due to the fact that most immigrants do not engage in informal participation and therefore there is little variation in this outcome variable. For example, only 8% of the non-naturalized immigrants engage in informal political participation.

1.3.2 Fuzzy Regression Discontinuity Design Estimates.

The green estimates in Figure 1.2 show the results from the fuzzy RD design that identifies the naturalization effect for compliers in close referendums based on a local linear two-stage least square regressions where the slopes of the vote margin is allowed to vary on both sides of the threshold. The results are similar to the IV

estimates, and the magnitudes are, if anything, slightly higher for all outcomes except informal participation. As expected, the RD estimates are less precise given the local identification for compliers at the threshold. Naturalization increases the political integration index by 0.83 ($p<0.00$), the probability of voting by 64 percentage points, political efficacy by 0.39 (or 89% over the baseline level), and political knowledge by about 0.52 (or 193% over the baseline level). The effect on informal political participation is 17 percentage points and again far from significant at conventional levels ($p<0.49$).

Finally, in order to check the design-based RD identification, the red estimates show the effects that we obtain when replicating the RD model while dropping all the covariates (except the vote margin). If the naturalization decision in close referendums is as good as random, then just like in a randomized experiment, controlling or not controlling for the baseline covariates should not considerably change the effect estimates since the covariates (and also unobservables) are well balanced by design. The estimates are almost identical with and without the covariates, which corroborates the RD identification.

Taken together, these results demonstrate that naturalization caused big and long-lasting improvements in political integration among the competitive immigrant applicants in our sample. The results are consistent across the different identification strategies and various measures of political integration (except informal participation). These long-term increases in political integration are remarkable given that outcomes like voting, political efficacy, or political knowledge are often seen as fairly stable attributes that are formed in early socialization, but then rarely change over time. Yet, among otherwise similar immigrants, naturalization substantially increases political engagement to a new level where more than two decades later naturalized immigrants vote at the same rates and possess similar levels of political information as rooted natives who have been Swiss since birth. This suggests that naturalization acts as a critical juncture where barely rejected immigrants remain disengaged from the political process, while barely accepted immigrants are propelled to become integrated to a level that is similar to that of rooted natives.

1.4 Discussion

1.4.1 Effect Heterogeneity

One important question for policy and theory is whether the naturalization effect varies for different immigrant groups. To investigate this, we examined whether the naturalization effect differs by the origin of the immigrants, their level of education, and their prior residency in Switzerland. We find that the effects of naturalization are remarkably stable across these different groups of immigrants (Tables 1.E.5–1.E.10 in the appendix). Naturalization improved political integration for groups that are less socially marginalized to begin with, such as immigrants who are born in Switzerland, immigrants with higher education levels, and immigrants from richer European origin countries. But we see similar naturalization effects among more socially marginalized groups, such as immigrants from Turkey and Yugoslavia, immigrants who are born abroad, and immigrants with lower education levels. This stability in the effects suggests that we might expect similar

positive integration returns to naturalization if the stringent residency requirements for naturalization were to be lowered.

1.4.2 Alienation or Integration

Which mechanisms might be driving the naturalization effects? While a full analysis of the mechanisms is clearly beyond the scope of this study, our data can shed some light on distinguishing between two broader mechanisms. One possibility is that the acquisition of citizenship turns immigrants into active and well-integrated participants of the democratic process. Another possibility is that the act of being rejected alienates applicants from the political process and the host country society such that their political integration drops lower than it would have been had they never applied for naturalization. Distinguishing these two mechanisms is difficult given that naturalization decisions always involve either an acceptance or rejection. However, one possibility is to examine outcomes that are especially sensitive to one specific mechanism. To test for a potential alienation effect, we replicate our models using three measures that capture the degree to which respondents distrust other people, the judicial system, or the local authorities (see section 1.E.5 in the appendix for details). If applicants are alienated because they are rejected on discriminatory grounds, then we would expect them to show higher levels of distrust than accepted applicants. This distrust would be directed either towards other people who cast the discriminatory votes in local referendums, the local authorities who processed the naturalization applications but did nothing to prevent the discrimination, or the courts who might have failed to overturn discriminatory rejections upon appeal. The findings, displayed in Figure 1.E.4 in the appendix, contradict the idea of a long-lasting alienation effect. Naturalization has no effect on all three distrust measures; point estimates are close to zero and insignificant. This suggests that the effects of naturalization work mainly through accepted immigrants becoming more politically integrated than they would be in the absence of naturalization, rather than through an alienation effect.

1.5 Conclusion

This study examined the long-term effect of Swiss citizenship on the political integration of immigrants. We exploited a natural experiment in that some municipalities used referendums to decide on naturalization requests of immigrants. This allowed us to isolate the effects of naturalization from the non-random selection into naturalization. Using two identification strategies and multiple outcomes and robustness checks, we found that in our sample of competitive applicants, naturalization has a strong effect in generating lasting improvements in political integration. Comparing among otherwise similar immigrants, those immigrants who barely won their referendums and therefore received the Swiss passport developed high levels of turnout, efficacy, and political knowledge similar to that of rooted natives, whereas those immigrants who barely lost their referendums and were therefore rejected for the Swiss passport remained fairly disengaged from the political process. These effects persist for more than a decade. The findings have important implications for the

design of immigration and citizenship policy. They clearly support those who argue that naturalization has important independent effects in accelerating political integration and helps turn immigrants into "citizens" in the Tocquevillian sense. Moreover, the finding that the positive effects of naturalization on integration are stable across very different immigrant groups suggests that lowering the stringent residency requirements might be beneficial to realize the full integration gains from naturalizations. Clearly, more work is needed to identify the effects of citizenship in other contexts and for other outcomes. Further work is also needed to better ascertain the mechanisms through which naturalization increases political integration.

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Appendix

1.A Introduction

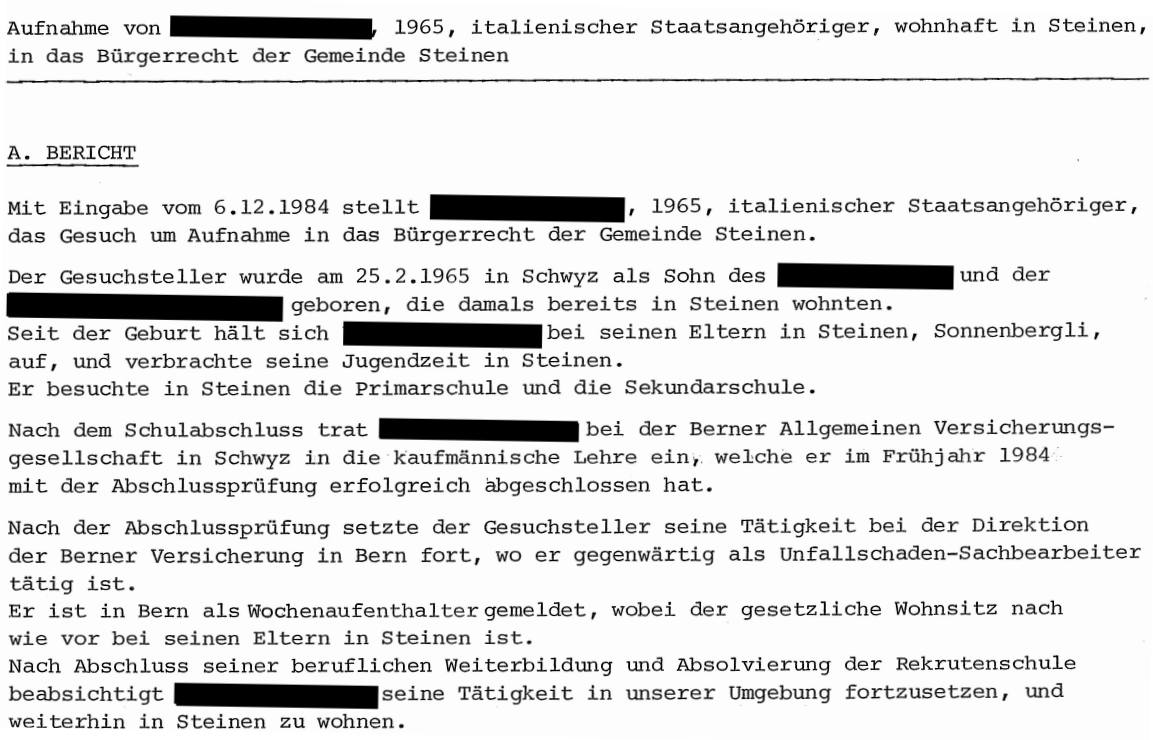
This appendix is structured as follows: Following the introduction, the second section provides background information on the Swiss naturalization referendums. The third section provides details about the survey, the sample, response rate, attrition, and the construction of the political integration index. The fourth section presents placebo tests that validate the identification strategy. The last section reports additional results referenced in the main paper, including results for the first-stage estimation, the main effects, robustness checks for different bandwidths, subgroup effects, effects on distrust, and OLS estimations.

1.B Swiss Naturalization Referendums

In Switzerland, each municipality autonomously decides on the naturalization applications of its foreign residents who seek Swiss citizenship via the ordinary naturalization procedure. We focus on the group of municipalities that until 2003 used referendums with closed ballots to decide on naturalization requests. A typical naturalization referendum involved two stages. Local voters first received in the mail the ballot and an official voting leaflet that explained the pending naturalization request with a detailed description of each immigrant applicant including information about his or her age, gender, education, country of origin, language skills, and integration status.

Figure 1.B.1 shows an anonymized example of a typical voting leaflet. Voters then cast a secret ballot on each individual request and applicants with a majority of 'yes' votes were granted Swiss citizenship. More details on the Swiss naturalization procedure are provided in Hainmueller and Hangartner (2013).

Figure 1.B.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 1.B.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.

1.C Sample

1.C.1 Sampling Frame

We use the data compiled by Hainmueller and Hangartner (2013) that contains applicants' characteristics and voting outcomes for 2,225 unique citizenship applicants voted on between 1970 and 2003 in the Swiss municipalities that used secret ballot referendums with voting leaflets. The data was assembled by first identifying all ballot box municipalities that used referendum voting with secret ballots to decide on naturalization requests before 2003. Members of the Hainmueller and Hangartner research team then visited each municipality and extracted the official voting leaflets with applicant information and the vote counts for all ordinary naturalization requests documented in the municipality archive for the period from 1970 to 2003. Overall there are 46 ballot box municipalities[3] located in seven different cantons in the German-speaking region. The average municipality had 4,029 registered voters (in 2003), although the size varied considerably from 563 registered voters in Oberiberg to 22,441 voters in Chur. The period coverage varies somewhat due to differences in data availability, but for most municipalities, the data contains all naturalization referendums going back to the 1970s and 1980s.

1.C.2 Response Rate

The interviews were conducted between October 3, 2011 and September 19, 2014. The sampling frame based on Hainmueller and Hangartner (2013) includes 2,225 unique applicants of which we successfully identified and interviewed $N = 768$. This corresponds to a cumulative response rate (RR3) as defined by AAPOR of 34.5%. We conducted 502 interviews on the phone, 260 by a combination of mail and phone (for the knowledge questions), and 6 face-to-face. Of the 1,457 applicants that we were not able to interview only 105 were actually contacted by us and declined to be interviewed (so 88% of the contacted cases agreed to participate). For the other cases that we were not able to interview we learned based on information from relatives that 82 were deceased and 58 have left Switzerland. For the remaining cases we were not able to contact the applicant.

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3 The 46 municipalities are: Altdorf, Altendorf, Arth, Beckenried, Bühler, Buochs, Chur, Dallenwil, Davos, Einsiedeln, Emmen, Ennetmoos, Feusisberg, Freienbach, Gais, Galgenen, Gersau, Heiden, Hergiswil, Hundwil, Ingenbohl, Küssnacht, Lachen, Lutzenberg, Malters, Morschach, Muotathal, Oberiberg, Reichenburg, Rothenthurm, Schübelbach, Schwyz, Speicher, St. Margrethen, Stans, Stansstad, Steinen, Teufen, Trogen, Tuggen, Unteriberg, Urnäsch, Walzenhausen, Wangen, Weggis, Wolfenschiessen, and Wollerau.

Among competitive applicants who obtained enough "yes" votes to come within a $\pm 15\%$ window around the threshold of winning, we conducted $N = 474$ interviews which corresponds to a cumulative response rate (RR3) of 45.9%. Note that this response rate is substantially higher than that of comparable surveys. For example, a recent survey conducted among voters in Switzerland yielded a contact rate of 20.6% and a response rate (RR3) of 12.8% (Hainmueller et al. 2015).

1.C.3 Descriptive Statistics

Table 1.C.1 displays the descriptive statistics for key covariates and outcomes for all interviewed applicants and table 1.C.2 shows the same information but focuses on competitive applicants that obtained enough 'yes' votes to come within a $\pm 15\%$ window around the threshold of winning.

Table 1.C.1: 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	654	20.16	6.72	12.00	47.00
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	641	0.00	0.50	-0.86	0.99
Turnout	761	0.58	0.49	0.00	1.00
Efficacy	757	0.59	0.26	0.20	1.00
Knowledge	679	0.43	0.41	0.00	1.00
Participation	737	0.39	0.49	0.00	1.00
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
Distrust for people	761	0.38	0.21	0.00	1.00

Note: Male, age, residency years, 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, turnout, efficacy, knowledge, participation, and distrust are measured in our immigrant survey.

Table 1.C.2: 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	428	19.20	5.70	12.00	44.00
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	403	-0.05	0.49	-0.86	0.99
Turnout	470	0.53	0.50	0.00	1.00
Efficacy	467	0.57	0.25	0.20	1.00
Knowledge	424	0.43	0.41	0.00	1.00
Participation	456	0.34	0.47	0.00	1.00
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
Distrust for people	469	0.38	0.20	0.00	1.00

Note: Male, age, residency years, 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, turnout, efficacy, knowledge, participation, and distrust are measured in our immigrant survey.

1.C.4 Non-response and Attrition

Figure 1.C.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.

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

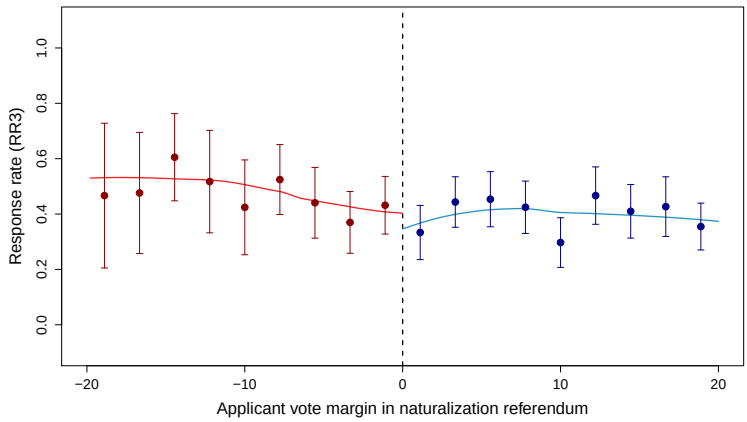


Table 1.C.3 provides further evidence that applicants who were successfully interviewed are not different from those that we could not contact, have died, emigrated, or declined to be interviewed. In particular, we examine whether the interaction of baseline covariates and the instrument (more than 50% 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 1.C.3: Instrument Interaction Test for Selective Attrition

	(1)	(2)	(3)	(4)
Outcome	Interviewed	Interviewed	Interviewed	Interviewed
Above 50 %	0.02	-0.55	0.03	-0.57
	(0.04)	(0.35)	(0.06)	(0.36)
Margin			-0.00	-0.00
			(0.01)	(0.01)
Margin × Above 50%			0.01	0.01
			(0.01)	(0.01)
Applicant Characteristics				
Country of Origin	✓	✓	✓	✓
Sociodemographics	✓	✓	✓	✓
Interactions with Above 50 %				
Country of Origin		✓		✓
Sociodemographics		✓		✓
Controls				
Time period Fixed Effects	✓	✓	✓	✓
Municipality Fixed Effects	✓	✓	✓	✓
Parameters tested	1	35	1	35
F-test	0.20	1.33	0.18	1.31
p-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 ±15%. Robust standard errors in parentheses.

1.C.5 Construction of the Political Integration Scale

We use Principal Component Analysis (PCA) to combine the four outcome measures into the political integration scale. Using a scale that averages responses from several items reduces bias due to random measurement error in survey research (Ansolabehere et al. 2008). To take into account the discrete distributions of some of our outcomes, we use polychoric PCA (Olsson 1979) which uses linear combinations of the polychoric correlation matrix of the items, rather than the items themselves, to extract the principal components. While the first principal component explains more than 51% of the total variance (Eigenvalue = 2.04), the explanatory power drops sharply and flattens for the higher components: it is 21% (Eigenvalue = 0.86) for the second, 15% (Eigenvalue = 0.60) for the third, and 12% of the total variance (Eigenvalue = 0.48) for the fourth component. We rescale the first principal component to have a mean zero and standard deviation of 0.5 to make this political integration scale comparable to the other metrics. Note that the results for the naturalization effects are similar when we instead use a simple, additive scale of the four outcome measures or when we omit the turnout outcome from the PCA to build the scale.

