UNIVERSITÄT
HEIDELBERG
ZUKUNFT
SEIT 1386

Essays on the Economics of Migration

Inauguraldissertation zur Erlangung des Doktorgrades des
Fachbereichs Wirtschaftswissenschaften der
Ruprecht-Karls-Universität Heidelberg

vorgelegt von
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Heidelberg
Juli 2018

Acknowledgment

I wish to thank my supervisor, Christina Gathmann, for her support and guidance throughout my PhD. I am very grateful for her ideas and thoughts from which I have learned and benefited a lot. I also thank Stefan Klonner for serving as the second referee for this dissertation. Furthermore, I thank Christian Pfeifer, who supported me throughout my studies, and encouraged me to study in Copenhagen as well as to proceed with a PhD.

Moreover, I would like to thank my colleagues at Heidelberg University. In particular, many thanks are due to Sabine Morawa, who was a great help (and authority) in all non-academic questions. Furthermore, my work benefited immensely from the discussions with my fellow PhD students at the chair of labor economics.

Finally, I wish to thank my family and friends. First, I am very grateful to my parents, who gave me the freedom to develop and follow my interests, and provided many opportunities that favored my development. Furthermore, I would like to thank Anne, Anna, Eddy, Christian, Micha, Hannes, and Anja, as well as all other friends for their points of view and their constant support throughout the last five years. Finally, I thank my uncle whose character and attitude have influenced me a lot.

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Chapter 1

Introduction to the Essays

Immigration is at the center of public attention in many developed countries. The large refugee inflow to Europe with more than 1.4 million applications for asylum in 2015 alone, has dominated public and political debates in European countries over the last years. However, immigration has been a key issue for many countries long before the recent refugee migration to Europe. Large-scale immigration to classic immigration countries such as the United States, Canada or Australia has a long tradition; and increasing immigration to European countries since the second half of the 20th century transformed many European countries into immigration countries. Over the last three decades, the number of first-generation immigrants living in OECD countries has more than doubled, reaching a number of 135 million in 2017 (United Nations Population Division, 2018; OECD/European Union, 2015).

Figure 1.1 displays the population shares of first-generation immigrants in different OECD countries between 1990 and 2017. It illustrates that the relative number of immigrants grew substantially during this period in all displayed countries. Moreover, the immigrant populations in many European countries are today comparable in relative size to those in classic immigration countries. For example, the foreign-born population shares in 2017 in France (12.2%), the U.K. (13.4%), Germany (14.8%), and Sweden (17.6%), are similar to the share of immigrants in the United States (15.3%). In Switzerland, Australia, and Canada, these numbers lie between 20 and 30 percent.

At the same time, we observe increasing skepticism and anti-immigration sentiments in the public and political debates in several of these countries over the last years. For example, the emergence of populist right-wing parties in many European countries (e.g., in Denmark, Sweden, the Netherlands and France) is closely related to these sentiments, mostly against Muslim immigrants from non-EU countries (e.g., The Economist, 2010). Furthermore, the "Brexit" referendum in the U.K. was dominated by discussions about immigration from EU-countries (e.g., The Economist, 2016); and also the election of Donald Trump partly built on anti-immigration rhetoric.

Figure 1.1: Immigrant Populations in different OECD countries

A typical explanation for such anti-immigration sentiments are economic concerns of the receiving population with respect to an increased competition for jobs and the associated fiscal costs of immigration. However, a perceived lack of integration plays another important role. While the economic integration of immigrants is mostly a concern in the public debate, a number of studies suggest that especially the integration along social and cultural lines and its effects on the host society are important determinants of attitudes towards immigration. Accordingly, the integration of immigrants is repeatedly mentioned as one of the main issues of concern in public opinion surveys in many countries (e.g., Card et al., 2012; Dustmann and Preston, 2007; Hainmueller et al., 2015; OECD/European Union, 2015).

It appears that the economic and social integration of immigrant populations is a major challenge for many host countries. It is crucial for both the well-being of individual immigrants and the social cohesion of destination countries. Hence, to avoid high economic and social costs for immigrants and destination countries alike, it is important to understand the integration process, and to identify determinants and policy instruments that can be useful to support successful integration.

Given the labor market implications and the intense debates over the merits of immigration, a sizable literature has evolved in economics that is concerned with migration. One major strand of this literature studies the migration decision of immigrants,

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and treats migration as an investment including costs and benefits (Sjaastad, 1962; see Bodvarsson et al., 2015 for a survey of the literature). A second important strand of the migration literature is concerned with the effects of immigration and emigration on the labor markets in the destination and origin countries, respectively (e.g., Dustmann et al., 2016, on measuring effects of immigration on the destination country's labor market; Beine et al., 2008, on brain drain in origin countries). A third large strand of the migration literature is concerned with the integration and assimilation of immigrants.[1] More specifically, this literature analyzes how immigrants perform and develop in the new country. Starting with the seminal work of Chiswick (1978), immigrant-native gaps in labor market outcomes and the progress of immigrants with time spent in the destination country have been studied extensively (e.g., Borjas, 1985, 1995; LaLonde and Topel, 1992; Duleep and Regets, 1999; Lubotsky, 2007). While the main focus of this literature lies on labor market assimilation, there is an increasing interest also in the assimilation with respect to social, cultural, and political outcomes. Examples for outcomes studied in this literature are marriage and fertility decisions, residential location, or name-choices (e.g., Bleakley and Chin, 2010; Abramitzky et al., 2016).

The assimilation literature draws a mixed picture on immigrants' assimilation in different countries. Especially in European countries, immigrants and their children are often found to perform worse in the labor market than natives. In addition, both economic and social assimilation are observed to happen at a rather slow pace (OECD/European Union, 2015; Dustmann and Glitz, 2011; Algan et al., 2012). On the contrary, classic immigration countries, such as the United States or Canada, have a lot of experience in absorbing huge immigrant populations. Therefore, immigrants and their descendants are typically found to assimilate much faster in these countries than in Europe. However, the topic of integration has become increasingly prominent also in the United States, where the changing composition of immigrants since 1965 is also reflected in a larger heterogeneity in assimilation patterns among more recent immigrant cohorts (e.g., Card, 2005).

The literature proposes several reasons for initial differences between immigrants and natives with respect to economic performance and other dimensions, as well as for the observed assimilation patterns of immigrants. Most importantly, education and skill acquisition play a key role (Dustmann and Glitz, 2011). For example, the immigrant-native gaps in labor market performance in many European countries are in large part caused by less favorable socio-demographic characteristics, i.e., by a lower formal education of immigrants (e.g., OECD/European Union, 2015). However, also

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[1]In the economics literature, the term 'assimilation' refers to the process of closing immigrant-native gaps in labor market or social outcomes. It is often used interchangeably with the term 'integration' in this literature, even though 'integration' describes the inclusion of immigrants in the society more generally. This thesis follows the literature and uses 'assimilation' and 'integration' interchangeably.

immigrants with a higher stock of human capital may have problems to utilize their skills after immigration. A different valuation and non-recognition of diplomas in the destination country can cause occupational downgrading (e.g., Eckstein and Weiss, 2004; Dumont and Monso, 2007). Furthermore, an initial lack in complementary destination country-specific human capital, such as language skills, hinders immigrants to reach their potential, leading to disadvantages in the labor market and a slow social integration of immigrants (Chiswick and Miller, 2015, survey the literature on language acquisition and its effects).

An immigrant's willingness to invest in destination country-specific human capital and also in additional general human capital, depends crucially on the expected returns to skills. Many factors are likely to determine these returns. One of the most prominent factors influencing the investment decisions of immigrants is the time span that they plan to stay in the country (Dustmann and Görlach, 2015, survey the literature on temporary migration). Other factors that may influence (country-specific) human capital investments are the motive of immigration and the legal status of immigrants (e.g., Chin and Cortes, 2015; Gathmann and Keller, 2017).