1.D Placebo Tests

Figure 1.D.1: Balance Checks for Applicant Characteristics (95% Confidence Intervals)

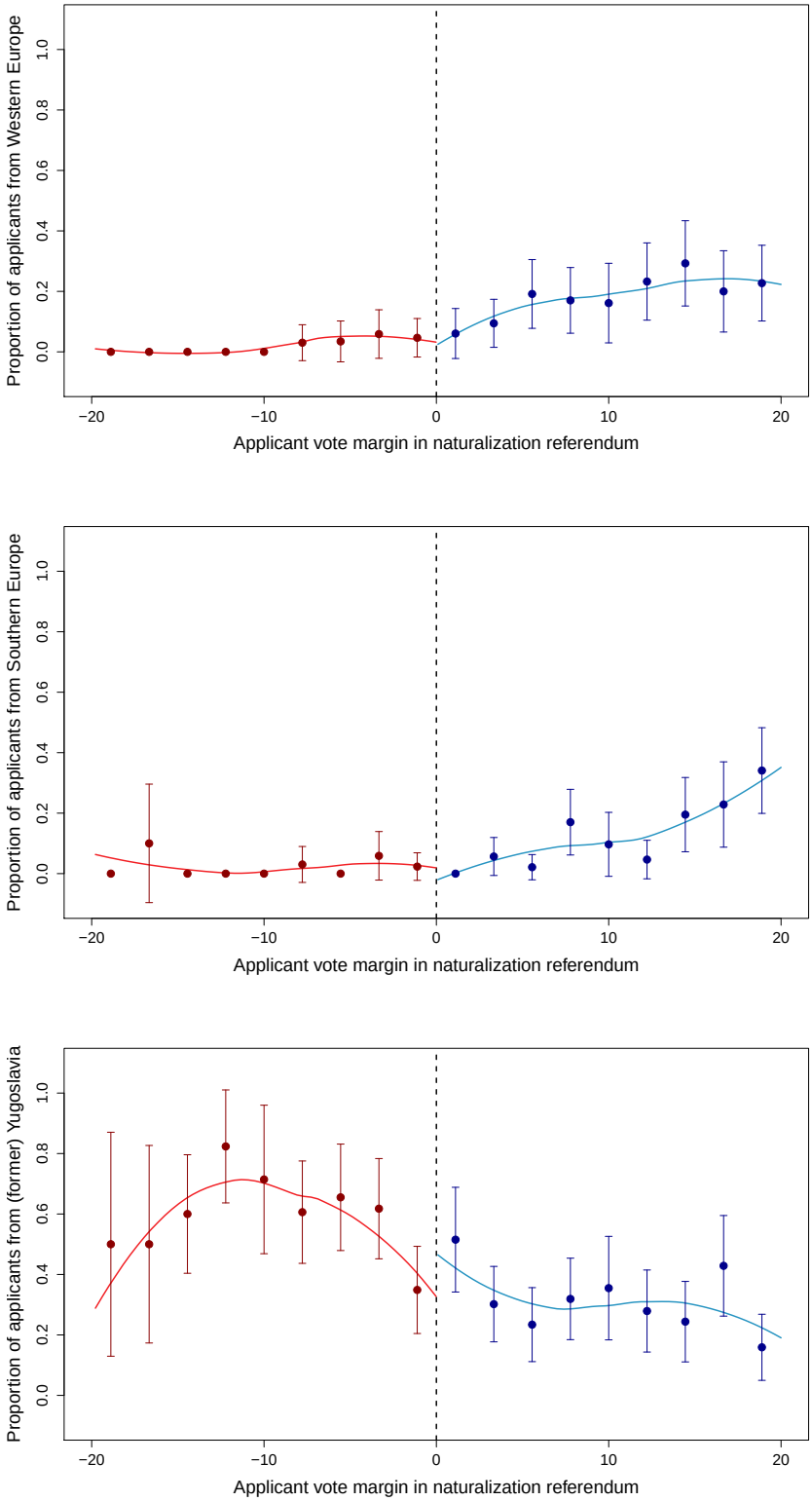


Figure 1.D.2: Balance Checks for Applicant Characteristics (95% Confidence Intervals)

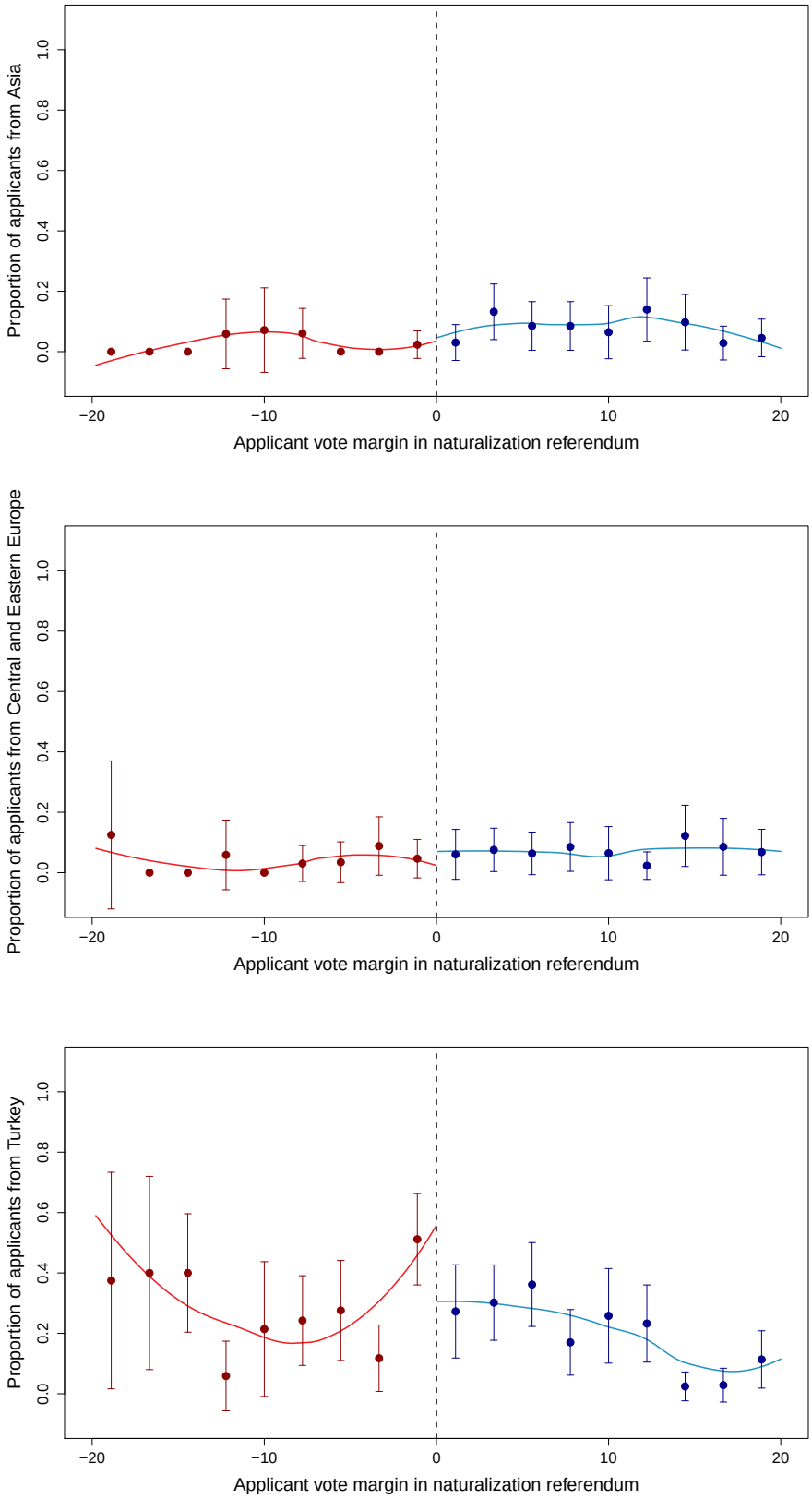


Figure 1.D.3: Balance Checks for Applicant Characteristics (95% Confidence Intervals)

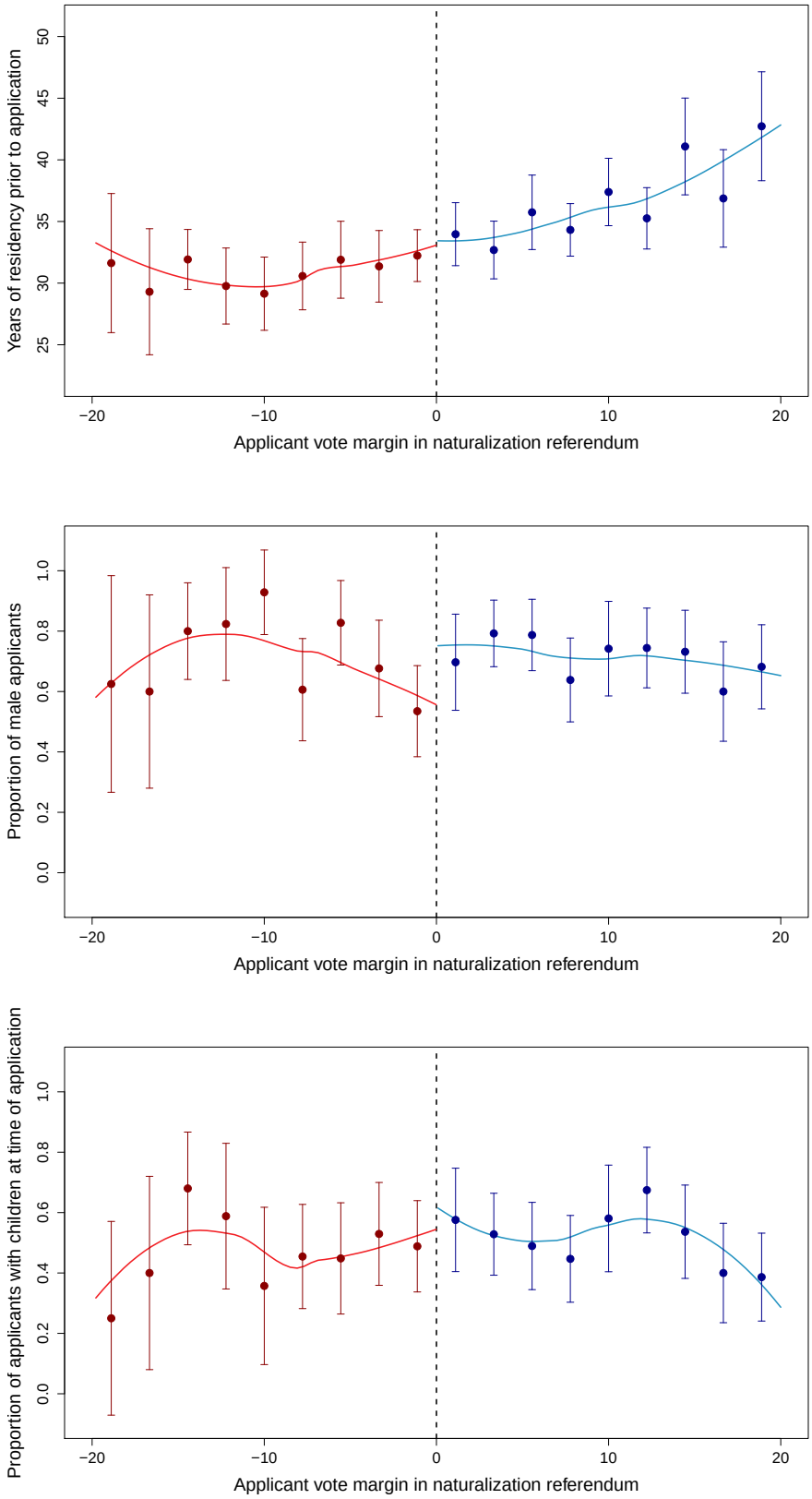
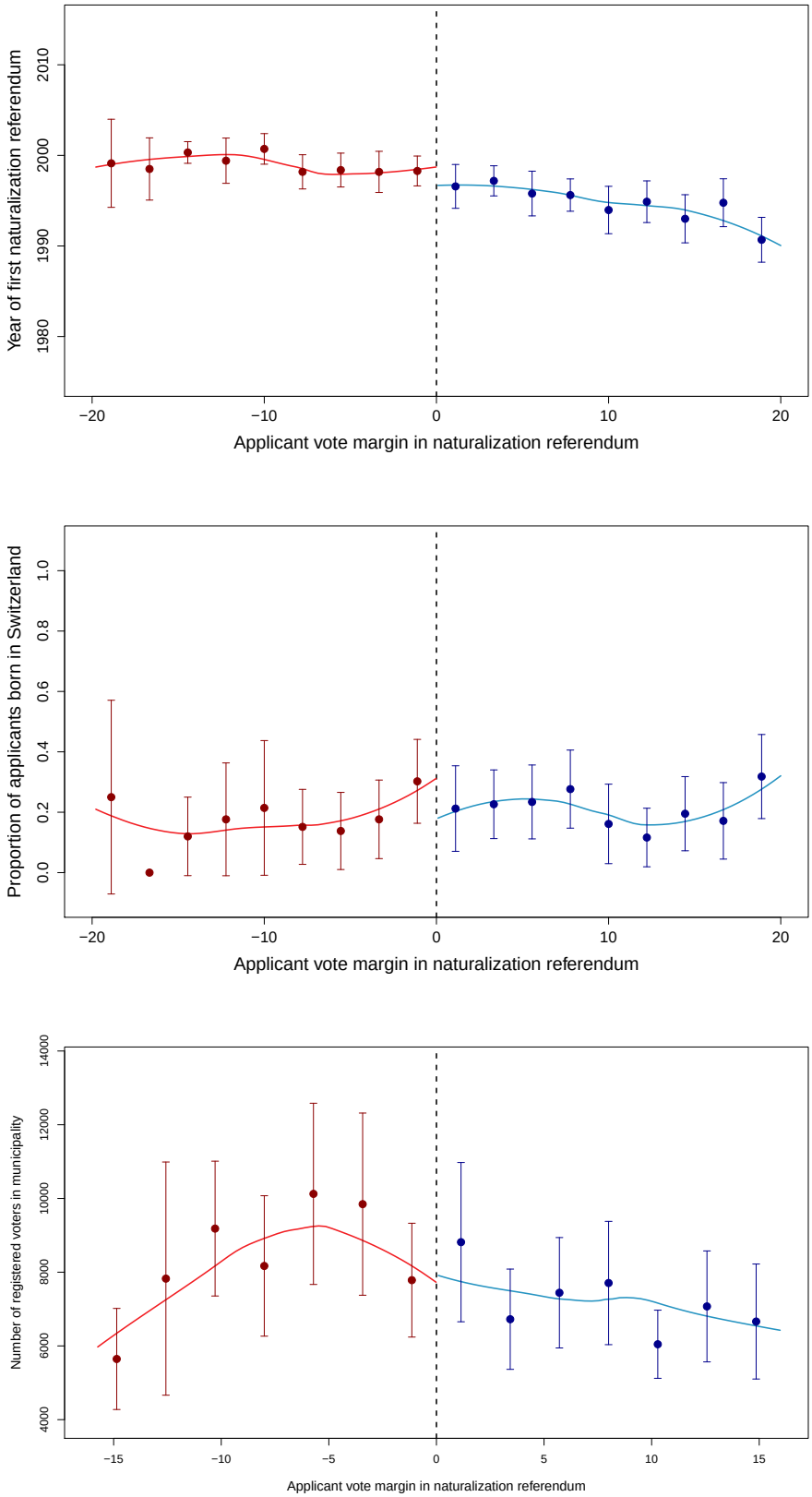


Figure 1.D.4: Balance Checks for Applicant Characteristics (95% Confidence Intervals)



1.E Additional Results

1.E.1 First Stage Results

Table 1.E.1: First Stage

	(1)	(2)	(3)	(4)	(5)	(6)
	Naturalized	Naturalized	Naturalized	Naturalized	Naturalized	Naturalized
Above 50 %	0.29	0.30	0.28	0.34	0.30	0.32
	(0.06)	(0.06)	(0.06)	(0.08)	(0.06)	(0.09)
Margin linear	0.02	0.03	0.02	0.01	0.02	0.01
	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.03)
Margin quadratic						0.00
						(0.00)
Country of Origin	✓	✓		✓	✓	✓
Sociodemographics	✓					
Time period Fixed Effects	✓	✓		✓	✓	✓
Municipality Fixed Effects	✓	✓		✓	✓	✓
F-test	20.21	20.78	20.66	19.36	27.31	12.41
Observations	471	474	474	329	650	474

Note: Ordinary least squares regression of naturalization measure on vote share margin of first referendum (the forcing variable) and binary instrument (=1 if vote share margin above 50%). Model (1) uses the sample of interviewed applicants within $\pm$15% vote share margin, controls for applicants' country of origin, sociodemographics, and fixed effects for each municipality and time period, and a linear function of the vote margin. Model (2) is based on the same window but only controls for vote margin and the most predictive control variables: country of origin, and fixed effects for each time period and municipality. Model (3) is again based on the same window but only controls for vote margin. Model (4) and (5) use the same specification as model (2) but focus on applicants between $\pm$10% and $\pm$25%, respectively. Model (6) uses the same specification as model (2) but also includes a quadratic term for vote share margin. Note that the forcing variable is recoded as 0 if above 50% because noncompliance is one-sided. Robust standard errors in parentheses.

1.E.2 Effects on Political Integration

Table 1.E.2: 2SLS Estimates of the Effect of Naturalization on Political Integration

	(1)	(2)	(3)	(4)	(5)
Outcomes	Scale	Turnout	Efficacy	Knowledge	Participation
Naturalized	0.61	0.58	0.25	0.28	0.12
	(0.13)	(0.12)	(0.07)	(0.11)	(0.13)
Country of Origin	✓	✓	✓	✓	✓
Sociodemographics	✓	✓	✓	✓	✓
Time period Fixed Effects	✓	✓	✓	✓	✓
Municipality Fixed Effects	✓	✓	✓	✓	✓
Observations	400	467	464	421	453

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. Robust standard errors in parentheses. 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.

Table 1.E.3: Fuzzy RDD Estimates of the Effect of Naturalization on Political Integration with Covariates

	(1)	(2)	(3)	(4)	(5)
Outcomes	Scale	Turnout	Efficacy	Knowledge	Participation
Naturalized	0.83	0.64	0.39	0.52	0.17
	(0.27)	(0.25)	(0.16)	(0.27)	(0.26)
Margin	-0.00	0.01	-0.01	-0.00	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Country of Origin	✓	✓	✓	✓	✓
Time period Fixed Effects	✓	✓	✓	✓	✓
Municipality Fixed Effects	✓	✓	✓	✓	✓
Margin	✓	✓	✓	✓	✓
Observations	403	470	467	424	456

Note: Two-stage least squares estimates of fuzzy regression discontinuity. Regression of outcomes (1) – (5) on naturalization status, instrumented by getting more (less) than 50% of "yes" votes in first referendum, fixed effects for country of origin, municipality, and time period, and linear forcing variable with variable slopes on both sides of the discontinuity. Sample: all applicants within a $\pm 15\%$ window. Robust standard errors in parentheses.

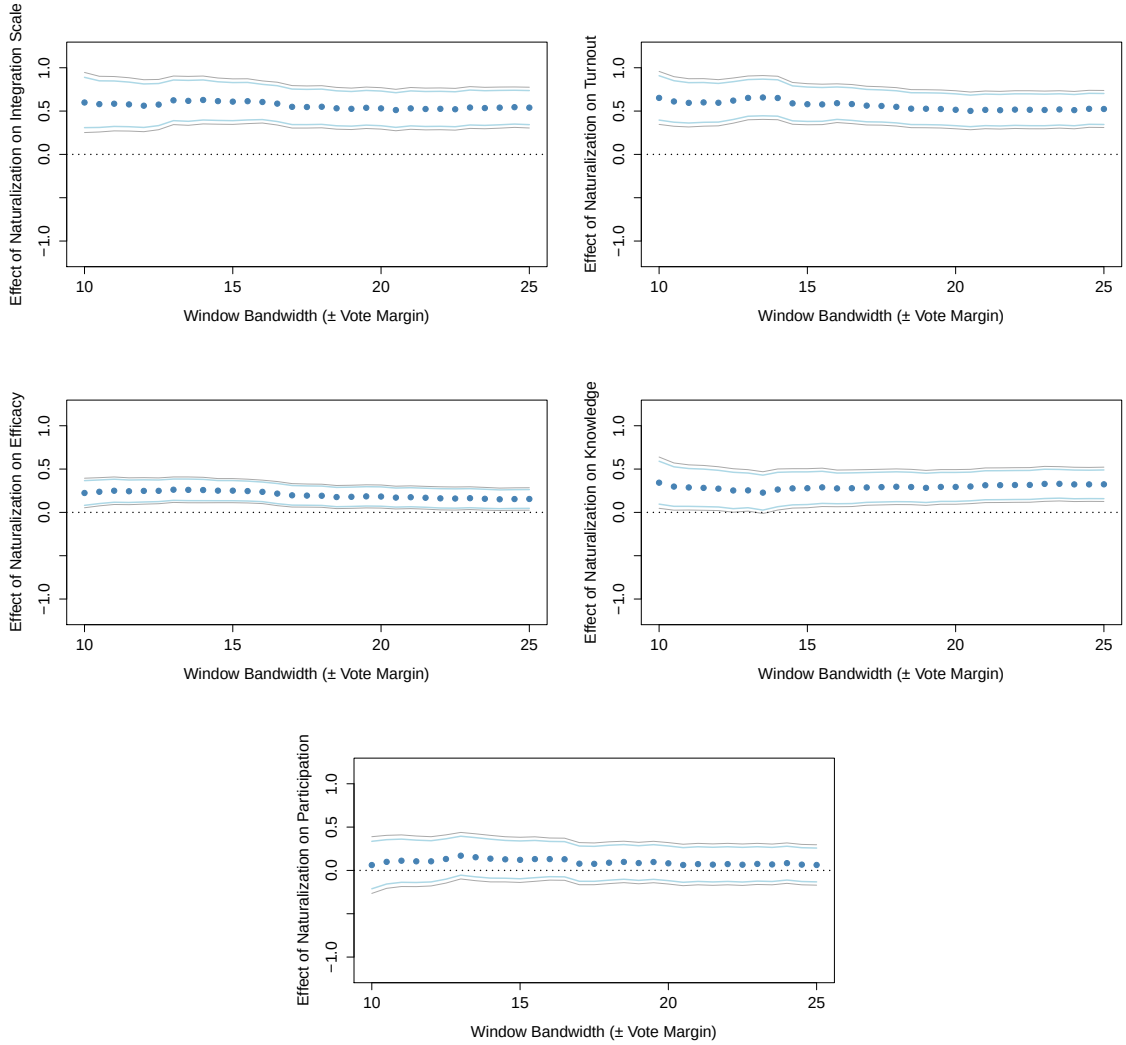
Table 1.E.4: Fuzzy RDD Estimates of the Effect of Naturalization on Political Integration without Covariates

	(1)	(2)	(3)	(4)	(5)
Outcomes	Scale	Turnout	Efficacy	Knowledge	Participation
Naturalized	0.77	0.61	0.38	0.55	0.17
	(0.30)	(0.27)	(0.17)	(0.30)	(0.28)
Margin	-0.00	0.01	-0.01	-0.01	0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Margin × Above 50%	-0.00	-0.01	0.00	-0.00	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Observations	403	470	467	424	456

Note: Two-stage least squares estimates of fuzzy regression discontinuity. Regression of outcomes (1) – (5) on naturalization status, instrumented by getting more (less) than 50% of "yes" votes in first referendum and linear forcing variable with variable slopes on both sides of the discontinuity. Sample: all applicants within a ±15% window. Robust standard errors in parentheses.

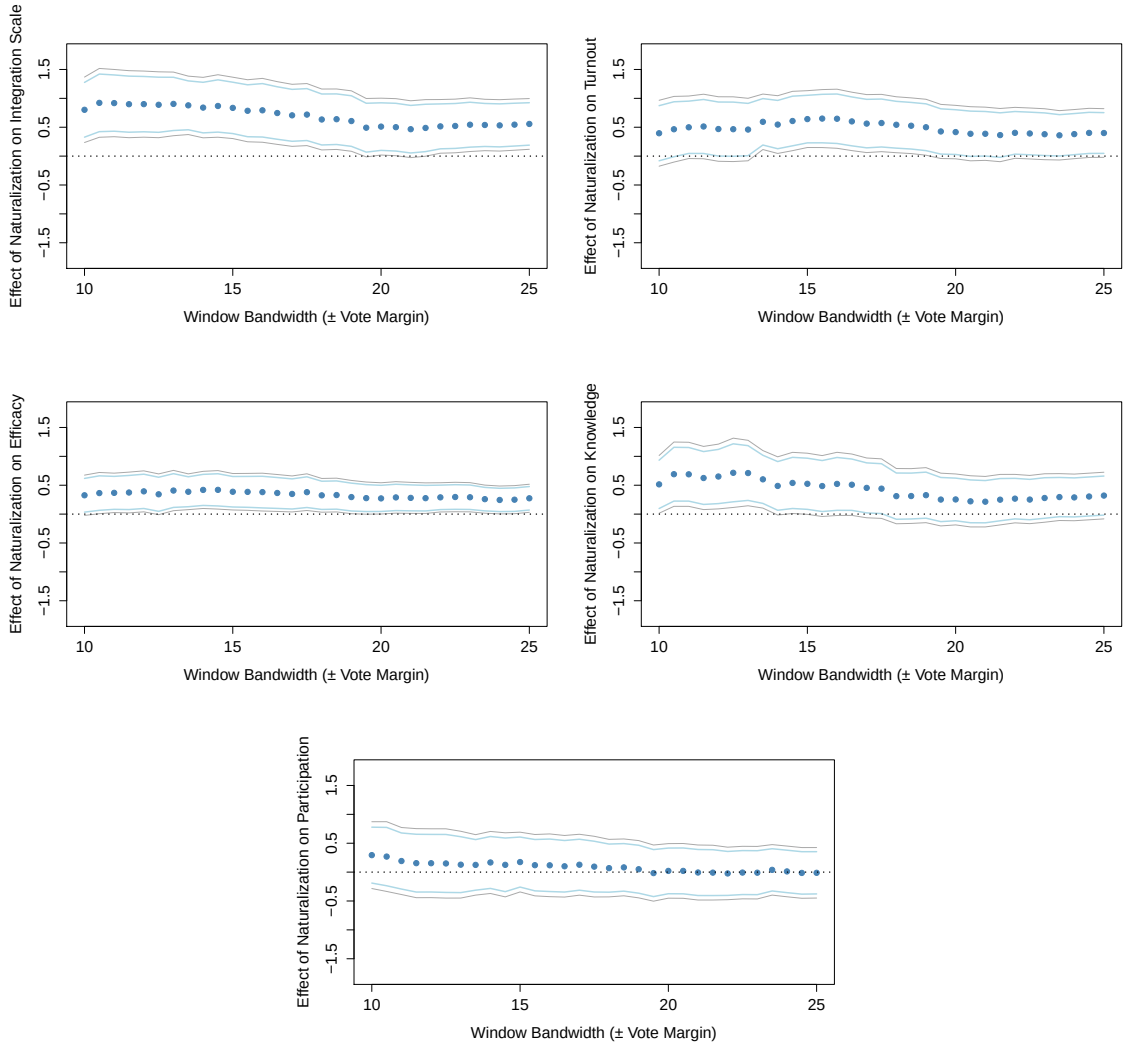
1.E.3 Different Bandwidths for Estimation Window

Figure 1.E.1: Naturalization Effect with Different Window Sizes (2SLS Specification)



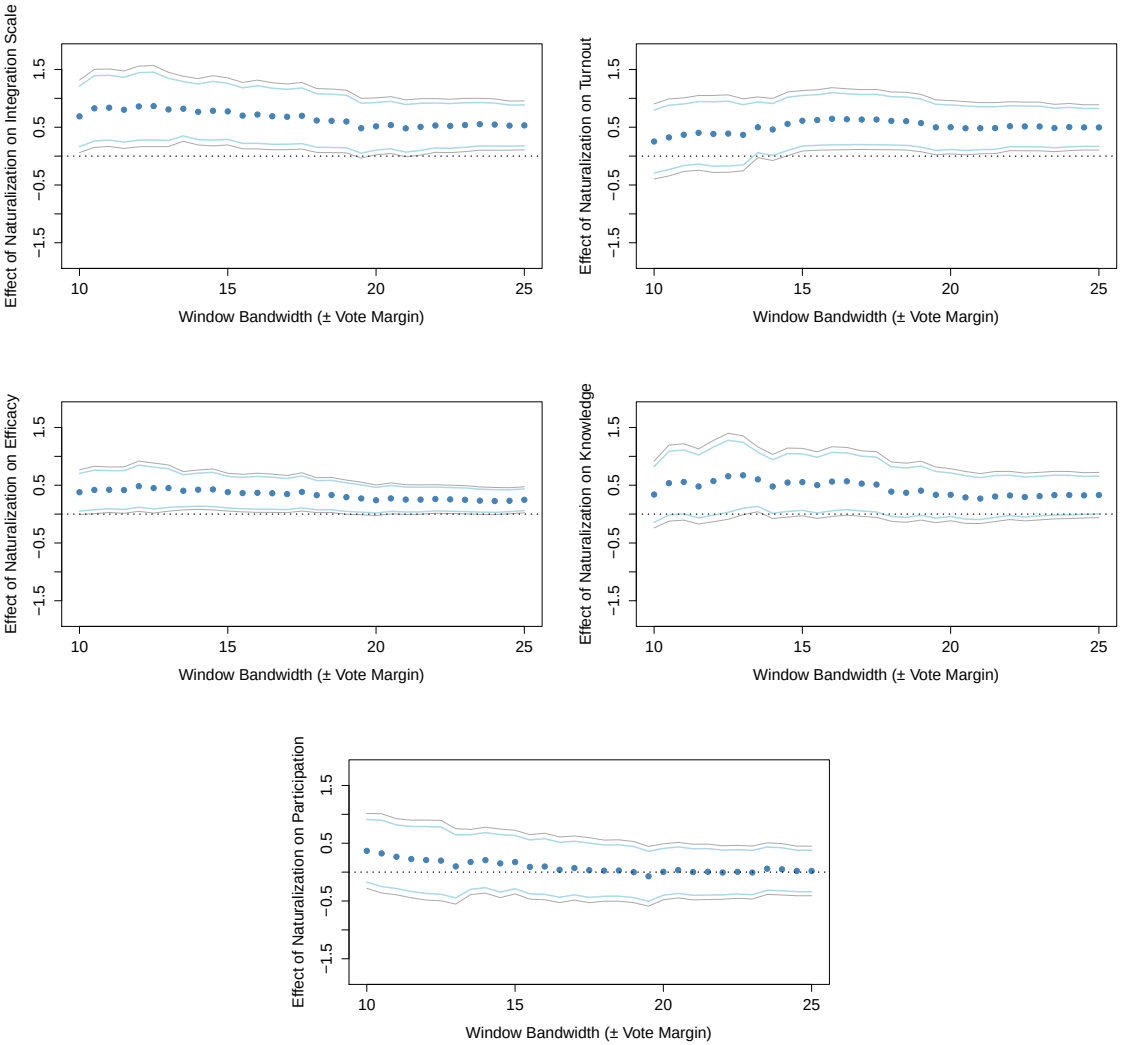
For each outcome, the figures show the estimated effects of naturalization on the outcome as a function of the bandwidth for the sample window. Dots show the point estimates based on the sample of applicants within the corresponding window based on the absolute value of their vote margin, and blue and dark grey lines the 90% and 95% confidence intervals, respectively. Outcomes: political integration scale (mean 0, standard deviation 0.5), voted (0/1) in last election; political efficacy measured on a five-point scale and rescaled (0–1); political knowledge measured using two questions and rescaled (0–1), and political participation (0/1). 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 1.E.2: Naturalization Effect with Different Window Sizes (Fuzzy RDD with Covariates)



For each outcome, the figures show the estimated effects of naturalization on the outcome as a function of the bandwidth for the sample window. Dots show the point estimates based on the sample of applicants within the corresponding window based on the absolute value of their vote margin, and blue and dark grey lines the 90% and 95% confidence intervals, respectively. Outcomes: political integration scale (mean 0, standard deviation 0.5), voted (0/1) in last election; political efficacy measured on a five-point scale and rescaled (0–1); political knowledge measured using two questions and rescaled (0–1), and political participation (0/1). The following covariates are used as controls: country of origin, and fixed effects for each municipality and time period.

Figure 1.E.3: Naturalization Effect with Different Window Sizes (Fuzzy RDD without Covariates)



For each outcome, the figures show the estimated effects of naturalization on the outcome as a function of the bandwidth for the sample window. Dots show the point estimates based on the sample of applicants within the corresponding window based on the absolute value of their vote margin, and blue and dark grey lines the 90% and 95% confidence intervals, respectively. Outcomes: political integration scale (mean 0, standard deviation 0.5), voted (0/1) in last election; political efficacy measured on a five-point scale and rescaled (0–1); political knowledge measured using two questions and rescaled (0–1), and political participation (0/1).

1.E.4 Effects for Subsamples

Table 1.E.5: Effect of Naturalization on Political Integration for Applicants Born in Switzerland

	(1)	(2)	(3)	(4)	(5)
Outcomes	Scale	Turnout	Efficacy	Knowledge	Participation
Naturalized	0.64	0.72	0.13	0.36	0.00
	(0.21)	(0.17)	(0.10)	(0.16)	(0.19)
Country of Origin	✓	✓	✓	✓	✓
Sociodemographics	✓	✓	✓	✓	✓
Time period Fixed Effects	✓	✓	✓	✓	✓
Municipality Fixed Effects	✓	✓	✓	✓	✓
Observations	99	118	120	104	117

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 applicants born in Switzerland within a $\pm$20% window. Robust standard errors in parentheses. 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.

Table 1.E.6: Effect of Naturalization on Political Integration for Applicants Born outside Switzerland

	(1)	(2)	(3)	(4)	(5)
Outcomes	Scale	Turnout	Efficacy	Knowledge	Participation
Naturalized	0.44	0.40	0.15	0.23	0.10
	(0.14)	(0.13)	(0.08)	(0.12)	(0.15)
Country of Origin	✓	✓	✓	✓	✓
Sociodemographics	✓	✓	✓	✓	✓
Time period Fixed Effects	✓	✓	✓	✓	✓
Municipality Fixed Effects	✓	✓	✓	✓	✓
Observations	392	454	451	414	439

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 applicants born outside of Switzerland within a $\pm$20% window. Robust standard errors in parentheses. 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.

Table 1.E.7: Effect of Naturalization on Political Integration for Applicants with High Education

	(1)	(2)	(3)	(4)	(5)
Outcomes	Scale	Turnout	Efficacy	Knowledge	Participation
Naturalized	0.69	0.72	0.23	0.31	-0.30
	(0.24)	(0.21)	(0.11)	(0.22)	(0.23)
Country of Origin	✓	✓	✓	✓	✓
Sociodemographics	✓	✓	✓	✓	✓
Time period Fixed Effects	✓	✓	✓	✓	✓
Municipality Fixed Effects	✓	✓	✓	✓	✓
Observations	177	227	229	193	217

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 applicants with high education within a ±20% window. Robust standard errors in parentheses. 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.

Table 1.E.8: Effect of Naturalization on Political Integration for Applicants with Low Education

	(1)	(2)	(3)	(4)	(5)
Outcomes	Scale	Turnout	Efficacy	Knowledge	Participation
Naturalized	0.57	0.44	0.19	0.28	0.29
	(0.13)	(0.13)	(0.07)	(0.12)	(0.13)
Country of Origin	✓	✓	✓	✓	✓
Sociodemographics	✓	✓	✓	✓	✓
Time period Fixed Effects	✓	✓	✓	✓	✓
Municipality Fixed Effects	✓	✓	✓	✓	✓
Observations	157	184	184	165	179

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 applicants with low education within a ±20% window. Robust standard errors in parentheses. 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.

Table 1.E.9: Effect of Naturalization on Political Integration for Applicants from (former) Yugoslavia and Turkey

	(1)	(2)	(3)	(4)	(5)
Outcomes	Scale	Turnout	Efficacy	Knowledge	Participation
Naturalized	0.48	0.49	0.15	0.27	0.09
	(0.15)	(0.14)	(0.08)	(0.13)	(0.14)
Country of Origin	✓	✓	✓	✓	✓
Sociodemographics	✓	✓	✓	✓	✓
Time period Fixed Effects	✓	✓	✓	✓	✓
Municipality Fixed Effects	✓	✓	✓	✓	✓
Observations	322	364	364	335	360

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 applicants from (former) Yugoslavia or Turkey within a $\pm$20% window. Robust standard errors in parentheses. 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.