Apart from these classic human capital arguments, other aspects like ethnic networks or ethnic capital, immigration policies, and discrimination are likely to affect the performance of immigrants and their integration process (e.g., Battisti et al., 2016; Gathmann and Keller, 2017; Kaas and Manger, 2012). Another factor, which is among the most controversial topics in the integration debates in many European countries, is the (national) identity of immigrants. A growing literature in economics studies the question, whether it matters for the social and economic integration of immigrants if they feel more connected to their origin country, or if they have a feeling of belonging to the destination country (e.g., Casey and Dustmann, 2010; Bisin et al., 2011b; Nekby and Rödin, 2010). The channels through which the identity of immigrants may affect their integration are then related to the aforementioned mechanisms, e.g., the formation of social networks and investments in country-specific human capital.

This dissertation consists of three essays that study the integration of immigrants in different contexts. The essays cover a broad variety of dimensions of integration, including outcomes of economic and social integration, and identify particular mechanisms that foster or impede assimilation. Thus, the thesis primarily contributes to the literature on social and economic assimilation and their determinants. The three essays have in common that they consider the relationship of immigrants to their destination and origin countries as an important factor in the assimilation process. The general idea is that an immigrant's subjective feeling or objective legal status of belonging somewhere, affects her long-term integration by providing or reducing incentives to invest in country-specific human capital, social networks, and other opportunities.

In Chapter 2, I investigate how the national identity of first-generation immigrants,

measured as attachment to their origin country, influences the long-term integration of the second generation. In particular, this chapter addresses the research question how the origin attachment of immigrant parents in the U.S. affects the integration of their children in the dimensions of identity, social networks, language use and skills, and school performance. Hence, the focus in Chapter 2 lies on the emotional relationship of immigrants to their origin country and its long-term effects on social and economic integration.

Chapter 3, which is joint work with Christina Gathmann and Nicolas Keller, analyzes the effect of a liberal citizenship policy on the social integration of immigrants in Germany. More specifically, we analyze whether the option to naturalize faster, speeds up the social assimilation of immigrants with respect to fertility, family formation, and partner choice. Since acquiring citizenship gives immigrants the same rights as the native population in the destination country, citizenship changes the legal status with which an immigrant belongs to the destination society. Thus, the focus in this chapter lies on the legal relationship of immigrants to their destination country.

Chapter 4 of this thesis is joint work with Christina Gathmann, and aims to assess the labor market assimilation of immigrants in Germany. Most previous studies on economic assimilation in Germany have focused explicitly or implicitly on guest worker immigrants (e.g., Pischke, 1992; Schmidt, 1997). While these earlier studies find little or no evidence for economic assimilation despite large earnings differentials upon arrival, these results might not be relatable to more recent immigrants in Germany, since the composition of more recent immigrant cohorts with respect to education, origin countries, etc. is very different from earlier cohorts. Moreover, Germany's relationship to immigration has changed over the last decades because it has become an immigration country. Therefore, more recent immigrants may have more incentives to invest in country-specific human capital than guest workers. Thus, the motivation of this chapter partly builds on the idea that the relationship between the receiving society and immigrants affects integration.

In the following, each of the chapters is summarized in more detail.

National Attachment and the Integration of Second-Generation Immigrants in the U.S.

In Chapter 2, I analyze the effects of immigrants' national identity on their children's integration in the dimensions of identity, social networks, language use and skills, and school performance. Due to the potential endogeneity of immigrants' identity formation, most previous studies are limited in their scope and report correlations between some proxy of identity and different integration outcomes (e.g., Casey and Dustmann, 2010; Bisin et al., 2011b; Nekby and Rödin, 2010).

In this essay, I use a sample of immigrant parents and their children in the United States from the Children of Immigrants Longitudinal Survey (CILS), and rely on an IV-strategy to identify the effect of a parent's national identity on her children's integration outcomes. Parents' national identity is approximated with a composite measure of attachment to their origin country. In order to overcome endogeneity, I instrument parents' national attachment with a measure of average national pride of the population in their country of origin. The idea of the instrument is that immigrants from different backgrounds might be differently attached to their origin countries, since the importance of national identity varies across countries due to historical and cultural reasons. A theoretical model on the transmission of identity across two generations is introduced in order to motivate this empirical strategy.

The empirical results confirm that immigrants from countries with high average national pride are more attached to their origin countries, and that parents transmit their origin attachment to their children. Moreover, my main results show that a pronounced origin identity of parents has negative effects on their children's integration. Children whose parents are strongly attached to the origin country are less likely to have contact with natives, speak English less frequently and more poorly, and perform worse in school than peers whose parents are less attached to their origin country. Suggestive evidence from the Current Population Survey (CPS) further indicates that a stronger origin identity leads to disadvantages in the labor market for male second-generation immigrants.

The main contribution of this essay is that it addresses the endogeneity issue when analyzing the link between national identity and integration, and establishes a negative effect of a strong origin attachment of immigrants on the integration of the second generation. The results indicate that the relationship of immigrants to their origin country affects long-term integration. Thus, these results support inclusive policies that promote an immigrant's feeling of belonging to the destination society, since they have the potential to weaken origin ties and encourage the formation of a destination country identity. Examples of such policies could be a liberal access to citizenship, which is studied in the subsequent chapter.

Citizenship and Social Integration

Chapter 3 analyzes the causal link between citizenship and social integration. In particular, my co-authors and I analyze whether a more liberal access to citizenship affects the social assimilation of immigrants with respect to fertility, family formation, and partner choice. Further, we investigate the role of immigrants' expectations about their assumed residency requirement for citizenship for their long-term decisions. Finally, we study cultural heterogeneity of the effects.

A liberal citizenship policy may affect the marriage and fertility decisions of eligible immigrants through three channels: income, human capital and social norms. The option to naturalize faster in the host country improves the earnings of immigrants in the labor market, since citizenship removes entry barriers and restrictions on mobility (Bratsberg et al., 2002; Gathmann and Keller, 2017). It further encourages additional investments in (destination country-specific) human capital. Finally, citizenship is a policy instrument that could foster a destination country identity, since the option to naturalize allows immigrants to become equal members of the host society with all rights and responsibilities. As a result, the option to naturalize could influence the social norms or values that immigrants want or feel obliged to follow (Akerlof and Kranton, 2000). Higher wages, more human capital, and an assimilation in norms are likely to have consequences for the demand and timing of fertility, as well as the position in the marriage market.

To identify the causal effect of citizenship empirically, we cannot simply compare naturalized and non-naturalized immigrants, because naturalized migrants are not selected randomly from the immigrant population. A second difficulty is that eligibility to citizenship is often closely tied to the number of years an immigrant has resided in the host country. To overcome these empirical challenges, we exploit exogenous variation in the eligibility rules for citizenship that was caused by two reforms in Germany. More precisely, we exploit age-dependent residency requirements for naturalization that were introduced in 1991. Immigrants who arrived at the age of 15 or older could naturalize after 15 years of residency, while immigrants who arrived between the ages of 8 and 14 could naturalize after only 8 years. At the same time, foreign-borns who arrived before the age of 8 could naturalize when they turn 16. The second reform in 2000 reduced the residency requirement to 8 years for all immigrants arriving at age 8 or older; younger immigrants still get eligible when they turn 16. The timing of the reforms provides additional variation across immigrants depending on their year of arrival.

Based on data from the German Microcensus (2005-2010), we find that the option to naturalize faster has significant effects on fertility, family formation and partner choice. Specifically, faster eligibility delays marriage but has no effect on divorce or cohabitation rates. Female immigrants reduce their demand for children and postpone childbirth. Our estimates indicate that immigrants who were surprised by the reforms converge much less in their fertility behavior and marriage choices than immigrants who anticipated their waiting period. The average effects mask substantial heterogeneity across immigrant groups. Immigrants from more traditional cultures have not only higher fertility and marriage rates, but also adapt more slowly to a liberal citizenship policy than the average immigrant.