Table 1.E.10: Effect of Naturalization on Political Integration for Applicants from Countries other than (former) Yugoslavia and Turkey

	(1)	(2)	(3)	(4)	(5)
Outcomes	Scale	Turnout	Efficacy	Knowledge	Participation
Naturalized	0.47	0.64	0.24	-0.00	-0.11
	(0.19)	(0.16)	(0.11)	(0.18)	(0.22)
Country of Origin	✓	✓	✓	✓	✓
Sociodemographics	✓	✓	✓	✓	✓
Time period Fixed Effects	✓	✓	✓	✓	✓
Municipality Fixed Effects	✓	✓	✓	✓	✓
Observations	169	208	207	183	196

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 applicants from countries other than (former) Yugoslavia and Turkey within a $\pm$20% window. Robust standard errors in parentheses. 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.

1.E.5 Effects on Distrust

Table 1.E.11: 2SLS Estimates of the Effect of Naturalization on Distrust in People and Institutions

	(1)	(2)	(3)
Outcomes: Distrust in ...	Local authorities	The court	People
Naturalized	-0.03	-0.03	-0.01
	(0.05)	(0.05)	(0.05)
Country of Origin	✓	✓	✓
Sociodemographics	✓	✓	✓
Time period Fixed Effects	✓	✓	✓
Municipality Fixed Effects	✓	✓	✓
Observations	465	459	466

Note: Instrumental variables regression of outcomes (1) – (3) on naturalization status, instrumented by getting more (less) than 50% of "yes" votes in first referendum. Sample: all applicants within a $\pm 15\%$ window. Robust standard errors in parentheses. 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.

Table 1.E.12: Fuzzy RD Estimates of the Effect of Naturalization on Distrust in People and Institutions with Covariates

	(1)	(2)	(3)
Outcomes: Distrust in ...	Local authorities	The court	People
Naturalized	0.02	-0.05	0.02
	(0.12)	(0.13)	(0.12)
Margin	-0.00	0.01	-0.00
	(0.01)	(0.01)	(0.01)
Margin $\times$ Above 50%	0.00	-0.01	0.00
	(0.01)	(0.01)	(0.01)
Country of Origin	✓	✓	✓
Time period Fixed Effects	✓	✓	✓
Municipality Fixed Effects	✓	✓	✓
Observations	468	462	469

Note: Two-stage least squares estimates of fuzzy regression discontinuity. Regression of outcomes (1) – (3) on naturalization status, instrumented by getting more (less) than 50% of "yes" votes in first referendum, fixed effects for country of origin, municipality, and time period, and linear forcing variable with variable slopes on both sides of the discontinuity. Sample: all applicants within a $\pm 15\%$ window. Robust standard errors in parentheses.

Table 1.E.13: Fuzzy RD Estimates of the Effect of Naturalization on Distrust in People and Institutions without Covariates

	(1)	(2)	(3)
Outcomes: Distrust in ...	Local authorities	The court	People
Naturalized	0.03	0.00	-0.02
	(0.13)	(0.14)	(0.12)
Margin	-0.00	0.00	-0.00
	(0.01)	(0.01)	(0.01)
Margin x Above 50%	0.00	-0.00	0.01
	(0.01)	(0.01)	(0.01)
Observations	468	462	469

Note: Two-stage least squares estimates of fuzzy regression discontinuity. Regression of outcomes (1) – (3) on naturalization status, instrumented by getting more (less) than 50% of "yes" votes in first referendum and linear forcing variable with variable slopes on both sides of the discontinuity. Sample: all applicants within a ±15% window. Robust standard errors in parentheses.

Figure 1.E.4: Effect of Naturalization on Distrust in People and Institutions

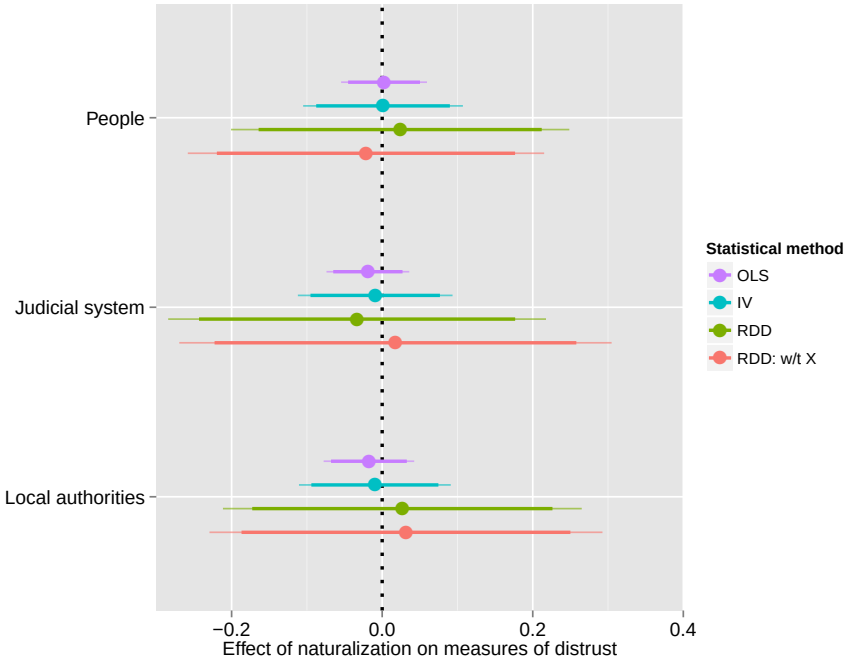


Figure 1.E.4 shows point estimates and robust 95% (thin) and 90% (bold) confidence intervals from instrumental variables and fuzzy regression discontinuity design models. Outcomes: Distrust (11-point scale and rescaled to 0–1), for: people, the judicial system, and the local authorities. Sample: all applicants within a ±15% window of the threshold.

1.E.6 OLS Results

Table 1.E.14: OLS Estimates of the Effect of Naturalization on Political Integration

	(1)	(2)	(3)	(4)	(5)
Outcomes	Scale	Turnout	Efficacy	Knowledge	Participation
Naturalized	0.54	0.56	0.16	0.17	0.27
	(0.06)	(0.04)	(0.03)	(0.06)	(0.06)
Country of Origin	✓	✓	✓	✓	✓
Sociodemographics	✓	✓	✓	✓	✓
Time period Fixed Effects	✓	✓	✓	✓	✓
Municipality Fixed Effects	✓	✓	✓	✓	✓
# of attempts	✓	✓	✓	✓	✓
Observations	400	467	464	421	453

Note: Ordinary least squares regression of outcomes (1) – (5) on naturalization status. Sample: all applicants within a $\pm 15\%$ window. Robust standard errors in parentheses. 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, and number of attempts.

Table 1.E.15: OLS Estimates of the Effect of Naturalization on Distrust in People and Institutions

	(1)	(2)	(3)
Outcomes: Distrust in ...	Local authorities	The court	People
Naturalized	-0.03	-0.03	-0.01
	(0.03)	(0.03)	(0.03)
Country of Origin	✓	✓	✓
Sociodemographics	✓	✓	✓
Time period Fixed Effects	✓	✓	✓
Municipality Fixed Effects	✓	✓	✓
# of attempts	✓	✓	✓
Observations	465	459	466

Note: Ordinary least squares regression of outcomes (1) – (3) on naturalization status. Sample: all applicants within a $\pm 15\%$ window. Robust standard errors in parentheses. 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, and number of attempts.

2

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

Jens Hainmueller, Dominik Hangartner, and Giuseppe Pietrantuono

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.

2.1 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 et al. 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 soci-

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

2 For reviews of the debates see, for example, Oers and Hart (2006); Hainmueller et al. (2015)

ety? 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 et al. 2015).

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.

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 citzienship. 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.

2.2 Does Naturalization Lead to Better Integration?

2.2.1 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 et al. 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).

2.2.2 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 et al. 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 con-

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

sequences 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.

2.2.3 Double Selection Bias

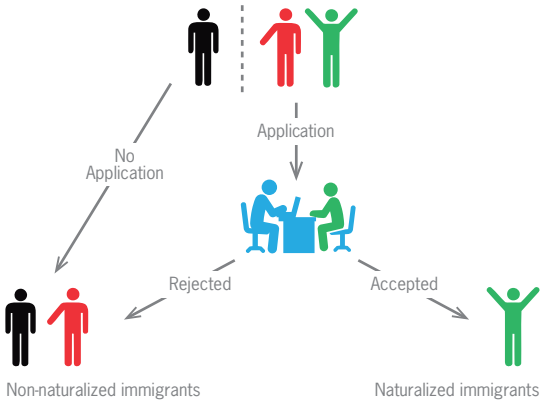
Perhaps the major shortcoming of the existing evidence is that it suffers from potentially severe selection bias. In order to isolate the causal effect of naturalization, we need to compare two groups of immigrants that differ in their naturalization status, but are otherwise similar on all other characteristics 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 immigrants obtain citizenship involves a complex two stage selection.

Figure 2.1 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 2.1: 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.

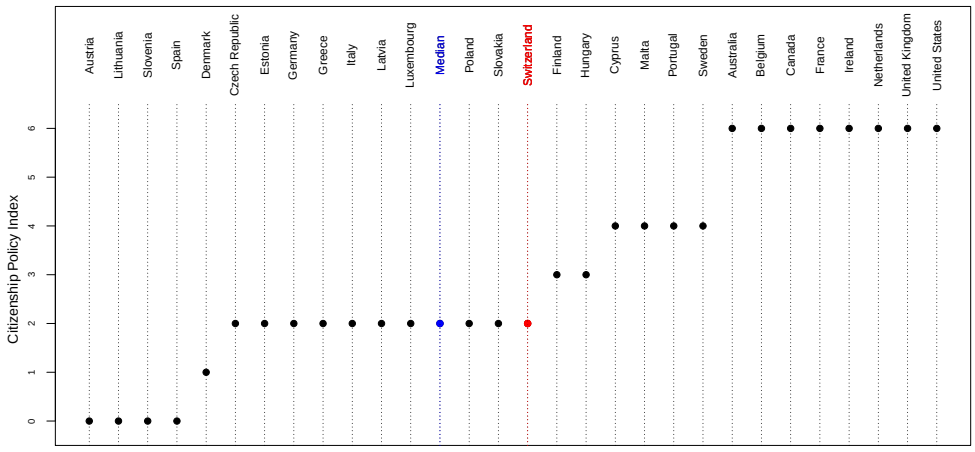
2.3 Empirical Strategy

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.

2.3.1 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 2.1 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 appendix for details).

Figure 2.1: 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 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.

2.3.2 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, martial 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 Hainmueller et al. (2015). In the second stage, voters then cast a secret ballot where they voted 'yes' or 'no' on each applicant and only 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).

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4 Switzerland 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.

2.3.3 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.

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 systematical 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 systematical 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 et al. (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 et al. (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 wining 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.

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 et al. 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.

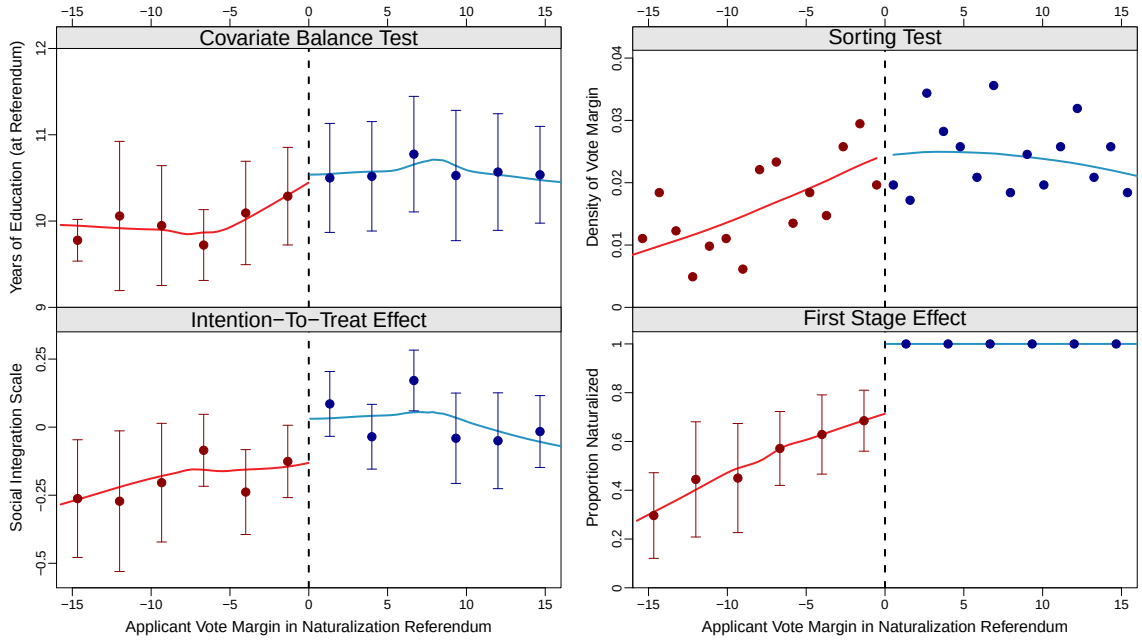
Fuzzy Regression Discontinuity Design Strategy

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

5 Note 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).

threshold (Hahn et al. 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 2.3: 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).

Figure 2.3 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 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

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

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 2.C.1 in the appendix 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.

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 0.14 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 et al. 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 0.28 at the threshold and therefore the LATE of naturalization for compliers amounts to about 0.14/0.28=0.5. Note that the social integration index has a standard deviation of 0.5 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.

2.4 Data

2.4.1 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 Hainmueller et al. 2015).

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 appendix describes the coding of all variables used in our analysis and provides the descriptive statistics (Tables 2.B.1 and 2.B.2).

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.

One potential concern might be that the probability of being interviewed is correlated with naturalization. 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 Hainmueller et al. 2015 for details).

2.4.2 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 et al. 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 et al. 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 appendix 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 et al. 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 categorial distribution of the items (see the appendix 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 0.5. 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 then resulting in only temporary short term changes.

2.5 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 2.C.2 and 2.C.3 in the appendix show that the estimated naturalization effects are fairly insensitive to varying the width of the estimation window.

2.5.1 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 0.28-0.42 depending on the model and this first stage effect is highly significant at conventional levels (see the appendix 2.C.2 for details). 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.

2.5.2 Main Effects of Naturalization

Figure 2.1 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 2.C.2 in the appendix 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 2.C.3 in the appendix reports the regression table).

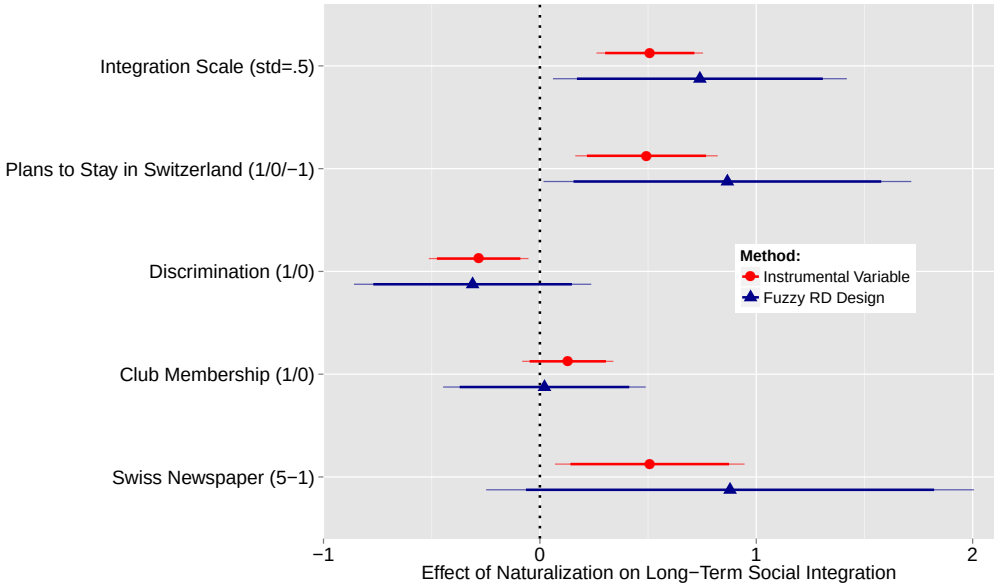
Our main finding is that naturalization strongly improved the long-term social integration of immigrants. Looking at the social integration index that combines all the integration outcomes in a single measure, we find that among otherwise identical immigrants, naturalization increases the social integration scale by about 0.51 according to the IV model. This effect is highly statistically significant ($p<0.00$) and large in substantive terms: given that the social integration scale has a mean zero and standard deviation of 0.5 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 0.74, although, as expected given the local identification only at the threshold, the estimate is also less precise ($p<0.03$).

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 0.49 increase on the three point scale ($p<0.00$). 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 ($p<0.02$) 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 0.51 on the five point scale ($p<0.02$). 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 ($p<0.23$). 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 2.C.4 in the appendix). The estimates are very similar to the fuzzy RD design without the covariates with naturalization improving long term social integration by about 0.63 ($p<0.05$) 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 2.1: 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 in-

tegration 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.

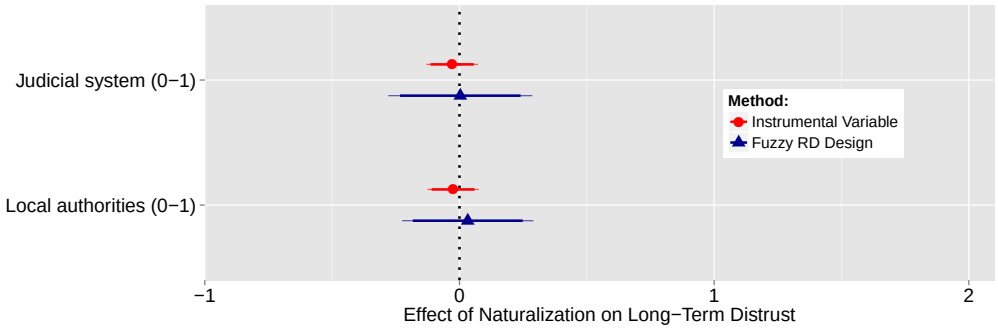
2.5.3 Alienation versus Integration

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 appendix for the question wording).

Figure 2.3: 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 2.3, 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.

2.5.4 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.