This essay provides causal evidence of the effects of immigration policy on the social assimilation of immigrants. A more liberal access to citizenship is found to speed up

social assimilation. The results therefore indicate that policies that change the (legal) relationship of immigrants to their destination country can support social assimilation.

The Labor Market Assimilation of Immigrants in Germany

In Chapter 4, we study the labor market assimilation of immigrants in Germany. Despite the huge interest in immigration in Germany, it is not quite clear from the existing literature how immigrants perform and progress in the labor market. This is partly caused by a lack of appropriate data sources: most papers in the existing literature on assimilation in Germany use the GSOEP survey, where the number of foreigners is very limited and the composition of the immigrant population is to some extent problematic (Dustmann, 1993; Pischke, 1992; Licht and Steiner, 1993; Schmidt, 1997; Bauer et al., 2005); others use the IAB employment register data (IEB), which suffer from a selective identification of immigrants (by citizenship) and the lack of a variable indicating the year of migration (e.g., Lehmer and Ludsteck, 2015).

In this essay, we use a rich, new data source to analyze the assimilation of immigrants in employment, unemployment and wages. More specifically, our analysis relies on the PASS-ADIAB dataset, which combines longitudinal earnings histories from social security records between 1975 and 2010 (IEB) with household survey data (PASS). Whereas the administrative data contains no information on whether individuals are immigrants and their year of arrival, such information can be added from the survey data to produce an informative data source on migrant behavior.

The empirical results indicate that immigrants in Germany assimilate with respect to their employment and unemployment probabilities. Within the first ten years in Germany, male and female immigrants close between 70% and 80% of the initial immigrant-native gaps in employment, which are about 11 and 23 percentage points for men and women, respectively. The assimilation in the probability of being unemployed is of similar magnitude.

Due to the sizable relative employment growth of immigrants, the composition of the immigrant population in the workforce is likely to change with years since migration. In order to estimate wage assimilation, we therefore take into account potential selection along the employment margin by applying different methods to impute the missing wages of non-employed individuals (a similar approach is used for gender wage gaps by Olivetti and Petrongolo, 2008). Independent of the imputation method applied, we find robust evidence for wage assimilation among both male and female immigrants. Over the first 10 years, their wages increase by 10-11% relative to natives. When investigating the heterogeneity of the effects, we find that especially immigrants from former Soviet republics (most likely ethnic Germans) assimilate in the labor market, while Turkish immigrants are less likely to catch up with natives. Further results

indicate that immigrants in Germany tend to find better job matches and are less likely to change occupations or industries the longer they live in Germany.

This chapter revisits the labor market assimilation in Germany, and illustrates that immigrants in Germany perform better than the previous literature suggests. Furthermore, it illustrates that selection along the employment margin can bias estimates of wage assimilation substantially.

Chapter 2

National Attachment and the Integration of Second-Generation Immigrants in the U.S.

2.1   Introduction

In recent years, the national identity of immigrants has increasingly attracted attention in public debates on immigrant integration in many destination countries. In particular, the weak record of integration in many European countries is often attributed to a strong attachment of immigrants to their origin countries. The observed persistence of pronounced origin country identities among immigrants, even among the second and third generation, is often argued to have detrimental effects for their long-term integration (e.g., The Economist, 2017, on the recent discussions about Turkish immigrants in Europe).

The economics literature proposes different theoretical arguments why the national identity of immigrants may affect their integration (e.g., Akerlof and Kranton, 2000, argue that identity affects preferences and economic behavior). A pronounced origin identity is likely to influence the ethnic composition of immigrants' social networks, leading to lower incentives to invest in country-specific human capital, and access to different information on the labor market (e.g., Battu et al., 2007). Furthermore, it may foster the formation of oppositional identities (e.g., Austen-Smith and Fryer, 2005). These factors may ultimately have negative effects on the school and labor market performance of immigrants and their descendants.

Despite the increasing public attention, little is known about the effects of immigrants' national identities. Only a few papers in economics have analyzed the link between national or ethnic identity, and the integration of first and second-generation immigrants. These studies have mostly reported correlations, and produced ambiguous results for European destination countries (e.g., Casey and Dustmann, 2010; Bisin et al., 2011b).[1] For the United States, previous research on ethnic identity has exclusively focused on racial achievement gaps, and has paid little attention to its potential effects on the performance of immigrants (e.g., Austen-Smith and Fryer, 2005; Fryer and Torelli, 2010). However, questions regarding the factors that favor or impede long-term integration have become more prominent also in the United States, as the changing composition of immigrants since the 1960s is also reflected in a larger heterogeneity in assimilation patterns among more recent immigrant cohorts.[2]

In this paper, I investigate how the national identity of first-generation immigrants, measured as attachment to their origin country, influences the long-term integration of the second generation. In particular, this paper addresses the research question how the origin attachment of immigrant parents affects the integration of their children in the dimensions of identity, social networks, language use and skills, and school performance.

To answer this question, I use a sample of immigrant parents and their children from the Children of Immigrants Longitudinal Survey (CILS). The CILS data include several variables reflecting a parent's attachment to her origin country, which are used as a composite measure to proxy national identity. The major challenge for identifying causal effects of immigrants' national attachment on their children's integration outcomes lies in its potential endogeneity. First, there might exist reverse causality such that a low performance of immigrants in the destination country may increase attachment to their origin country. Furthermore, immigrants with a strong origin attachment may have other traits that favor or impede integration.

Therefore, the empirical approach of this paper relies on an IV-strategy to overcome potential endogeneity. More specifically, the instrument for immigrants' national attachment is the average national pride of the population in their origin country, which is taken from the Integrated Values Survey (IVS). The instrument is based on the idea that immigrants from different backgrounds might be differently attached to their origin countries, since historical and cultural reasons affect the importance of national identity across countries. I motivate this empirical strategy with a theoretical model on

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[1]The national identity of immigrants is generally treated as a concept of ethnic identity in this literature, and therefore, this paper also treats national identity as ethnic identity.

[2]Figure 2.A.1 illustrates this heterogeneity in terms of real wages for male second-generation immigrants. It reports origin country coefficients of second-generation immigrants in a log-wage regression for men in the CPS (1994-2015). While second-generation immigrants in the U.S. earn, conditional on education, on average 3% less than natives, there exists substantial heterogeneity across origin countries, even among immigrants from countries that are located within more homogeneous geographical areas.

the transmission of identity across two generations. The model illustrates that immigrants from countries with a higher weight on national identity will choose an identity for themselves and their children that deviates less from the origin country's norms.

The empirical results indicate that immigrants from countries with high national pride are indeed more attached to their origin countries. Moreover, I find strong support for the theoretical prediction that a more pronounced origin attachment of parents is transmitted to their children, and that it impedes children's assimilation. Children whose parents are strongly attached to the origin country have less contact with natives, speak English less frequently and more poorly, and perform worse in school than peers whose parents are less attached to their origin country. Furthermore, reduced-form estimates in the Current Population Survey (CPS) suggest that a stronger origin identity leads to disadvantages in the labor market for male second-generation immigrants. All results are very robust to various robustness checks.