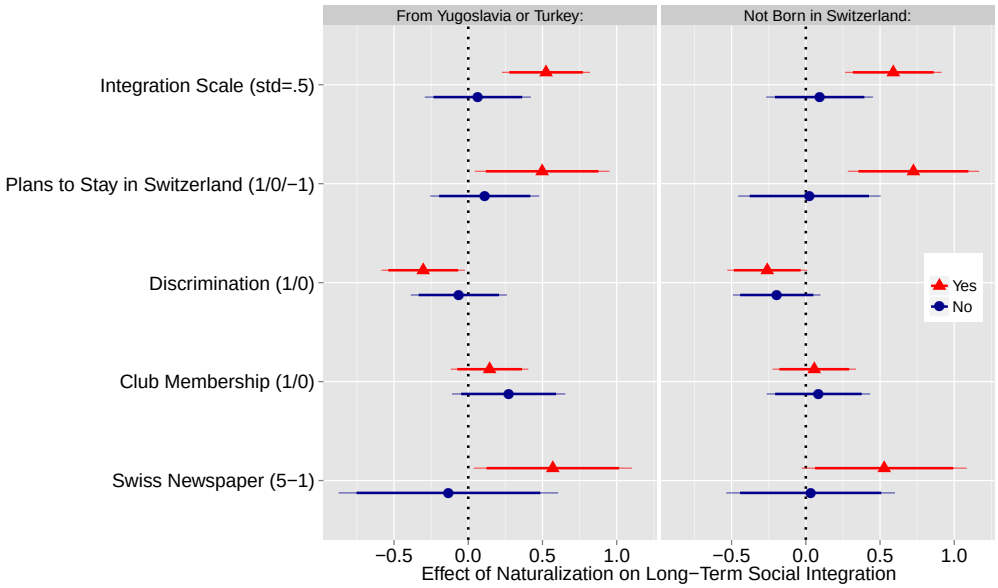
First, we consider how the naturalization effects vary by the immigrants' origin, distinguishing between applicants from Turkey and the former Yugoslavia with those from other origins. The other origins mostly include applicants from western, northern, and southern European countries like Germany, Austria, 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 2.5.[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 0.52 ($p<.001$) for immigrants from Turkey and the former Yugoslavia, while the effect is 0.06 ($p<0.72$) for immigrants from the other origins; the difference between the two effects is statistically significant ($p<0.05$).

Looking at the effects by whether immigrants are born in Switzerland or not we see a similar picture 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 0.59 ($p<.001$) for immigrants who are born abroad while the effect is 0.09 ($p<0.61$) for immigrants born in Switzerland and the difference between the effects is again statistically significant ($p<0.05$).

Figure 2.5: 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

7 Note 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 from Turkey and the former Yugoslavia.

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.

2.5.5 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.

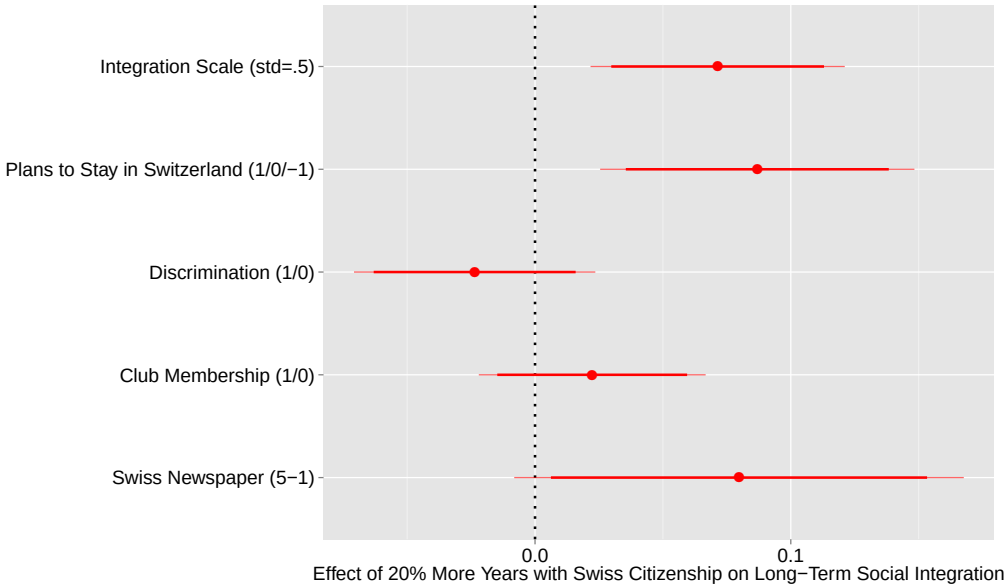
Fortunately, in our setting we can conduct an empirical strategy that closely approximates this ideal experiment. We focus on the group of naturalized applicants and exploit the fact that the outcome of the first referendum provides an exogenous shock to the timing of the naturalization. Among applicants 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 significant with a Stock and Yogo (2005) F-value of about 48 (see Table 2.D.1 in the appendix).

8 One 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 appendix 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).

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 2.7: 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 2.7 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 or 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 0.08 ($p<.005$), 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 appendix 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 2.D.1 and Figure 2.D.3). 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.

2.6 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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Appendix

2.A Data Sources

Table 2.A.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

2.B 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 2005[9] to code selected European countries, as well as Australia, Canada, and the United States, to place Switzerland in a comparative perspective.

Figure 2.1 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 of 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.

2.B.1 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 categorial 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 0.5.

2.B.2 Descriptive Statistics

Tables 2.B.1 and 2.B.2 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

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

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 the 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 there 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 2.B.1: 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 2.B.2: Descriptive Statistics for Competitive Applicants

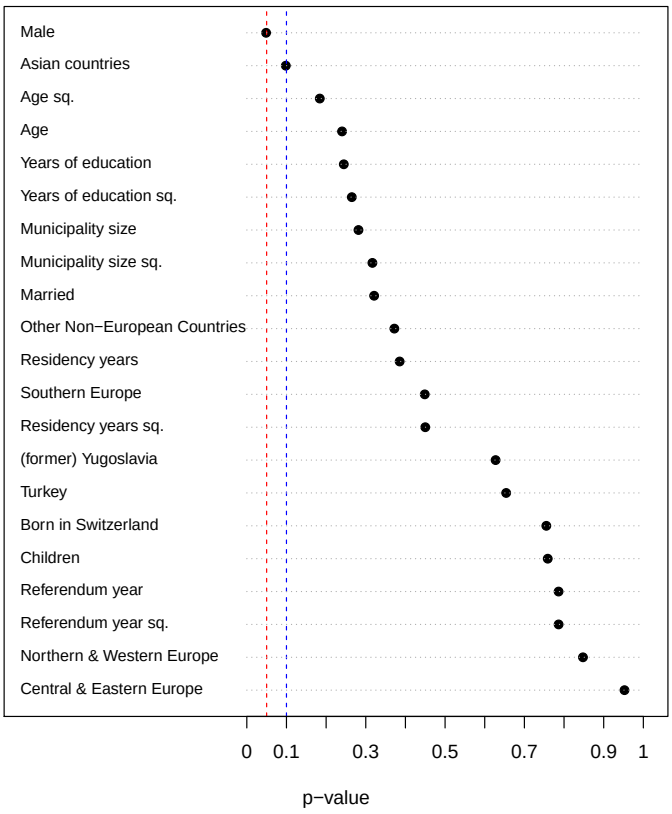
Variable	Observations	Mean	SD	Min	Max
Male	474	0.72	0.45	0.00	1.00
Age	472	49.72	14.49	23.00	84.00
Residency years at time of referendum	428	19.20	5.70	12.00	44.00
Residency years at time of survey	474	34.91	9.05	17.00	72.00
Northern & Western Europe	474	0.11	0.32	0.00	1.00
Southern European Countries	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.

2.C Additional Results

2.C.1 Balance Tests for Fuzzy RD Design

Figure 2.C.1: 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.

2.C.2 First Stage Results

Table 2.C.1 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 0.30–0.43. The F-stat for the strength of the instrument is much higher than the standard threshold of 10 for weak instruments.

Table 2.C.1: First Stage Regression Estimates

Model	(1)	(2)	(3)
Outcome	Naturalized	Naturalized	Naturalized
Above 50%	0.42	0.28	0.29
	(0.04)	(0.06)	(0.06)
Country of Origin	✓		✓
Sociodemographics	✓		✓
Time period Fixed Effects	✓		✓
Municipality Fixed Effects	✓		✓
Margin		✓	✓
Margin × Above 50%		✓	✓
F-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 ±15%. Robust standard errors in parentheses.

2.C.3 Effects on Social Integration

Table 2.C.2: 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	0.49	-0.28	0.13	0.51
	(0.13)	(0.17)	(0.12)	(0.11)	(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 ±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 2.C.3: 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	0.87	-0.31	0.02	0.88
	(0.35)	(0.43)	(0.28)	(0.24)	(0.58)
Margin	-0.01	-0.01	0.01	0.00	-0.02
	(0.02)	(0.02)	(0.01)	(0.01)	(0.03)
Margin × Above 50%	0.00	-0.02	-0.01	0.01	0.01
	(0.02)	(0.02)	(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 ±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 2.C.4: 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	0.63	-0.37	0.05	0.63
	(0.31)	(0.41)	(0.27)	(0.22)	(0.52)
Margin	0.01	0.02	0.00	-0.00	0.01
	(0.02)	(0.02)	(0.01)	(0.01)	(0.03)
Margin × Above 50%	-0.02	-0.04	0.00	0.01	-0.02
	(0.02)	(0.02)	(0.01)	(0.01)	(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 ±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.

2.C.4 Secondary Outcomes

Table 2.C.5: Effect of Naturalization on Long-Term Distrust

Model	(1)	(2)	(3)	(4)	(5)	(6)
Outcome: Distrust in ...	judicial system	local authorities	judicial system	local authorities	judicial system	local authorities
Naturalized	-0.03	-0.03	0.00	0.03	0.01	0.03
	(0.05)	(0.05)	(0.14)	(0.13)	(0.13)	(0.12)
Margin			0.00	-0.00	0.00	-0.00
			(0.01)	(0.01)	(0.01)	(0.01)
Margin × Above 50%			-0.00	0.00	-0.01	0.00
			(0.01)	(0.01)	(0.01)	(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 ±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.

2.C.5 Subgroup Analysis

Table 2.C.6: 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	0.50	-0.30	0.14	0.57
	(0.15)	(0.23)	(0.14)	(0.13)	(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 ±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 2.C.7: 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	0.11	-0.06	0.27	-0.13
	(0.18)	(0.19)	(0.17)	(0.20)	(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 2.C.8: 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 Discrimination	Club Membership	Swiss Newspapers
Naturalized	0.09	0.02	-0.20	0.08	0.03
	(0.18)	(0.25)	(0.15)	(0.18)	(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 2.C.9: 2SLS Estimates of the Effect of Naturalization for Applicants not born in Switzerland

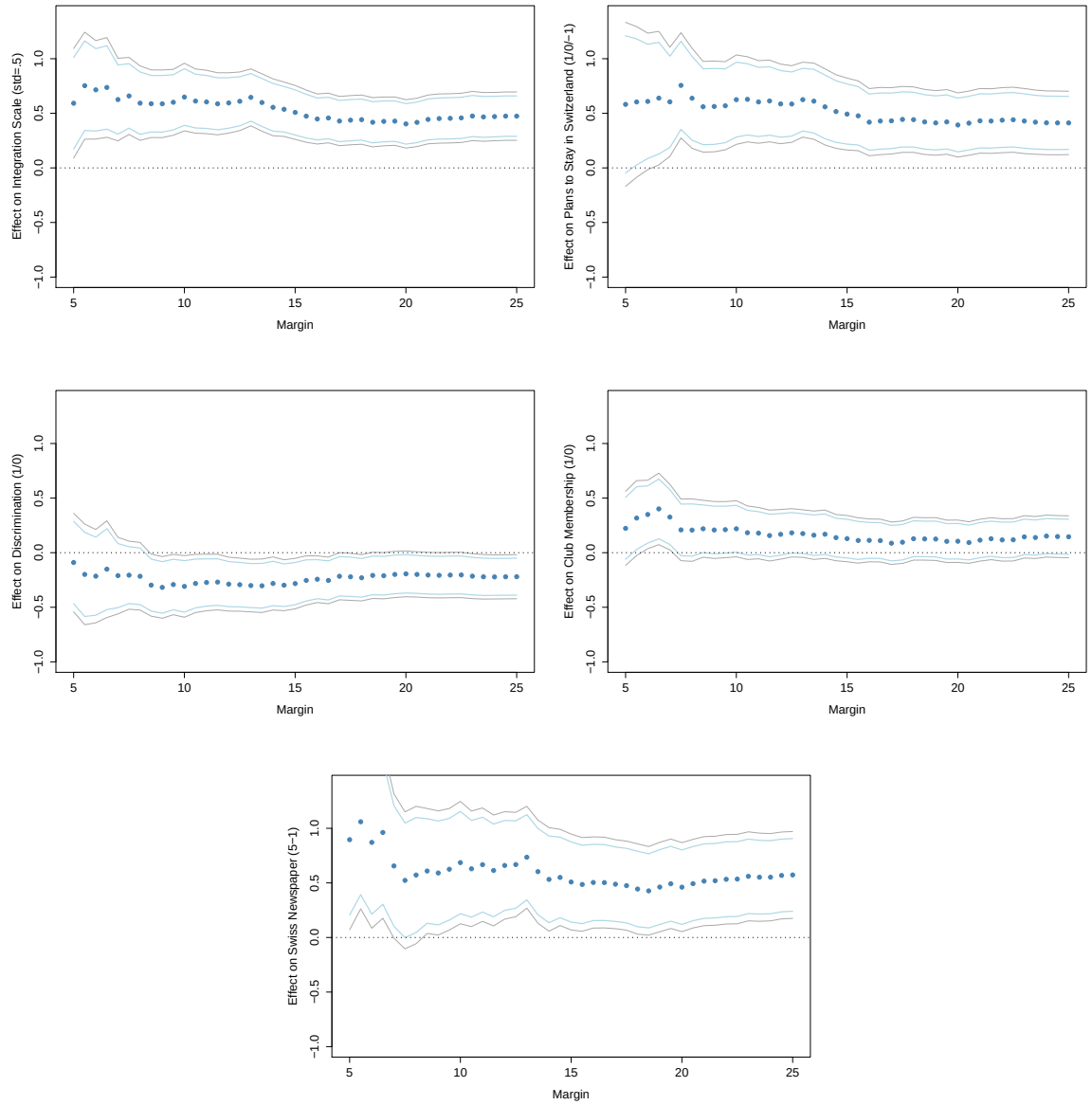
Model	(1)	(2)	(3)	(4)	(5)
Outcomes	Integration Scale	Stay in Switzerland	Report Discrimination	Club Membership	Swiss Newspapers
Naturalized	0.59	0.72	-0.26	0.06	0.53
	(0.17)	(0.23)	(0.14)	(0.14)	(0.28)
Country of Origin	✓	✓	✓	✓	✓
Sociodemographics	✓	✓	✓	✓	✓
Time period FE	✓	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓	✓
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.

2.C.6 Robustness tests for different bandwidths

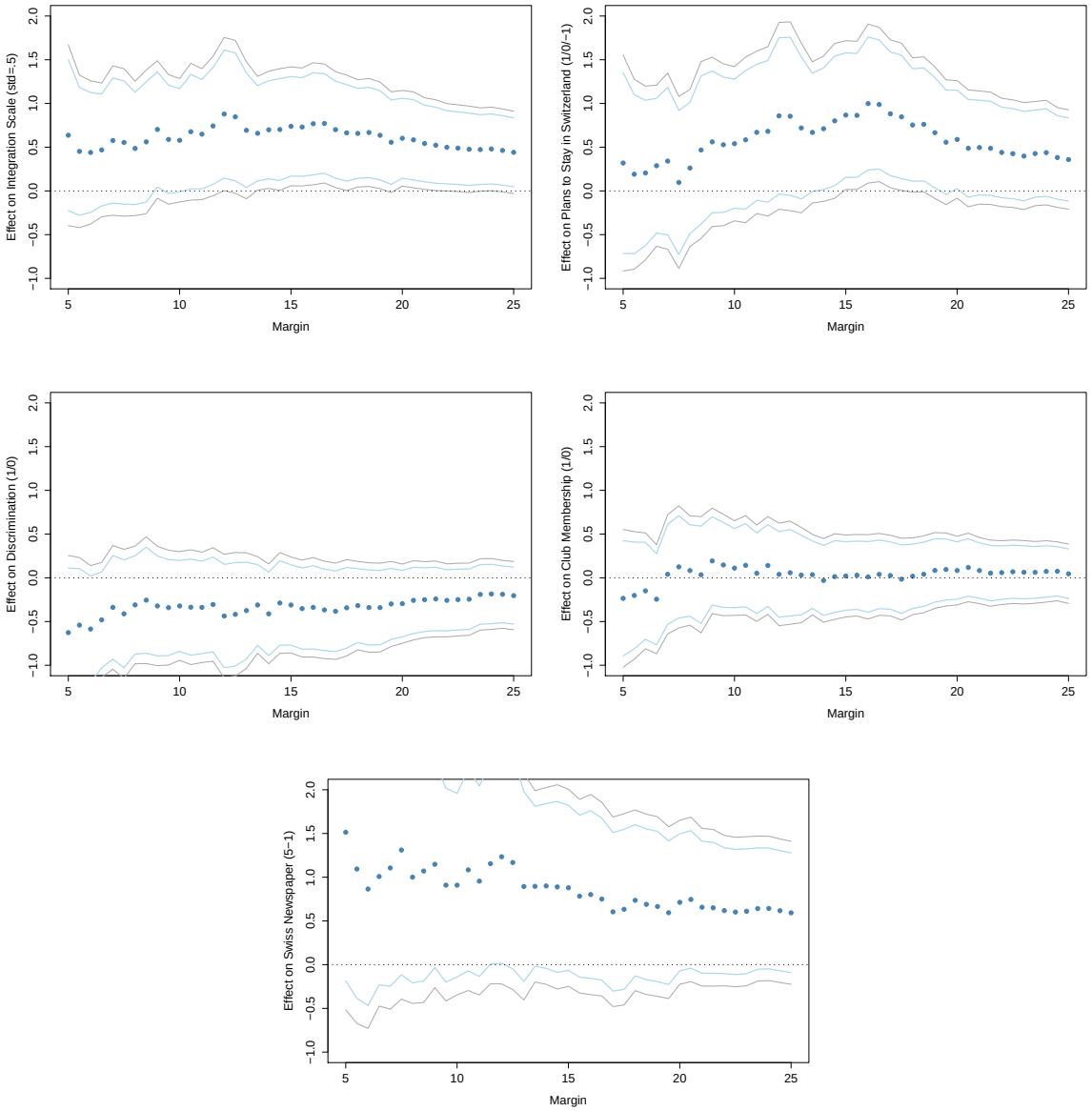
Figures 2.C.2 and 2.C.3 shows the estimated effects for various bandwidth to trim the estimation sample based on the margin of victory.