The results of this study illustrate that the national identity of immigrants influences long-term integration. It affects their and their children's social networks and (country-specific) human capital investments, and leads to disadvantages in the labor market. Thus, whether immigrants are emotionally oriented towards their origin country or open to the new society, plays an important role for the integration process. The results therefore support inclusive policies that promote an immigrant's feeling of belonging to the destination society, since they have the potential to weaken origin ties and encourage the formation of a destination country identity. One example of such policies could be a liberal access to citizenship. Furthermore, the recent efforts made by many countries to target the identity of immigrants more directly through immigration policies, might help to reduce negative effects of national attachment.[3]

The analysis in this paper contributes to three strands of literature. First, it is closely related to the rapidly growing literature on identity in economics, and in particular to the literature on ethnic identity, its intergenerational transmission, and its effects on school or labor market performance. A couple of theoretical studies analyze the link between ethnic identity and education or labor market outcomes. Their main focus lies on the formation of oppositional identities among ethnic minorities, and on potential trade-offs between a pronounced ethnic identity and school or labor market opportunities (e.g., Austen-Smith and Fryer, 2005; Battu et al., 2007; Patacchini and Zenou, 2016). Empirically, a few papers study correlations between ethnic identity and labor market outcomes of immigrants. Most of these papers use variables such as ethnic self-identification, language use, number of same-origin friends, or attachment

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[3]One type of these policies are compulsory language and integration courses that exist for example in France (Service-Public, 2018) and Germany (Bundesamt für Migration und Flüchtlinge, 2016). A second type are requirements for naturalization that demand immigrants to commit to the destination country's culture and value system, and have been introduced in many countries in recent years (e.g., civics test in the U.S.).

to religion as proxies for ethnic identity, and produce ambiguous results on its link with labor market outcomes (e.g., Casey and Dustmann, 2010; Bisin et al., 2011b; Nekby and Rödin, 2010; Battu and Zenou, 2010). While some find penalties for having a strong ethnic identity (e.g., Bisin et al., 2011b), others do not find negative effects (e.g., Casey and Dustmann, 2010). Again other papers focus on the formation of the destination country identity rather than the origin country identity (e.g., Manning and Roy, 2010). The main contribution of this paper to this literature is that it exploits exogenous variation in the importance of the origin country identity of immigrants, in order to estimate its causal effects on integration outcomes.[4] Furthermore, it uses a novel concept of ethnic identity, namely the attachment of immigrants to their origin country. This measure of ethnic identity has the advantage that it is not an integration outcome itself unlike some imposed measures of ethnic identity in the literature (e.g., the language use of immigrants). Another advantage of this measure is that it represents effectively the idea of identity that is present in public debates on immigrants' identity. A third contribution of this paper to this literature is that it investigates the effects of national identity on the integration of immigrants in the U.S., whereas most previous research on ethnic identity in the U.S. has focused on explaining racial achievement gaps.[5]

Second, this paper contributes to the sizable literature on immigrant assimilation, since it analyzes identity as a factor that influences long-term assimilation (e.g., Chiswick, 1978; Borjas, 1985, 1995; Duleep and Regets, 1999; Lubotsky, 2007; Card, 2005). It also contributes to the literature on the assimilation of second-generation immigrants by focusing on outcomes of this population (Dustmann and Glitz, 2011; Borjas, 1992, 1993; Card, 2005; Sweetman and Van Ours, 2014). Furthermore, this study is related to the literature on ethnic capital and ethnic networks, since the social networks of parents are found to depend on their national attachment (Battisti et al., 2016; Bisin et al., 2011b; Borjas, 1992; Cutler and Glaeser, 1997; Dustmann et al., 2016).

Finally, the empirical approach in this paper is related to a growing literature that tries to identify the economic effects of culture through the use of the epidemiological approach (e.g., Blau, 1992; Blau et al., 2011; Giuliano, 2007; Fernández and Fogli, 2009; Fernández, 2011).[6] My approach exploits a similar type of variation to the epidemio-

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[4]As opposed to other papers, such as Nekby and Rödin (2010), who differentiate four dimensions of the national identity of immigrants by considering combinations of the origin and the destination country identities, this paper does not consider the effects of changes in immigrants' destination country identity. The focus lies exclusively on the origin identity, since the exogenous variation only affects the origin country identity in this setting.

[5]For instance, the studies of Austen-Smith and Fryer (2005) and Fryer and Torelli (2010) are concerned with the achievement gaps between Black and White students in the U.S.

[6]The epidemiological approach "is the attempt to identify the effect of culture through the variation in economic outcomes of individuals who share the same economic and institutional environment, but whose social beliefs are potentially different" (Fernández, 2011, p. 489). In this empirical literature,

logical approach, namely variation in an aggregate measure across origin countries of second-generation immigrants. However, compared to studies that apply the epidemiological approach, the IV-approach allows to narrow down the channel through which this cultural effect works. Moreover, the data provides rich information on the parents such that I can control for many important characteristics that might be omitted when applying the epidemiological approach (e.g., parents' education, labor market position, and years since migration).

The paper proceeds as follows. The next section discusses the theoretical mechanisms through which parents' national identity could affect the integration of their children. Furthermore, a theoretical model on the transmission of identity is introduced in order to motivate the empirical strategy of this paper. Section 2.3 introduces the data sources as well as the empirical strategy to identify the effects of national attachment. Section 2.4 discusses the empirical results. Section 2.5 presents additional results and a range of sensitivity checks in order to demonstrate the robustness of the results, and Section 2.6 concludes.

2.2 Theoretical Considerations

In this section, I discuss mechanisms through which immigrants' attachment to their origin country could affect the integration of their children. Building on this discussion, I then introduce a simple model on the intergenerational transmission of identity that is used to motivate my empirical strategy.

2.2.1 Origin Attachment and Long-Term Integration

From an economics point of view, there exist several potential reasons why the identity of immigrants and their descendants is of vital interest. A growing literature in economics has focused on identity, and points out that the concept of identity may affect important life choices. Identity influences preferences, creates externalities, and affects economic behavior. All of these factors have effects on economic performance (e.g., Akerlof and Kranton, 2000). In the given context, there are two particularly relevant channels through which a stronger origin attachment of immigrant parents might affect the long-term integration of their children.

The attachment of immigrants to their origin country is likely to have an influence on their preferences with respect to social networks. After immigrating to the destination country, immigrants with a strong national attachment to the origin country will therefore choose social networks with a higher emphasis on the origin country, i.e.,

cultural variation across origin countries is used to investigate how culture affects outcomes like female labor supply, fertility (Fernández and Fogli, 2009) or living arrangements (Giuliano, 2007) in the host country among second- or third-generation immigrants (see Fernández, 2011, for a survey).

they are likely to have more friends and acquaintances who are immigrants from the same origin country.[7] Thus, the children of parents with a strong ethnic identity grow up in a different social surrounding, which is induced by their parents' choices. Bisin and Verdier (2011) describe, for example, that self-segregation of parents is a decision where the cultural composition of the surrounding is at least partly under control of the parents. They can choose schools, neighborhoods, peers, and so on, and thereby influence their children, who then pick traits by matching in society.

These more pronounced ethnic networks are likely to have negative effects on the long-term integration of children for different reasons. Growing up in a surrounding with more persons of the same national background will decrease incentives and opportunities to invest in country-specific human capital, such as the destination country language. Hence, children of immigrants with strong origin-country networks might end up having a lower language proficiency – with negative consequences for their school and labor market performance (e.g., Chiswick and Miller, 2002; Bleakley and Chin, 2004). Another reason is that ethnic rather than native networks are likely to provide different information regarding labor market opportunities. Battu et al. (2007) model such a trade-off between labor market opportunities and ethnic preferences. In both cases, parents' preferences with respect to social networks will negatively affect their children's education and labor market success through a different horizontal socialization.