Figure 2.C.2: 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 2.C.3: 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.

2.D Early vs. Late Naturalization

First Stage: Early vs. Late Naturalization

Table 2.D.1 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 2.D.1: First-Stage Effect of Winning First Referendum on Number of Years with Swiss Citizenship

Mean outcome	0.48	2.59
	(1)	(2)
Outcome	Years Swiss $\geq$ 13	Years Swiss (Logged)
Above 50%	0.27	0.48
	(0.06)	(0.07)
Country of Origin	✓	✓
Sociodemographics	✓	✓
Residency in Switzerland	✓	✓
Time period Fixed Effects	✓	✓
Municipality Fixed Effects	✓	✓
Window size	$\pm$15%	$\pm$15%
Stock and Yogo *F*-test	20.73	48.81
p-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 $\pm$15. Robust standard errors in parentheses.

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

Model	(1)	(2)	(3)	(4)	(5)
Outcomes	Scale	Stay in Switzerland	Report Discrimination	Club Membership	Swiss Newspapers
Years Swiss (Logged)	0.36	0.43	-0.12	0.11	0.40
	(0.13)	(0.16)	(0.12)	(0.11)	(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 2.D.3: 2SLS Estimates of the Effect of Early Versus Late Naturalization (Binary Treatment)

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

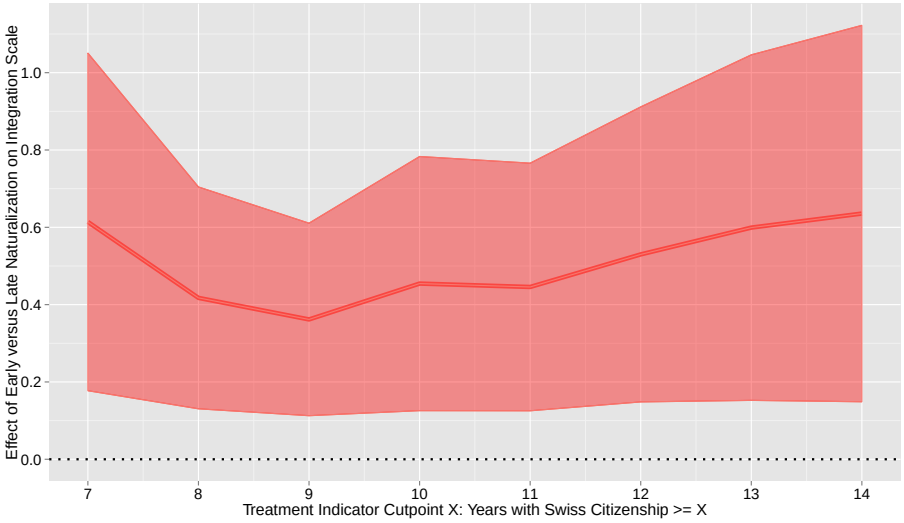
Note: Instrumental variables regression of outcomes (1) – (5) on a binary indicator for more (less) than 13 years with the Swiss passport, instrumented by getting more (less) than 50 % of "yes" votes in first referendum, for all naturalized applicants within a $\pm 15\%$ window. All models control for 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 2.D.1 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 2.D.3 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 2.D.1: 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 2.D.3: 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.

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:

$$\alpha = \frac{E[Y|Z=1,X] - E[Y|Z=0,X]}{E[D|Z=1,X] - E[D|Z=0,X]} \quad , \tag{2.1}$$

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, $\mathcal{A}$, 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, alwaus-takers, hence $E[Y|Z=0,X] = E[Y|Z=0,X,\mathcal{A}]$ and $E[D|Z=0,X] = E[D|Z=0,X,\mathcal{A}]$. 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:

$$E[Y|Z=1,X] = E[Y|Z=1,X,\mathcal{A}]\Pr(\mathcal{A}) + E[Y|Z=1,X,C]\Pr(C) \tag{2.2}$$

and express this equation in terms of always-takers:

$$E[Y|Z=1,X,\mathcal{A}] = \frac{E[Y|Z=1,X] - E[Y_1|Z=1,X,C]\Pr(C)}{\Pr(\mathcal{A})} \tag{2.3}$$

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. $E[D|Z=1,X,\mathcal{A}] = E[D|Z=1,X,C]$, we can write equation 2.1 in terms of always-takers only:

$$\begin{aligned} \tilde{\alpha} &= \frac{E[Y|Z=1,X,\mathcal{A}] - E[Y|Z=0,X,\mathcal{A}]}{E[D|Z=1,X,\mathcal{A}] - E[D|Z=0,X,\mathcal{A}]} \\ &= \frac{\frac{E[Y|Z=1,X] - E[Y|Z=1,X,C]\Pr(C)}{\Pr(\mathcal{A})} - E[Y|Z=0,X,\mathcal{A}]}{E[D|Z=1,X,\mathcal{A}] - E[D|Z=0,X,\mathcal{A}]} \end{aligned} \tag{2.4}$$

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 $E[Y|Z = 1, X, \mathcal{A}]$ would have to be in order to render $\tilde{\alpha}$ i) insignificant or ii) equal to 0. We incorporate the sensitivity parameter

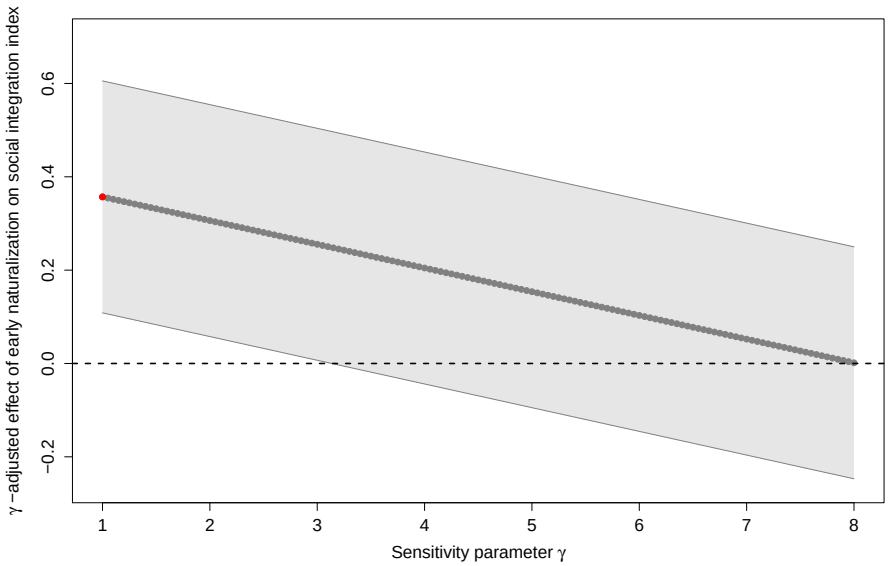
$$\gamma = \frac{E[Y|Z = 1, X, C]}{E[Y|Z = 1, X, \mathcal{A}]} \tag{2.5}$$

directly into equation 2.4:

$$\tilde{\alpha}(\gamma) = \frac{\frac{E[Y|Z=1,X]-\ E[Y|Z=1,X,\mathcal{A}]\ \Pr(C)}{\Pr(\mathcal{A})} - E[Y|Z = 0, X, \mathcal{A}]}{E[D|Z = 1, X, \mathcal{A}] - E[D|Z = 0, X, \mathcal{A}]} \tag{2.6}$$

such that we can calculate the value of γ that gives us $\tilde{\alpha}(\gamma)/\text{SE}(\tilde{\alpha}) = 1.96$ and $\tilde{\alpha}(\gamma) = 0$, respectively. By plugging in the sample analogues (of subsection 2.5.5) in equation 2.6, we produce Figure 2.D.5 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 2.D.5: 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.

3

The Value of Citizenship: Naturalization Decreases Labor Market Discrimination of Immigrants

Giuseppe Pietrantuono

What is the economic value of citizenship? Employing a correspondence test in Germany, this paper isolates the causal effect of naturalization on the likelihood of being invited for a job interview for applicants with Turkish-sounding names. In 948 job applications I randomly vary applicants' names, citizenship status, place of birth, photographs, signals of social integration and religion, and reference letters. The analysis suggests that having German citizenship considerably increases callback rates for applicants with Turkish-sounding names, but is not enough to remove all of the ethnic penalty relative to native Germans. Exploiting the absence of birth right citizenship in Germany, I also show that place of birth is one channel that contributes to the callback difference between immigrants and natives.

3.1 Introduction

Discrimination is the key obstacle to the full integration of immigrants and their children into society in general and into the labor market in particular. Native-born citizens often perform better across a vast array of outcomes than their foreign-born counterparts; labor market outcomes of immigrants and their progeny lag behind natives given similar education level and age (OECD 2012). Potentially, there are many explanations why immigrants face difficulties integrating into their host society and why their performance in the labor market lags behind that of natives. Especially if we take into account first-generation immigrants, it can be hypothesized that these immigrants gained their qualifications and work experience in very different contexts and, thus, may have a greater variety of human capital than natives. Furthermore, language can be a very difficult obstacle to overcome. These differences have been shown to be persistent, and second-generation immigrants still suffer from lower performances in the labor market (OECD 2010; Portes and Rumbaut 2001). Whether and how naturalization is able to close this gap is difficult to assess and, thus, discussed ambiguously in the literature (see Hainmueller and Hangartner 2013).

Theoretically, naturalization is linked to increased productivity and, thus, to better labor market outcomes. First, naturalization offers unrestricted access to the labor market. Citizensship is a requirement for not only many jobs in the public sector but also for numerous jobs that require unrestricted mobility of the employees (see Yang 1994; Bratsberg et al. 2002; Steinhardt 2012). Second, from the employers side naturalization is linked to a cost reduction in at least two dimensions: On the one hand, employing a foreign worker (especially an employer from a non-European Union country) requires administrative effort that is not needed for a worker with a passport from the host country (see Bratsberg et al. 2002; Mazzolari 2009). On the other hand, naturalization reduces insecurity as the job candidate has the indefined right to live and work in the host country (see Cahuc and Zylberberg 2004; Steinhardt 2012). Third, naturalization provides to a certain degree a signal of integration and identification with the host community as naturalization always comes with the fulfillment of requirements (e.g., language skills, a certain period of residence in the host country, and the ability to support oneself economically, Spence 1974). In this sense, naturalization can be seen as productivity-related information, which employers may use for selection purposes.

Several observational (i.e., non-randomized) studies have analyzed the impact of citizenship on economic outcomes (for overviews, see, e.g., Bevelander and DeVoretz 2008; Liebig and Von Haaren 2011). A number of scholars have attempted to estimate empirically the effect of citizenship on economic outcomes in Sweden (Bevelander 2000; Scott 2008; Ohlsson 2008), Canada (DeVoretz and Pivnenko 2006), France (Fougère and Safi 2008), Germany (Steinhardt 2012), and the United States (Chiswick 1978; Bratsberg et al. 2002; Mazzolari 2009; Akbari 2008). Although the findings have been somewhat mixed, the results of several studies have indicated that naturalization has a positive effect on immigrants' employment, in particular for groups of immigrants who have a low probability of employment. However, there are several noteworthy exceptions to this pattern (see, e.g., Mata 1999; Kogan 2003; Chiswick 1978; Bevelander 2000).

There are two potential explanations for these mixed findings. On the one hand, citizens and non-citizens immigrants may differ in unobservable characteristics that are linked to productivity, such as network mem-

berships, field of study, skills, ability, or motivation. On the other hand, this inequality may be due to employers' discrimination against non-citizens. My study design clearly differentiates between the two competing explanations.

Nevertheless, the existing research on the impact of citizenship on economic outcomes fails to unambiguously answer the question of whether citizenship causally affects employment. The previous studies potentially suffered from severe selection bias, which prevented them from isolating the causal effects of citizenship on economic outcomes. These studies prdominantely relied on cross-sectional data, which makes it very difficult to control for selection bias. In particular, naturalized and non-naturalized immigrants may differ with respect to unobservable characteristics correlated with productivity that can explain the differences in their economic outcomes. However, this limitation is not restricted to cross-sectional studies. The same problem applies to the few panel studies of naturalization that compare immigrants over time (Bratsberg et al. 2002; Ohlsson 2008; Steinhardt 2012). The reason is that the timing of the naturalization is typically endogenous and triggered by changes in unobserved confounders that lead immigrants to apply for naturalization and also have an independent effect on integration (such as marriage to a host country national, a pending job promotion, etc.). For example, using Swedish panel data Engdahl (2013) shows that the economic outcomes of naturalized and non-naturalized immigrants diverge sharply in the years right before naturalization, which violates the parallel trends assumption required for causal identification in panel estimations. Hence, the evidence remains inconclusive because we do not know if the differences in outcomes were driven by citizenship per se or simply differences in unmeasured confounding characteristics that were not controlled for.

I overcome this methodological problem by applying a field experiment to test for discrimination in the hiring process. I am interested in determining whether there are informal but systematic differences in labor market access between natives, naturalized immigrants, and non-naturalized immigrants. My measure for discrimination in the hiring process is behavioural: differences in callback rates. This enables me to estimate the causal effect of citizenship on the likelihood of being called for a job interview. I address the empirical shortcomings by randomizing all applicant characteristics and signals, such that any difference in callback rates equals the causal effect of citizenship. Correspondence tests like the applied promise both high internal and external validities because the experiment will solicit a real-world behavioural outcome. Explicitly differentiating between the legal statuses of the immigrants applying for jobs will allow for detecting differences in the discrimination rates between the three groups (natives, immigrants with citizenship, and immigrants without citizenship). I field the study in Germany. Germany applies a restrictive citizenship law (see for example Howard 2009). Even after the reforms in the year 2000 which added some aspects of the principle of jus soli to the existing law, naturalization regulations are still characterized by the principle of descent (jus sanguinis) (see, for example, Steinhardt 2012; Gathmann and Keller 2014). This allows me to disentangle country of origin, as indicated by the applicants name, from place of birth and citizenship status.

There are two dominant economic theories of labor market discrimination: statistical discrimination theory (Arrow 1972; Phelps 1972) and the taste-based or animus-based interpretation of discrimination (Becker 1957). The former theory is based on the fact that employers have incomplete information on the candidates

applying for a position. Due to this uncertainty, employers resort to generalizations based on observable characteristics (e.g., race or gender) to infer the expected productivity of the applicants. Thus, the group average productivity is used to classify the applicants. The more information employers have on the candidates, the less this group average should play a role. In this context naturalization can bring direct benefits as it signals social and cultural integration to prospective employers. Thus, citizenship can reduce uncertainty in the statistical sense of discrimination as employers view citizenship as a signal of better social and cultural integration, motivation, or a commitment to stay in the country permanently and invest in country specific human capital. Therefor, I can assume that on average, native applicants are more likely to receive a positive response than immigrant applicants are, regardless of whether they are citizens or non-citizens (discrimination against immigrants hypothesis) and that, on average, naturalized immigrants are more likely to receive a positive response than non-citizens immigrants are (discrimination against non-citizens hypothesis). The taste-based theory of discrimination suggests that employers dislike minorities. This type of discrimination is very different from the previous one, as it is not revised once the uncertainty is reduced. In line with this theoretical approach we would expect citizenship not to help reducing discrimination.

The contribution of this paper is three-fold: First, this is the first correspondence test to focus on the effects of citizenship. Second, the explicit differentiation between country of birth, citizenship status, signals of social integration, and religion allow for insight into the drivers of discrimination. This feature enables me to measure the 'citizenship premium' for different immigrant types that differ, e.g., by country of birth or being Muslim. Third, my study fills a gap by examining the effect of naturalization on economic integration in Germany specifically, a country where immigrant integration in general, and the integration of the Turkish minority in particular, is a controversial policy issue.

3.2 Materials and Methods

3.2.1 Experimental protocol

Assessing actual discrimination is difficult for the reasons stated above. Other observed and unobserved factors potentially drive differences between immigrants and natives and not the ethnic origin itself. Testing studies in hiring processes offer an unambiguous way to measure discrimination. Moreover, previous research has shown the hiring process is a key hurdle for economic integration: about 90% of the discrimination occurs at this stage of the recruitment process (see Riach and Rich 2002; Petersen and Saporta 2004; Petersen et al. 2000). I will use the correspondence test method to measure the behavioural responses of employers to fictitious job applicants with varying characteristics and signals.

I focus on a specific segment of the labor market. I choose a job from the industrial sector requiring a vocational training (electronic technician). In the industrial sector the highest proportion of immigrants is employed. Similarly, I have chosen the target group by focusing on the largest non-EU immigrant group with the highest absolute number of naturalized citizens, which in the German case are the Turks.

The procedure comprises sending out three carefully matched, fictitious applications in response to real job vacancies that are advertised online and tracking the callback rates. In the job applications, I randomly varied the applicants' name, citizenship status, place of birth, signals of social integration (membership in clubs or associations) and religion, and the inclusion of reference letters. The employers received per e-mail up to three applications for each position (the applicants are all male). The employers then decided whether the candidates are suitable to invite for a job interview. They were able to contact the (fictitious) applicants by phone or e-mail. If an applicant is called for a job interview, he turned down the invitation using a template e-mail stating that he has already found a job.