Apart from inducing a different social network, parents also affect their children through vertical socialization. Immigrant parents with a strong origin attachment are likely to transmit their origin attachment to the children. For example, they might raise their children more according to their origin culture, talk more positively about the origin country, or visit the country more often. This vertical transmission of the ethnic identity could affect the child because the stronger origin attachment of a child will lead to social network preferences that are similar to those of their parents. Hence, the same mechanisms will apply to a child's network with the consequences described above. Additionally, immigrant children with a strong origin identity might be more likely to form oppositional identities. For example, Austen-Smith and Fryer (2005) formalize a particular peer effect, "acting White," as a two-audience signaling problem: In their model, ethnic minorities face a tension between signaling their type to the outside labor market and their peers, since signals that induce high wages can be signals that induce peer rejection. A similar mechanism could also apply for children of immigrants.

The discussion of theoretical mechanisms gives reasons to expect that a stronger origin attachment of immigrant parents could have negative effects on the integration

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[7]For example, Fryer and Torelli (2010) use a measure that is based on the share of same-race friends as a proxy for ethnic identity.

of second-generation immigrants. In particular, one can form the expectation for the empirical analysis that children of parents with a strong origin attachment have a more ethnic social network, speak the destination country's language less frequently and more poorly, and perform worse in school and in the labor market. Furthermore, immigrant children of parents who are more attached to the origin country are more likely to develop a more pronounced origin identity, and consequently, this may result in an oppositional identity.

2.2.2   The Transmission of Ethnic Identity

After discussing theoretical arguments for the expectation that a stronger origin attachment of immigrants negatively affects the long-term integration, I introduce in this subsection a simple model on the transmission of ethnic identity from parents to children.[8] The model allows to formalize ideas regarding the mechanisms that form the ethnic identity of immigrants and their children, and will furthermore be useful to motivate the choice of the instrument in the empirical setting.

In this model, parents who migrate to a country face the decision to what extent they acculturate and how to raise their children. Very simplified, the identity choices that parents have to take are therefore the decisions on how much they and their children should assimilate and deviate from the origin identity.

Parents are assumed to have an interest in preserving their origin identity, since they grew up in the origin country and were raised according to its norms and values. However, as argued in the previous section, a strong origin identity might negatively affect an immigrant's labor market position. Hence, the decision for the parents' identity depends on the effect of acculturation on their labor market position, and on the disutility from deviating from the origin culture.

Parents further have to decide how to educate and raise their children, and which values and norms to transmit to them, thereby implicitly deciding on their identity. Marks et al. (2007) illustrate that the level of immigrant parents' acculturation influences the development of their children's ethnic identity. This may be the case because they prefer that their children become similar to themselves, but they may also simply not be able to educate their children in a way that promotes the destination country's views and norms. At the same time, altruistic parents have incentives to maximize the future prospects of their descendants. Hence, if a strong ethnic identity of children decreases their future chances in the labor market, or if it creates disutility through other channels, for example due to a higher risk of social marginalization, then this will also influence the identity decision of parents.

Parents therefore face a trade-off. They want to maximize their utility by maintaining

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[8]National attachment to the origin country is conceptually treated as ethnic identity in this model.

origin norms and by raising their children similarly to themselves and ultimately similar to those origin norms. Conversely, they want to minimize possible disadvantages from an identity that deviates too much from the native norms.

The following utility function of parents formalizes these ideas:

$$U_p = y_p + \pi u_c - \theta(I_c - I_p)^2 - \mu(I_p - x_o)^2. \tag{2.1}$$

In this formulation, the utility U_p of a parent p depends on her income y_p and the future utility of her child c, u_c. I_p and I_c represent the identity of the parent and the child respectively, and x_o are the norms and values of the origin country. The latter two parts of the utility function are loss functions, decreasing the utility of a parent if children deviate from parents, as well as if parents deviate from the origin country norms. The weights θ and μ determine how important each part is for the utility of a parent.

The child's future utility u_c depends on future earnings and the social status of a child,

$$u_c = y_c - S(I_c), \text{ with } S'_{I_c}(\cdot) > 0, \tag{2.2}$$

where y_c represents future earnings of a child, and the function $S(I_c)$ describes potential effects of a strong ethnic identity on the child's social position in society. As previously discussed, a stronger ethnic identity may affect the utility that a child gains from its social status, for example, if it causes the child to feel marginalized throughout her life. The future earnings of a parent and her child are given by

$$y_p = t_p - \zeta(I_p), \text{ with } \zeta'_{I_p}(\cdot) > 0 \tag{2.3}$$

$$y_c = t_c - \sigma\zeta(I_p) - \eta(I_c), \text{ with } \eta'_{I_c}(\cdot) > 0 \text{ and } 0 \leq \sigma \leq 1. \tag{2.4}$$

Earnings depend on the individual earnings potentials t_p and t_c, as well as functions $\zeta(I_p)$ and $\eta(I_c)$ through which the ethnic identity of the child and the parent, may have an effect on the labor market position. The assumption that the first derivatives of those functions are positive, meaning that the earnings of parents and children depend negatively on identity, are reasoned in the previous section.

Therefore, a parent who has to decide on her own and her child's ethnic identity in this model faces the trade-off outlined above: A strong ethnic identity of a parent minimizes losses from the latter loss function, since the parent does not deviate so much from the origin country's norms. At the same time, it decreases utility due to its effects on the earnings of the parent and future earnings of the child. A decision for a strong ethnic identity of a child might decrease the distance between the parent's and the child's identity, and therefore increase utility. However, the decision for a strong

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ethnic identity of a child generates disutility for the parent through its negative effects on the child's social position, and the future earnings of the child.

The parent maximizes U_p with respect to I_c and I_p. Maximizing equation (2.1) with respect to the child's identity I_c and solving the first order condition gives

$$I_c = I_p - \frac{\pi}{2\theta}\Big(\eta'(I_c) + S'(I_c)\Big). \tag{2.5}$$

Maximizing equation (2.1) with respect to the parent's identity I_p gives the parent's optimal choice of identity:

$$I_p = \frac{1}{\theta + \mu}\left[\mu x_o + \theta I_c - \Big(\frac{1 + \pi\sigma}{2}\Big)\zeta'(I_p)\right]. \tag{2.6}$$

Substituting the parent's optimal identity from equation (2.6) into equation (2.5) and solving by I_c gives:

$$I_c = x_o - \Big(\frac{1 + \pi\sigma}{2\mu}\Big)\zeta'(I_p) - \frac{\pi(\theta + \mu)}{2\theta\mu}\Big(\eta'(I_c) + S'(I_c)\Big). \tag{2.7}$$

Equations (2.5) and (2.7) illustrate that in the absence of negative effects of a pronounced ethnic identity of the parent and the child (with respect to the earnings of the parent or the future utility of the child), a parent would choose an identity for her child that is equal to her own identity, and ultimately resembles the norms of her origin country, x_o. However, due to the negative effects of a strong ethnic identity, the identity of the parent will deviate from her origin country's norms, and the identity of the child will deviate from the parent's identity. In equation (2.7) one can see that the difference between a child's optimal identity I_c and the origin norms x_o is larger, the larger the negative effects of a strong identity of parents and children are, i.e., the larger $\zeta'(I_p)$, $\eta'(I_c)$ and $S'(I_c)$. Furthermore, the size of the deviation depends positively on the weight π, which reflects the altruism of the parent, and negatively on the weights on the loss functions, θ and μ. It is an intuitive result that altruistic parents deviate more from the preferred level of ethnic identity when facing negative consequences of a strong ethnic identity for their children's future utility. Additionally, it is also plausible that parents who are more interested in raising their children similar to themselves (high θ), as well as immigrants who care more about being similar to the norms of their origin country (high μ), will deviate less from the origin norms when facing negative effects of a strong ethnic identity.

The basic results of the model illustrate that immigrants are likely to transmit their ethnic identity to their children. More interestingly, they also allow to think of sources of exogenous variation that cause differences in ethnic identity among immigrants and their children, in order to empirically identify the effects of ethnic identity. For example,

the national identity might play a different role across countries, since the national feelings might be shaped over a long time and be based on historical events and culture. In Germany, for instance, national identity plays a less important role than in countries such as the United States or France. Immigrants from origin countries with a high importance of national feelings might also be more affected by deviations from the origin country's norms after immigration. In the model, such a heterogeneity will translate into an origin country-dependent weight on the second loss function: μ_o. In equation (2.6) and (2.7), one can see that immigrants from countries with a higher importance of the national identity (which translates into a higher value of μ_o) will choose an identity for themselves and their children that deviates less from the origin norms. The discussion on the assumptions $\eta'_{I_c}(I_c) > 0$ and $\zeta'_{I_i}(I_i) > 0$ support the idea that ceteris paribus, an increase in μ_o and thus in I_i and I_c, will lead to negative effects on the labor market position of both parents and children.

As will be discussed in the next section, I use a proxy for μ_o in the empirical part of the analysis to identify the causal effect of immigrants' origin identity on the integration of their children. This proxy will be the average national pride in the origin country of immigrant parents, since it reflects differences in the importance of national feelings across countries.

2.3   Data and Empirical Strategy

Based on the theoretical discussion in Section 2.2.1, the empirical analysis is concerned with the effects of national attachment of immigrant parents on their children's integration in the dimensions of ethnic identity, oppositional identities, social networks, language use and skills, and education. For this purpose, I use data from the Children of Immigrants Longitudinal Study (CILS), which contains information on both the origin attachment of immigrant parents and integration outcomes of their children at different ages. Since origin attachment of first generation immigrants might be endogenous, I apply an IV-strategy where I instrument national attachment of parents with a measure of national pride in the country of origin. The idea is that immigrants from different backgrounds assign a different importance to their national identity, as captured by the weight μ_o in the theoretical model in the previous section.

2.3.1   Children of Immigrants Longitudinal Study (CILS)

The main analysis builds on data from the Children of Immigrants Longitudinal Study (CILS), which was designed to study the assimilation process of immigrant children in the United States. It includes a broad range of information including variables on demographics, language knowledge and preference, ethnic identity, self-esteem, school

and academic attainment, and social networks of both parents (first-generation immigrants) and their children (second-generation immigrants). The first survey was conducted in 1992 with 5,262 children in junior high school, at average age 14, in Miami and Fort Lauderdale, Florida, and in San Diego, California. The survey observes the children two more times in 1995 and between 2001 and 2003 at age 17 and 24, respectively. Each of the two follow-up surveys retrieve about 85% of the previous sample. In addition, a parental survey was conducted together with the first follow-up survey. For reasons of cost, this survey targeted half of the total universe of parents, selecting them on a random basis. Hence, only 46% of the original student sample's parents were interviewed.

In my sample, second-generation immigrants are defined as children who were born in the United States but have at least one foreign-born parent, or migrated at very young age (younger than nine years old).[9] I define the origin country of second-generation immigrants as the place of birth of their respective parent from the parent survey.[10] Only children who are observed in all three waves and whose parents attended the survey are considered in the main analysis. The resulting main sample includes 799 children and their parents who immigrated from 24 different origin countries. The distribution of origin countries can be seen in Table 2.B.1.[11] It is different than the representative distribution in the Current Populations Survey, since it reflects the composition of immigrants in the cities where the interviews took place. The majority of parents in this sample immigrated from Asian countries (i.e., the Philippines and Vietnam) or North-American countries (i.e., Mexico). Summary statistics are reported in Table 2.B.2. About 53% of the children are female, 13% are born to an intermarried couple, and about 43% of the children are born outside the U.S. Parents are on average 47 years old and immigrated to the United States on average 20 years ago.[12]

The key independent variable in my analysis is the composite measure 'Origin Ties,'

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[9]Literature in psychology and economics suggests that childhood immigrants who arrived at age nine or younger from non-English-speaking countries are able to learn English better than those who arrived at an older age (e.g., Bleakley and Chin, 2010). However, also restricting the sample to children that immigrated at an age younger than 4 years old does not change the results.

[10]About 80% of the responding parents have partners who originate from the same origin country, and about 13% have native partners. For children, whose parents were born in different origin countries, I use the birth country of the parent who responded in the survey for two reasons: First, I am interested in the effect of the origin attachment of parents on the child's integration, and hence I need the information from the survey on the parent's origin attachment; second, since the parent answers the survey, the parent seems to be responsible to interact with the school and to play an important role in the education of the child.

[11]The sample is further restricted to immigrants and their children whose origin countries take part in the Integrated Values Survey, since it is the source of the instrumental variable. For that reason, immigrant children with parents from Cuba, which is among the most important source countries of immigrants in Miami, had to be dropped.

[12]When I do not restrict the sample to those children who participated in all three waves, the sample comprises 1218 children from 28 origin countries. As one can see in Table 2.B.2 (right columns), the summary statistics do not differ systematically. Also the results are fairly similar as will be discussed in Section 2.5. Hence, selective attrition seems not to influence my results.

which measures parents' national attachment to their origin country. This variable is obtained with a principal component analysis of the following five dummy variables that reflect whether the country of origin plays an important role for the identity of a parent: 1) whether a parent is very proud of the origin country; 2) whether she talks a lot about the origin country with her child; 3) whether she celebrates origin country holidays a lot; 4) whether she agrees a lot that contact to compatriots is very important; and 5) whether a parent buys from shops owned by compatriots. The composite index explains roughly 40% of the total variance. Factor loadings show that it is almost equally driven by the first four variables, whereas the fifth contributes to a lesser extent. In fact, summary statistics of the different components illustrate that parents have a rather strong orientation to their origin countries. About 80% of the parents state that they are very proud of their country of origin, and about half of them talks a lot with their children about the country or consider contact with compatriots as very important. One third of the parents celebrates origin country holidays a lot, and about 20% buy from shops owned by compatriots.

My main dependent variables comprise outcomes of parents and children in all three waves and cover the different dimensions of integration discussed in Section 2.2: ethnic identity and the formation of oppositional identities, social network choices, language use and skills, and school performance.[13] The ethnic identity of second-generation immigrants is conceptualized empirically by the respondents' ethnic self-identification, which is observed in the all three waves. I use a dummy variable indicating whether the observed children self-identify by national origin as opposed to American, hyphenated, racial or mixed identities. Oppositional identities are approximated by variables that indicate some sort of negative feelings towards the native population. In order to study whether a higher national attachment of parents influences the social network of their children, I exploit parents' information on the racial composition of their neighborhood and children's information on their social network. To study differences in language use, I analyze outcomes that indicate whether English is the preferred language with friends, parents, and own potential children in the future. Language skills are measured in each wave comparably as self-assessed skills on a scale from 1 to 4 in the areas of speaking, reading, understanding, and writing. The mean value of those four categories gives a composite measure on English skills that is used as a dependent variable in my analysis. Finally, I analyze the effect of national attachment of immigrant parents on the integration of their children with respect to educational outcomes. The first CILS wave includes Stanford mathematics and reading achievement tests. I use the percentile rank with regard to the national percentiles of those tests as dependent variables, in

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[13]Whenever possible, the same questions are used in different waves in order to compare the results at different ages. However, the questionnaires change a lot throughout the three waves, such that it is not always possible to compare results.

order to analyze objective measures of skills. Furthermore, grade point averages from school are available in the first and second wave when children are 14 and 17 years old. At age 24, different and less precise measures of education are available, and therefore I only analyze the effects of parents' national attachment on the years of education and whether a respondent graduated from college within the last five years as education outcomes.