3.2.2 The applications

The three applications I mailed to the hiring companies were very similar but not identical to avoid detection. The technique allows strict control of all objective factors, such as education, qualifications, language skills, etc., that influence job performance. I produced three very similar types of basic applications (A, B, and C), in order to apply for the same position with three applicants. Application A is mailed on Mondays form an applicant from Berlin, application B on Wednesdays from a candidate living in Mannheim, and application C on Fridays from an applicant from Munich. The applications are comprehensive and include all usual documents (i.e., cover letter, résumé, diplomas). All three types of applicants were raised and educated in the host country (in the city they are sending the application from). All three applicants state that the country's native language is their mother tongue. As the applications are the same for natives and non-naturalized and naturalized immigrants, they all are native speakers, and the résumés do not report any knowledge of the language of the country of origin for the non-native applicants. The three applications state that all candidates have good IT and software skills. In addition, they all play sports in their leisure time.

While the applications are similar in all characteristics reported in the résumé, grades, pictures, and the inclusion of the reference letters are randomly assigned over the three applications (figure 3.B.1 in the appendix details the randomization scheme). Moreover, at least one and at most two of the basic applications have reference letters attached. Finally, names and citizenship (the treatment) are randomly assigned to the three application types: While applicant with the native name gets by default German citizenship assigned, I randomize citizenship status for the applicants with a Turkish-sounding name, i.e. one applicant is naturalized, the other non-naturalized, thus Turkish citizen. The three names I used are Tobias Hoffmann for the native candidate, and Adnan Ayaz and Evren Guenes for the candidates with Turkish-sounding names. In addition, I assign to the native applicant a birthplace in Germany (according to the city from where the application was mailed) and to the two non-native applicants randomly either a German (again Berlin, Mannheim, or Munich according to the application type) or a Turkish (Istanbul) birthplace. Note that the non-citizens applicants are not affected by domestic immigration and/or labor market regulations as they are legal permanent residents of the country. Finally, I randomized membership to association over the three applicants: The native applicant randomly was assigned to no association, to a neutral or to a christian one. The two

applicants with Turkish-sounding names were each assigned to one club condition: Either no membership, a neutral, a Christian, or a Muslim.

3.2.3 Outcomes

I present results for two outcome variables: a narrow and broader measurement for callbacks. I code for our narrow callback measure a response as positive/invitation when the applicant receives a call or an e-mail from the employer explicitly inviting him for an interview. Subsequently, I code a response as negative when a candidate receives no response at all, when the employer turns the candidate down, or when employers ask for further information (i.e. salary requirement, further references, willingness to move, etc.).

For our broader callback measure, I code a response as positive (invitation) when the application explicitly was invited or employers asked for further information, else as negative. This allows to capture whether applicants where treated somehow differently not only in means of explicit invitation. Following Adida et al. (2010) focusing on callbacks as the outcome of interest may lead to underestimating discrimination. They forward the argument that if hiring companies face pressure to demonstrate that they are not discriminating against minorities, applicants with Turkish-sounding names would receive callbacks so that the firm appears not to discriminate against them. This bias, if true, would mask to a certain extend a possible discrimination against candidates with Turkish-sounding names.

3.2.4 Sample

I collected the data between August and December 2015. I relied on online advertised job vacancies by the Federal Employment Agency. The vacancies cover the entire German territory but I did not apply to jobs with short-term contracts or offered by employment agencies. I applied to 316 open positions with three applications each for a total of 948 applications. The overall response rate indicating any answer in return to the applications is of 62%. The response rate is statistical identical for all three applications types (61%, 62%, respectively 62%), the three applicants (Ayaz 60%, Guenes 62%, and Hoffmann 63%), and the three treatment conditions (non-naturalized immigrant 62%, naturalized immigrant 60%, and native 63%) (see 3.C.1 in the appendix for descriptive statistics).

I conduct several tests to assess the successful randomization of the applicant characteristics. Table 3.C.2–3.C.4 in the appendix report the balance of all applications. Overall, the imbalance is minor and the data is consistent with a distribution generated from a null hypothesis of no differences.

3.3 Results

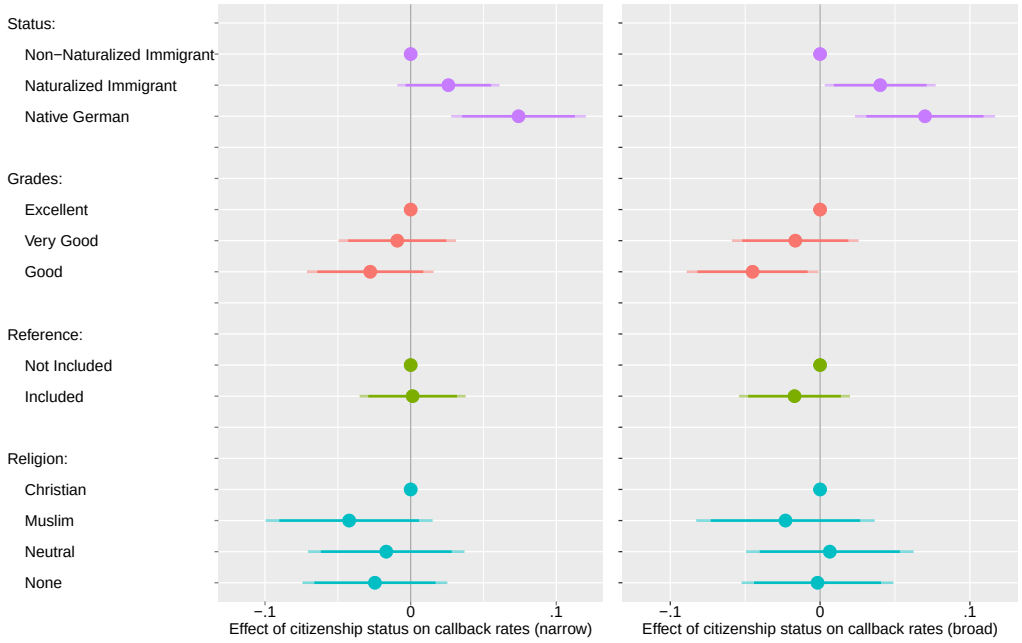
Regarding the narrowly defined callback or invitation rate, out of the 316 hiring companies I applied to, 249 treated the candidates equally, meaning that they either did nor invite any of them to a job interview (210 companies) or all of them (39 employers). 67 companies invited either one (42 employers) or two (25 employers) of the applicants for a total of 201 applications. The difference in the positive response rates between the applicants with a German name and the applicants with Turkish-sounding names is striking: The German candidate received a positive response rate of 26% and the applicants with Turkish-sounding names of only 20%. This 6 percentage point difference is significant at conventional levels ($p<0.03$) and indicates that a candidate with a Turkish-sounding name received 1.3 times less a positive response compared to the German applicant. Splitting the comparison according to the treatment variable indicating citizenship status, I find a significant ($p<0.02$) difference of about seven percentage points in callbacks between native applicants (26%) and non-naturalized candidates (19%). The difference in means for the callback rate of natives and naturalized applicants is about five percentage points, but statistically not significant ($p<0.14$), neither is the difference between non-naturalized and naturalized applicants (difference of three percentage points, $p<0.43$).

Turning to the broader measure for callbacks 61.4% of the hiring companies did not invite any of the applications and 15.8% invited all candidates. 44 companies invited one application out of the three and 28 two of them thus, we have 216 identifying applications for the analysis. At a first glance the difference in callback is less pronounced: 25% of the applications send by a candidate with a Turkish-sounding name and 30% of the natives' applications were accepted for an interview by the hiring companies. This difference of five percentage points is significant ($p<0.10$). According to the citizenship status the native applicant received 30% callbacks on his applications, the naturalized applicant 27%, and the non-naturalized applicant 23%. At conventinal levels only the difference in means between the non-naturalized and the native applicant is statistically different from zero ($p<0.05$) (for details see section 3.D.1 in the appendix).

A more detailed picture of a potential discrimination in hiring in the German labor market is offered by the multivariate regressions. In figure 3.1 and 3.2 I present the main effects of the analysis for the full sample and for the subsample of applicants with Turkish-sounding names. The regression tables are reported in the appendix table 3.D.4. I present results from ordinary least square regressions with clustered standard errors and job opening fixed effects for each of the two outcome variables. The figures show point estimates and robust 95% (thin) and 90% (bold) confidence intervals.

Figure 3.1 displays the main effect for the entire sample of 948 applications. In the left panel of figure 3.1 we see the effects on the likelihood of being invited to a job interview for the narrow callback rate. Several applicant characteristics do not affect this likelihood: Neither the differences in grades, the reference letters, the membership to a neutral or religious association, nor the picture used have an impact on the callback rate. Holding these characteristics constant, I find that, on average, non-citizens immigrants were called significantly less often for a job interview than equally qualified German natives. The effect is about seven percentage points.

Figure 3.1: Effects of Citizenship Status on Callback Rate (Full Sample)



The figure shows point estimates and robust 95% (thin) and 90% (bold) confidence intervals from ordinary least square regressions with clustered standard errors and job opening fixed effects for the full sample. The panel on the left reports the effects on the likelihood of being invited to a job interview for the narrow conceptualized callback outcome. The right panel shows the effect on the likelihood of an applicant being invited for the broad callback indicator. The regressions controls further for the pictures used.

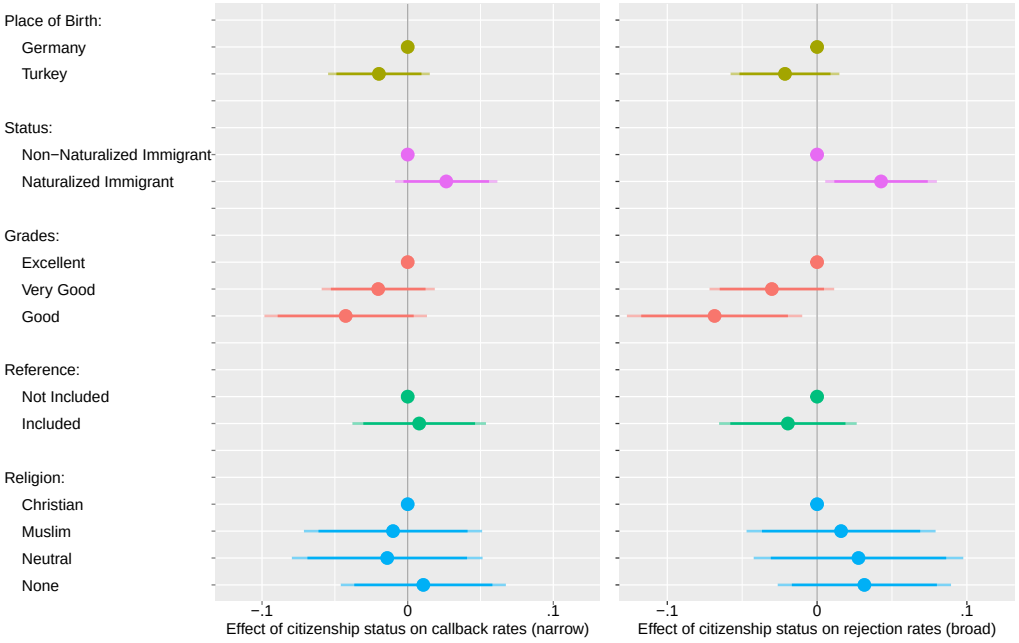
To a lower degree (about three percentage points) even if not significant at the conventional 5% level ($p < 0.15$), this also held true for naturalized immigrants. Thus, German citizenship (slightly) decreased the discrimination in callback rates for applicants with Turkish-sounding names, but it was not enough to remove the entire ethnic penalty relative to native Germans.

The effect of citizenship shows somewhat clearer when we turn to our second outcome, the broader defined callback rate: The right panel in figure 3.1 reports the main effects on the likelihood of an application being invited or asked for his willingness to take the job by the employers. I find a substantive and significant effect for the native applicant of about seven percentage points ($p<0.01$) as well as for the naturalized candidate of four percentage points ($p<0.03$) relatively to the non-citizens applicant. In addition, I find that candidates with the highest grade-score assigned where significantly more often invited to a job interview in relation to the applicants with the lowest score. The effect is significant at conventional levels ($p<0.05$) and with 5 percentage points substantial in magnitude.

I can confirm this pattern by looking at the results for the non-native subsample. Figure 3.2 shows the results of the correspondence test for the candidates with Turkish-sounding names reducing the sample to 632 ob-

servations. Generally, I can state that the uncertainty of the estimation increases as the number of observation decreases. Again the panel on the left shows the effects on the narrowly defined callback rate and the panel on the right the effects on the broader callback rate. Additionally, to the above mentioned covariates, I included in our analysis a dichotomous term capturing whether the applicant was born in Turkey or Germany (1 if born in Turkey, 0 otherwise).

Figure 3.2: Effects of Citizenship Status on Callback Rate for applicants with Turkish-Sounding Names



The figure shows point estimates and robust 95% (thin) and 90% (bold) confidence intervals from ordinary least square regressions with clustered standard errors and job opening fixed effects for the applicants with Turkish-sounding names. The panel on the left reports the effects on the likelihood of being invited to a job interview for the narrow conceptualized callback outcome. The right panel shows the effect on the likelihood of an applicant being invited for the broad callback indicator. The regressions controls further for the pictures used.

Focusing on the effects on the explicit invitation rate I find again that the differences in grades, the inclusion of reference letters, and the club membership does not affect our outcome variables. Holding this set of covariates constant, on average being born in Turkey decreases the likelihood of being invited to a job interview by about two percentage points and having German citizenship increases the callback rate by three percentage points. However, both effects are far from being significant at conventional levels ($p<0.27$ and $p<0.14$ respectively).

Turning to our broader callback measure (right panel of figure 3.2) I can draw a clearer picture about the discriminatory practices in the German labor market. This difference in callbacks is largely and substantially explained by the applicants' citizenship status. Naturalized immigrants have in relation to non-naturalized

candidates a four percentage points higher likelihood to be invited to a job interview ($p<0.03$). Everything else being equal, candidates with a Turkish-sounding name which were born in Germany face a higher probability of being invited. This effect is about two percentage points in magnitude. However, this effect is not significant at conventional levels ($p<0.30$).

3.4 Discussion

3.4.1 Discrimination of Immigrants

In general we find a positive and significant effect on callbacks if testing for the ethnic origin of the applicant and controlling for the set of covariates of about six, respectively five percentage points according to the two outcomes (see table 3.D.4 in the appendix). Compared to the existing correspondence tests in Germany (Kaas and Manger 2012; Schneider et al. 2014) I found a small rate of discrimination in callback rates between native applicants and candidate from a minority group. These studies also focused on second and third generation immigrants, but were conducted in different labor market segments in Germany. The fact that I find a smaller discrimination rate can be due to different causes: First, by focusing on the labor market segment where most immigrants are employed, I ensure that companies are used to deciding on applications from non-native applicants, and thus theoretically reduce statistical discrimination. Second, the applications are comprehensive in comparison to similar studies and contain more information. Third, I focus on a segment of the labor market that is in need for qualified workers regardless of the ethnic origin. Finally, although some applicants are born abroad they all are well educated and successful completed a job-specific vocational training in Germany, such that all can be expected to be well acculturated to Germany's way of life.

3.4.2 Discrimination of Non-Citizens

The leading question underlying this article is whether we find a naturalization premium in the hiring process, or differently: What are the economic returns of citizenship? As figure 3.1 shows naturalization about halves the country of origin penalty relative to native Germans in regard to callbacks. For the immigrant subsample we see that naturalization overplays the country of birth penalty. Thus, I find that naturalization indeed has a strong effect on the labor market integration of immigrants.

As discrimination can show itself in several ways, I can back up these results with additional information on employers behaviour agains applicants. I analyzed rejection rates as further mean of discrimination. A rejection being coded as one if the employers explicitly turned down the application, else as zero. I find a consistent pattern with the discussed results (see table 3.D.5), if anything the effects are even more pronounced then with the callback rate (Adida et al. 2010).

3.4.3 Interaction with applicant quality

We can gain a more profound understanding on how discrimination against applicants with Turkish origins is at work, when analyzing the subsample not including the applicants stating the highest grade-score (table 3.D.6 in the appendix). We see, that for the subsample including all applicants not stating excellent grades the effects on the callback rates are consistent with the previous findings based on the full sample: We find a significant difference in callback rates for applicants with Turkish origins and natives of 7 percentage points. Regarding citizenship status natives have a higher likelihood of being invited of about 9 percentage points. This effect is significant for both outcome specifications ($p<0.01$). The difference between non-naturalized immigrants and naturalized applicants is about 3 percentage points for the narrow defined callback rate and about 5 percentage points for the broader measure. However, both effects are far from being significant at conventional levels ($p<0.32$, $p<0.14$, respectively). Different then in the results shown previously, stating no membership to an association lowers significantly and drastically the callback rates depending on the specification between eight and eleven percentage points. For the narrow callback rate also stating a membership to a neutral (i.e. non-religious association) lowers the callback rate by about seven percentage points.

If we turn to the Turkish subsample, I find that discrimination is stronger for Turkish applicants with low and medium grades. But the naturalization premium is also larger for these subgroups: seven percentage points ($p< 0.09$) for the narrow outcome and at eleven percentage points for the broader measure.

At this point, I can only speculate why the effects are more pronounced for applicants with Turkish-sounding names without excellent grades. It is possible that a pre-existing bias against applicants with Turkish background induces employers not to invite them. Whereas this bias can be overplayed by the candidates with Turkish-sounding names when belonging to the best applicants, this is not the case when the grades stated are low or average. With caution, I can state that this bias is associated with less willingness to hire non-native applicants (see Moss-Racusin et al. 2012 for a discussion of gender bias in the hiring process). However, I would require a measure assessing pre-existing bias against Turkish applicants to draw more informed conclusion, and more research is clearly needed to answer this question.

3.5 Conclusion

This study examined the effects of citizenship on the likelihood of being invited to a job interview. I employed a correspondence test in Germany, to isolates the causal effect of citizenship from the confounding effects of ethnic origin, birth place, and religious affiliation. By analyzing two measures of callback rates from 948 applications in which I randomly varied applicants' names, citizenship status, place of birth, photographs, signals of social integration and religion, and reference letters, I found that there is substantial discrimination against applicants with a Turkish background. Further, I found that having German citizenship considerably increases callback rates for applicants with Turkish-sounding names, but is not enough to remove all of the

ethnic penalty relative to native Germans. Moreover, I found that naturalization overplays the negative effects of being born abroad and is more pronounced for job applicants with low to average grades.