Summary statistics of all dependent and independent variables are shown in Table 2.B.2. One can see that the national origin identity of second-generation immigrants in my sample is relatively pronounced in all three waves, while only a minority of immigrant children identify themselves as American. About 60% of the children have mostly foreign friends. They have a strong tendency to avoid speaking English with friends (63% at age 14), family (84% at age 14), and even future children (70% at age 24), despite having good (subjective) English skills on average. Children in the CILS sample have better math skills on average (56.93) than the national mean; however, the mean in reading percentile rank is substantially lower (48.41), reflecting the immigration background of the sample. The mean grade point average in my sample is about 2.8 for children aged 14 and 17. Among the 24 years-old second-generation immigrants, 54% are still in school. On average, the second-generation immigrants in my sample have spent 14.5 years in education, and about 37% have graduated from college in the last five years at age 24.

2.3.2 Empirical Strategy

This study aims to examine the causal effect of national attachment of immigrant parents on their children's integration outcomes. However, there are reasons to believe that the national attachment of parents is not exogenous to the parents' situation or background. There might be reverse causality, such that an immigrant who is less successful in a new society forms a stronger origin identity. Furthermore, immigrants' origin attachment could be endogenous to other traits that affect integration. For example, immigrants who migrate for different reasons, such as political or economic reasons, could differ both in terms of their integration success and their origin attachment.

In order to overcome this potential endogeneity, I apply an instrumental variable strategy. More specifically, the national attachment of immigrant parents is instrumented with a measure of national pride in a parent's origin country. The instrument exploits variation in the importance of the national identity over origin countries, in the theoretical model captured by the weight μ_o. I estimate two-stage-least-squares regressions with the first stage

$$origin\_ties_{pod} = \alpha_0 + \alpha_1 national\_pride_o + \alpha_2 X_{cpod} + \nu_d + \lambda_r + u_{cpod}, \qquad (2.8)$$

and the following second stage:

$$Y_{cpod} = \beta_0 + \beta_1 \widehat{origin\_ties}_{pod} + \beta_2 X_{cpod} + \nu_d + \lambda_r + \varepsilon_{cpod}. \qquad (2.9)$$

Y_{cpod} represents an integration outcome of child c, who lives in destination city d and whose parent p originates from country o. The predicted origin ties of the child's parent from the first stage are $\widehat{origin\_ties}_{pod}$. X_{cpod} consists of control variables on the level of the parents (polynomials of years since migration and age, gender, education, employment status, having a native partner), the children (gender, foreign-born), and the origin country (share of origin-immigrants in the city, real GDP per capita, English language).[14] Furthermore, equations (2.8) and (2.11) control for city fixed effects and region of origin fixed effects (ν_d and λ_r).[15] The error terms are clustered at the origin country level.

The parameter of interest is β_1, which identifies the effect of parents' national attachment if the average national pride in the origin country is correlated with national attachment (relevance), and if the exclusion restriction holds. The identifying assumption as well as threats to identification are discussed in detail in Subsection 2.3.2.2, after introducing and discussing the instrument in the following subsection.

2.3.2.1   The Instrument – National Pride in the Country of Origin

The measure of national pride that is used as an instrument for the national attachment of immigrant parents is obtained from a question in the Integrated Values Survey 1981-2014 (IVS), which asks the respondents how proud they are of their nationality.[16] The variable can take values from 0 to 3, with 0 being "not proud at all", 1 "not very proud", 2 "quite proud", and 3 "very proud". When aggregating this variable on country-level, simple country averages might reflect to some extent the composition of the EVS sample. Hence, I apply a procedure similar to that conducted by Giavazzi et al. (2013): I estimate a regression model for national pride, controlling for individual characteristics and wave fixed effects, and include country fixed effects which capture the country-specific feature of national pride.[17]

Table 2.B.3 shows the countries covered and the corresponding values of national

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[14]The share of compatriots in each city is calculated from census data in 1990. Data on real GDP per capita in 2000 (in U.S. dollars) is taken from Gleditsch (2002). Using information on real GDP per capita in 1990 or 1980 does not affect results, but reduces the number of observations (not reported).

[15]Using school fixed effects instead of city fixed effects does not change results. I define broad regions of origin: Europe, Asia, Africa, Middle East, South America, North America, and Oceania.

[16]The IVS combines the European Values Longitudinal data File 1981-2008 (EVS) and the World Values Surveys Longitudinal data File 1981-2014 (WVS). The aggregated data set that is used in order to obtain country-averages for national pride includes more than 470.000 interviews, covering in total 110 countries.

[17]Using the mean values of wave-specific country fixed effects, as well as using simple country-averages as measure of national pride, does not change the results.

pride and other aggregated variables on national feelings that I use in the analysis. Column (1) shows the measure of national pride that I utilize in most of my analysis (country fixed effects). In column (2), the simple country-averages of national pride from the IVS are displayed. The values of the two national pride measures differ for some countries more than for others. However, they are strongly correlated and therefore produce similar results.

The mean value of national pride (country fixed effects) among the different countries in the IVS is 2.39, indicating that national pride is on average important around the world. However, national pride varies considerably across countries, with the lowest value of 1.54 in Hong Kong and the highest value of 2.89 in Ghana. The values resonate quite well with other research on national pride and national attachment. Leading countries in a ranking of general national pride among 21 countries by Smith and Kim (2006), such as the United States, the Philippines or Australia, also have considerably high average values of national pride in the Integrated Values Survey (United States 2.62, Philippines 2.69, Australia 2.59), whereas low ranked countries like Latvia and Germany also have low average values of national pride (Latvia 2.06, Germany 1.77).

In order to argue that the measure of national pride in the IVS actually reflects national pride or national feelings, I additionally use data from the International Social Survey Programm (ISSP), which conducted studies on National Identity in 1995 and 2003.[18] Comparing the values of the IVS national pride variable with an identically phrased question about national pride in column (3) in Table 2.B.3 shows a high correlation (0.873). This supports the claim that the pattern of the national pride variable is not unique to the World Values Survey or the European Values Survey.

The ISSP data is further useful in order to gain a deeper understanding of the variable 'National Pride' and its relationship to other concepts of national feelings. Generally, the sociological literature distinguishes between two distinct sub-dimensions of national feelings: nationalism and constructive patriotism. While nationalism can be characterized as a blind idealization of the nation, patriotism rather rejects an idealization of the nation and reflects a constructive and critical view of it (Schatz et al., 1999; Sidanius et al., 1997). National pride could in general represent both of these two categories, since it could reflect blind nationalistic pride, and conversely well differentiated pride on certain achievements of a nation like human rights. Davidov (2011) proposes composite measures of nationalism and constructive patriotism that are constructed in the ISSP data and presented in columns (4) and (5) of Table 2.B.3.[19] All three indicators, national pride, nationalism, and constructive patriotism,

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[18]Most literature in political sciences and sociology on national identity/feelings uses this data source. It covers much less countries than the IVS − at most 34 in 2003.

[19]Nationalism is measured as a principal component of the two statements: 1. "The world would be a better place if people from other countries were more like the [Country Nationality of the Respondent]";

are positively correlated. However, the question regarding national pride in the IVS reflects rather nationalism than constructive patriotism, since the correlation between the IVS-country effects and the nationalism variable from the ISSP is about 0.6, while it is just about 0.4 for constructive patriotism. A similar gap exists between the same question regarding national pride in the ISSP and the two variables.[20]

2.3.2.2 Identifying Assumption and Discussion

The exclusion restriction demands that the instrument affects the integration outcomes of second-generation immigrants only through the national attachment of their parents. In other words, the identifying assumption of my IV-approach is that the average national pride of the population in the origin country of immigrants is exogenous to the integration outcomes of immigrants' children, conditional on the large set of controls.