This findings have important political implications. The fact that the sole act of holding host country citizenship, having on average the same background characteristics as natives, enables immigrants to better integrate into the labor market, challenges the restrictive design of the German citizenship regulation. Clearly, further research is needed to asses the mechanisms driving discrimination and to asses whether the results are idiosyncratic to the German case or generalizable to other contexts with different citizenship regimes.

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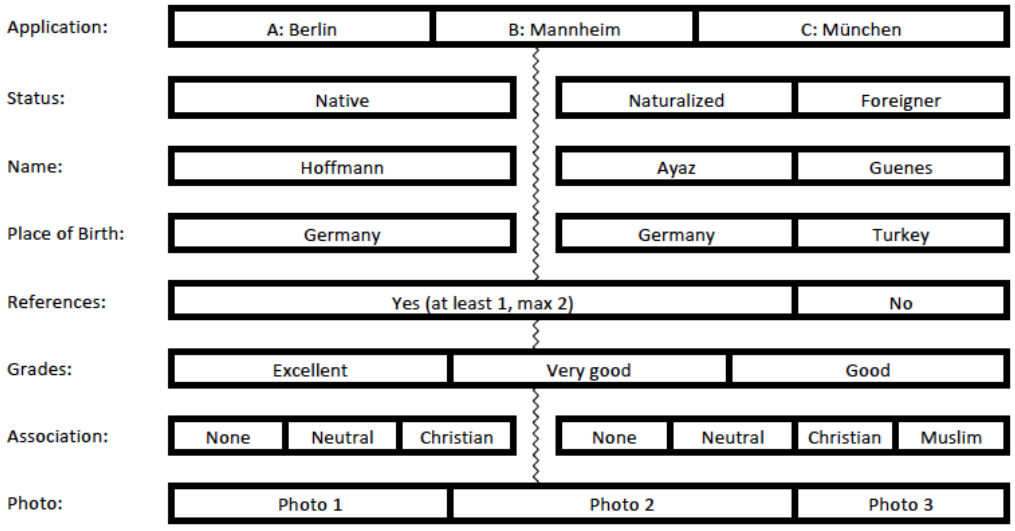
Appendix

3.A Introduction

This appendix provides further information to the study. In section 3.B I present the randomization scheme my study is based on. The third section provides details about the sample: I report the descriptive statistics and balance tests of our pre-treatment characteristics across different dimensions. The fourth section presents the results. First, simple differences in means for callbacks. Second, the multivariate analysis for the effects on the callback rate. Additionally, I present further results for the effects on the rejection rate, another mean of discrimination, and for a subsample of non-excellent applicants.

3.B Randomization

Figure 3.B.1: Randomization Scheme



3.C Sample

3.C.1 Descriptive Statistics

Table 3.C.1 displays the descriptive statistics for key covariates and outcomes for our sample of 948 applications.

Table 3.C.1: Descriptive Statistics of Covariates and Outcomes

Variable	Observations	Mean	SD	Min	Max
Citizenship status	948	2	0.82	1	3
Native	316	1	0	–	–
Naturalized Immigrant	316	1	0	–	–
Non-Naturalized Immigrant	316	1	0	–	–
Country of birth (TUR=1)	948	0.33	0.47	0	1
Grades	948	2	0.82	1	3
Excellent	316	1	0	–	–
Very good	316	1	0	–	–
Good	316	1	0	–	–
Reference included	948	0.51	0.50	0	1
Association	948	2.66	1.15	1	4
None	282	1	0	–	–
Neutralgood	293	1	0	–	–
Christian	232	1	0	–	–
Muslim	141	1	0	–	–
Picture	948	2	0.82	1	3
Picture 1	316	1	0	–	–
Picture 2	316	1	0	–	–
Picture 3	316	1	0	–	–
Callback (narrow)	948	0.22	0.42	0	1
Callback (broad)	948	0.26	0.48	0	1

3.C.2 Balance

Table 3.C.2: Balance of Covariates across Applications

	Application A			**Application B**			**Application C**			**A - B**	**A - C**	**B - C**
	N	Mean	SD	N	Mean	SD	N	Mean	SD	p-value	p-value	p-value
Status	316	1.97	0.85	316	2.03	0.79	316	2.01	0.81	0.36	0.50	0.80
Country	316	0.33	0.47	316	0.33	0.47	316	0.35	0.48	1.00	0.56	0.56
Grades	316	1.97	0.83	316	1.98	0.83	316	2.06	0.80	0.85	0.16	0.22
Reference	316	0.50	0.50	316	0.53	0.50	316	0.49	0.50	0.43	0.87	0.34
Association	316	2.72	1.15	316	2.58	1.15	316	2.67	1.13	0.13	0.60	0.31
Picture	316	2.07	0.82	316	1.95	0.80	316	1.98	0.83	0.06	0.15	0.66

Table 3.C.3: Balance of Covariates across Applicants' Names

	Ayaz			Guenes			Hoffmann			A-G	A-H	G-H
	N	Mean	SD	N	Mean	SD	N	Mean	SD	p-value	p-value	p-value
Status	316	1.51	0.50	316	1.49	0.50	316	3	0	0.75	–	–
Country	316	0.50	0.50	316	0.50	0.50	316	0	0	0.87	–	–
Grades	316	1.99	0.80	316	1.92	0.83	316	2.09	0.83	0.30	0.14	0.01
Reference	316	0.54	0.50	316	0.50	0.50	316	0.49	0.50	0.43	0.23	0.69
Association	316	2.64	1.11	316	2.56	1.14	316	2.78	1.18	0.36	–	–
Picture	316	2.02	0.82	316	2.01	0.79	316	1.97	0.85	0.81	0.45	0.59

Table 3.C.4: Balance of Covariates across Treatment Conditions

	Native (A)			Naturalized (B)			Non-Naturalized (C)			A-B	A-C	B-C
	N	Mean	SD	N	Mean	SD	N	Mean	SD	p-value	p-value	p-value
Application	316	1.99	0.82	316	2.07	0.79	316	1.94	0.84	0.20	0.50	0.05
Country	316	0	0	316	0.54	0 0.50	316	0.46	0.50	–	–	0.04
Grades	316	2.09	0.83	316	1.96	0.82	316	1.96	0.80	0.05	0.05	0.96
Reference	316	0.49	0.50	316	0.53	0.50	316	0.51	0.50	0.27	0.63	0.53
Association	316	2.78	1.18	316	2.56	1.13	316	2.64	1.12	–	–	0.40
Picture	316	1.97	0.85	316	1.98	0.80	316	2.05	0.81	0.96	0.21	0.22

3.D Results

3.D.1 Callback Rate

Table 3.D.1: Mean Differences in Callback Rates

	Name		A - B	Citizenship Status			A-B	A-C	B-C
	GER (A)	TUR (B)	p-value	Native (A)	Citizen (B)	Non-Cit. (C)	p-value	p-value	p-value
Callback (narrow)	0.26	0.20	0.03	0.26	0.21	0.19	0.14	0.02	0.43
Callback (broad)	0.30	0.25	0.10	0.30	0.27	0.23	0.38	0.05	0.27
Observations	316	632	948	316	316	316	632	632	632

Table 3.D.2: Mean Differences in Callback Rate for Applications with References

	Name		A - B	Citizenship Status			A-B	A-C	B-C
	GER (A)	TUR (B)	p-value	Native (A)	Citizen (B)	Non-Cit. (C)	p-value	p-value	p-value
Callback (narrow)	0.23	0.20	0.46	0.23	0.24	0.17	0.93	0.15	0.12
Callback (broad)	0.27	0.24	0.45	0.27	0.28	0.20	0.89	0.13	0.09
Observations	154	328	482	154	168	160	322	314	328

Table 3.D.3: Mean Differences in Callback Rate for Applications without References

	Name		**A - B**	**Citizenship Status**			**A-B**	**A-C**	**B-C**
	GER (A)	TUR (B)	p-value	Native (A)	Citizen (B)	Non-Cit. (C)	p-value	p-value	p-value
Callback (narrow)	0.29	0.20	0.02	0.29	0.18	0.21	0.03	0.08	0.62
Callback (broad)	0.32	0.25	0.12	0.32	0.25	0.26	0.17	0.21	0.90
Observations	162	304	466	162	148	156	310	318	304

3.D.2 Effects on Callback Rates

Table 3.D.4: Effects of Citizenship on Callback Rates

	All Applicants				Turkish Applicants	
	(1) Callback (narrow)	(2) Callback (broad)	(3) Callback (narrow)	(4) Callback (broad)	(5) Callback (narrow)	(6) Callback (broad)
Ethnic origin (TUR=1)	-0.06	-0.05				
	(0.02)	(0.02)				
Citizenship status:						
Ref: Non-naturalized immigrant						
Naturalized immigrant			0.03	0.04	0.03	0.04
			(0.02)	(0.02)	(0.02)	(0.02)
Native			0.07	0.07		
			(0.02)	(0.02)		
Country of birth (TUR=1)					-0.02	-0.02
					(0.02)	(0.02)
Grades:						
Ref: Excellent						
Very good	-0.01	-0.02	-0.01	-0.02	-0.02	-0.03
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Good	-0.03	-0.04	-0.03	-0.05	-0.04	-0.07
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)
Reference (0/1):	0.00	-0.02	0.00	-0.02	0.01	-0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Club membership:						
Ref: Christian						
Muslim	-0.04	-0.02	-0.04	-0.02	-0.01	0.02
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Neutral	-0.02	0.00	-0.02	0.01	-0.01	0.03
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)
None	-0.03	-0.00	-0.02	-0.00	0.01	0.03
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Picture:						
Ref: Picture 1						
Picture 2	0.03	0.04	0.03	0.05	0.04	0.06
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)
Picture 3	0.01	0.03	0.01	0.03	0.02	0.06
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)
Employers Fixed Effects	✓	✓	✓	✓	✓	✓
Application Fixed Effects	✓	✓	✓	✓	✓	✓
Observations	948	948	948	948	632	632

Note: Ordinary least squares regression of an indicator for invited applicants (=1 if invited) on different candidates citizenship measures. The first outcome is narrowly definite and captures only explicit invitations. Outcome two is broader conceptualized and sums up if applicants where invited or asked for further information regarding their applications. Model (1) and model (2) test for a significant effect of a binary variable indicating the candidates' ethnic origin (=1 if Turkish) and controls for grades, whether reference letters where included, the membership to an (religious) association, for the picture used and fixed effects for each application and employer. Model (3) and (4) similarly test for a significant effect of citizenship status. Model (5) and model (6) are restricted to the applicants with a Turkish-sounding name. These models use the same specification as models (3) and (4) but additionally controls for the country of birth (=1 Turkey). Clustered standard errors in parentheses.

3.D.3 Effects on Rejection Rates

Table 3.D.5: Effects of Citizenship on Rejection Rates

	All Applicants		Turkish Applicants
	(1)	(2)	(3)
	Rejection	Rejection	Rejection
Ethnic origin (TUR=1)	0.03		
	(0.02)		
Citizenship status:			
Ref: Non-naturalized immigrant			
Naturalized immigrant		-0.06	-0.07
		-0.02	(0.02)
Native		-0.06	
		-0.02	
Country of birth (TUR=1)			0.05
			(0.02)
Grades:			
Ref: Excellent			
Very good	-0.01	-0.02	-0.03
	(0.02)	-0.02	(0.03)
Good	-0.00	0	0.00
	(0.02)	-0.02	(0.04)
Reference (0/1):	-0.00	0	-0.01
	(0.02)	-0.02	(0.03)
Club membership:			
Ref: Christian			
Muslim	-0.01	-0.01	-0.01
	(0.03)	-0.03	(0.04)
Neutral	-0.02	-0.02	-0.04
	(0.03)	-0.03	(0.05)
None	-0.01	-0.01	-0.02
	(0.03)	-0.03	(0.04)
Picture:			
Ref: Picture 1			
Picture 2	-0.01	-0.01	-0.03
	(0.02)	-0.02	(0.03)
Picture 3	0.00	0	-0.04
	(0.02)	-0.02	(0.03)
Employers Fixed Effects	✓	✓	✓
Application Fixed Effects	✓	✓	✓
Observations	948	948	632

Note: Ordinary least squares regression of an indicator for rejected applicants (=1 if rejected) on different candidates citizenship measures. Model (1) tests for a significant effect of a binary variable indicating the candidates' ethnic origin (=1 if Turkish) and controls for grades, whether reference letters where included, the membership to an (religious) association, for the picture used and fixed effects for each application and employer. Model (2) similarly tests for a significant effect of citizenship status. Model (3) is restricted to the applicants with a Turkish-sounding name. This model uses the same specification as model (2) but additionally controls for the country of birth (=1 Turkey). Clustered standard errors in parentheses.

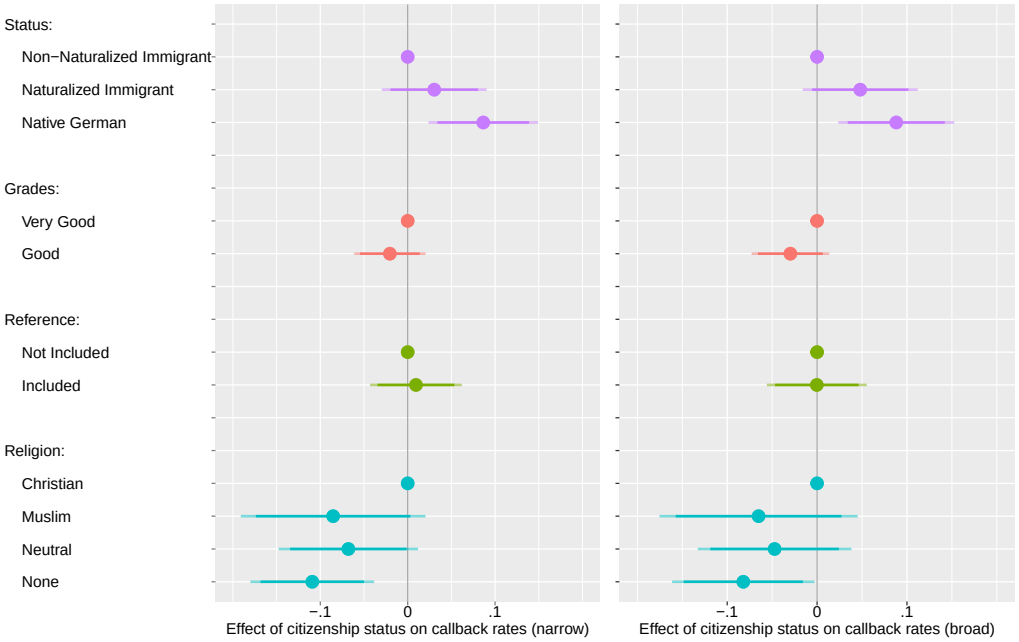
3.D.4 Subsample of Applicants with Low to Average Grades

Table 3.D.6: Effects of Citizenship on Callback Rates for the Subsample of Non-Excellent Applicants

	All Applicants				Turkish Applicants	
	(1) Callback (narrow)	(2) Callback (broad)	(3) Callback (narrow)	(4) Callback (broad)	(5) Callback (narrow)	(6) Callback (broad)
Ethnic origin (TUR=1)	-0.07	-0.07				
	(0.03)	(0.03)				
Citizenship status:						
Ref: Non-naturalized immigrant						
Naturalized immigrant			0.03	0.05	0.07	0.11
			(0.03)	(0.03)	(0.04)	(0.04)
Native			0.09	0.09		
			(0.03)	(0.03)		
Country of birth (TUR=1)					-0.02	-0.03
					(0.04)	(0.04)
Grades:						
Ref: Very good						
Good	-0.02	-0.03	-0.02	-0.03	-0.02	-0.05
	(0.02)	(0.02)	(0.02)	(0.02)	(0.04)	(0.04)
Reference (0/1):	0.01	0.00	0.01	-0.00	0.02	-0.02
	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.05)
Club membership:						
Ref: Christian						
Muslim	-0.08	-0.06	-0.09	-0.07	-0.11	-0.09
	(0.05)	(0.06)	(0.05)	(0.06)	(0.07)	(0.08)
Neutral	-0.07	-0.05	-0.07	-0.05	-0.11	-0.07
	(0.04)	(0.04)	(0.04)	(0.04)	(0.08)	(0.08)
None	-0.11	-0.08	-0.11	-0.08	-0.13	-0.09
	(0.04)	(0.04)	(0.04)	(0.04)	(0.06)	(0.07)
Picture:						
Ref: Picture 1						
Picture 2	0.04	0.05	0.04	0.05	0.03	0.03
	(0.03)	(0.03)	(0.03)	(0.03)	(0.06)	(0.06)
Picture 3	0.01	0.04	0.01	0.03	0.11	0.13
	(0.03)	(0.03)	(0.03)	(0.03)	(0.06)	(0.06)
Employers Fixed Effects	✓	✓	✓	✓	✓	✓
Application Fixed Effects	✓	✓	✓	✓	✓	✓
Observations	632	632	632	632	411	411

Note: Ordinary least squares regression of an indicator for invited applicants (=1 if invited) on different candidates citizenship measures for the subsample of applications which did not state excellent grades. The first outcome is narrowly definite and captures only explicit invitations. Outcome two is broader conceptualized and sums up if applicants where invited or asked for further information regarding their applications. Model (1) and model (2) test for a significant effect of a binary variable indicating the candidates' ethnic origin (=1 if Turkish) and controls for grades, whether reference letters where included, the membership to an (religious) association, for the picture used and fixed effects for each application and employer. Model (3) and (4) similarly test for a significant effect of citizenship status. Model (5) and model (6) are restricted to the applicants with a Turkish-sounding name. These models use the same specification as models (3) and (4) but additionally controls for the country of birth (=1 Turkey). Clustered standard errors in parentheses.

Figure 3.D.1: Effects of Citizenship Status on Callback Rate for Applicants with Low to Average Grades



The figure shows point estimates and robust 95% (thin) and 90% (bold) confidence intervals from ordinary least square regressions with clustered standard errors and job opening fixed effects for the subsample of applicants with low to average grades. The panel on the left reports the effects on the likelihood of being invited to a job interview for the narrow conceptualized callback outcome. The right panel shows the effect on the likelihood of an applicant being invited for the broad callback indicator. The regressions controls further for the pictures used.

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