There exist two major threats to the exclusion restriction. First, my measure of national pride could not only pick up differences in the importance of national feelings across countries, but proxy differences in, for example, education or economic development across origin countries that affect unobserved human capital. In this case, my estimates would be biased. This problem is common in all studies that use aggregate culture proxies from origin countries of immigrants, since they could always reflect other macro-differences than those intended. One advantage of this approach compared to the epidemiological approach is that I observe parents and therefore can control for parent characteristics such as age, years since migration, education, and the labor market position. These controls should decrease the problem of unobserved human capital to some extent. Looking at raw correlations between national pride and other macro-variables, one can see in Figure 2.1a that there exists in fact a negative correlation between real GDP per capita and national pride across countries. Thus, poorer countries exhibit more national pride on average. Furthermore, respondents in English-speaking countries are more proud of their nationality than those in others. However, simply conditioning on regions (Europe, Asia, Africa, Middle East, South America, North America, and Oceania) does eliminate the correlation of those variables as demonstrated in Figure 2.1b. In all regressions, I include region of origin fixed effects, and further control for GDP per capita and whether the origin country shares the same official language. Hence, I use variation in national pride within geographical regions that are more homogeneous. In sensitivity checks, I additionally control

and 2 "Generally speaking, [Respondent's Country] is a better country than most other countries". Both could be answered on a 5-point scale. Civic pride is measured by three questions about civic and political pride: 1. "How proud are you of [Respondent's Country] in the way democracy works?"; 2. "How proud are you of [Respondent's Country] social security system?"; and 3. "How proud are you of [Respondent's Country] fair and equal treatment of all groups in society?". All three questions could be answered on a 4-point scale.

[20]In a robustness check, I show that all measures of national feelings, also from the ISSP, gain fairly similar results.

Figure 2.1: National Pride and Real GDP per Capita
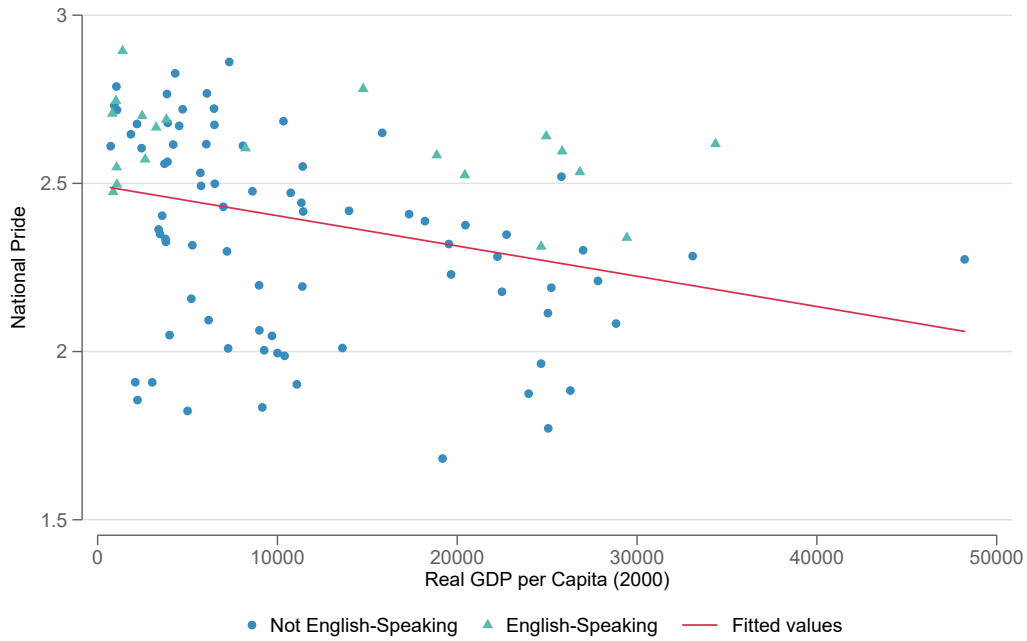
(a) Correlation
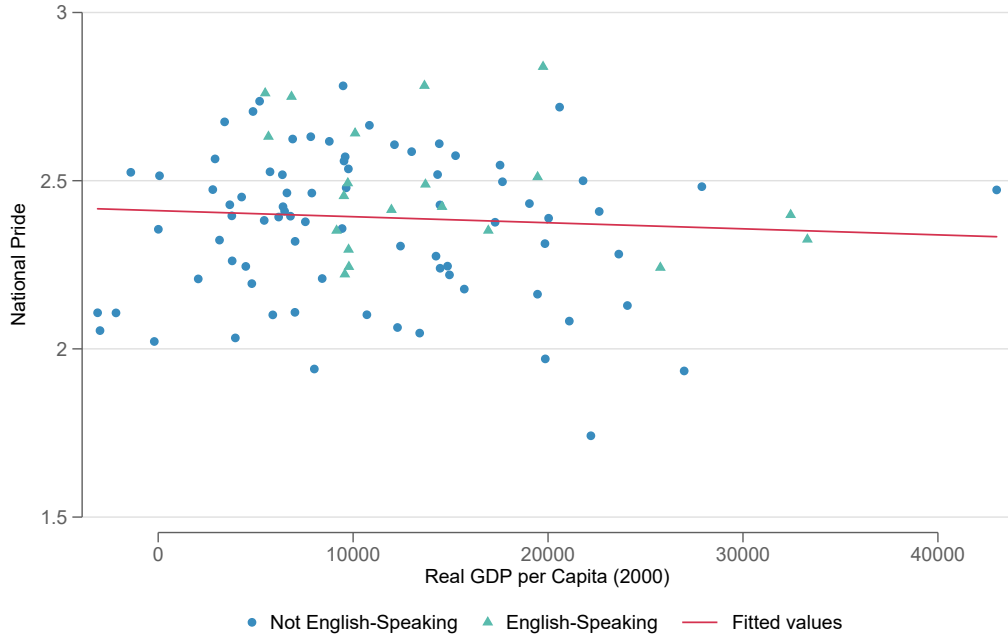
(b) Conditional on Region

Notes: The figure illustrates the correlation between the average national pride and real GDP per capita across countries. The upper graph plots the average national pride of countries in the IVS (1981-2014) on the y-axis, and real GDP per capita (in the year 2000) on the x-axis; in the bottom graph, residuals from regressions of real GDP per capita on region fixed effects (Europe, Asia, Africa, Middle East, South America, North America, and Oceania), are plotted on the x-axis.

for different measures of school quality in the origin country, in order to address this concern further. Including these controls does not change my results.

The second threat to the exclusion restriction is that the level of national pride in the origin country may affect children's integration outcomes through other channels than parent's national attachment. For example, a high national pride in the origin country could affect the integration of immigrant children through other family ties or through media consumption. However, there are reasons to believe that these other channels play a minor role. Parents can in general be expected to have an influence on how family ties or media consumption affect their children – especially because internet access was not common at the time that the survey was conducted (i.e., the 1990s). Furthermore, parents are likely to be affected by family ties and media themselves, such that these other channels will shape parents' origin attachment. Therefore, the main effect would still go through the instrumented variable. However, in case that immigrant children are directly affected by the average national pride in the origin country, the effect of parents' origin attachment on their children's education could be overestimated. In order to address these remaining concerns regarding the exclusion restriction, I provide further sensitivity checks of the IV results by performing the Conley, Hansen, and Rossi (2012) analysis of plausible exogeneity. It suggests that to render the IV results insignificant, more than 40% of the overall effect of my instrument would have to come through some omitted channels.

Another issue that is common to all studies on assimilation is the selective in- or out-migration of immigrants. If return migrants, for instance, are negatively selected from the pool of immigrants in the host country, return migration will lead to an overestimation of general assimilation effects. This well-known bias from selective return migration does not affect my estimates, as long as the selection into return migration is uncorrelated with the national attachment of immigrants. However, high national attachment of immigrants might increase the probability of return migration. If this is the case, selective return migration will downward bias my results, since the remaining second-generation immigrants in my sample would be positively selected. The literature suggests that 20-50% of an immigrant cohort leave within 10 years in the host country (Lubotsky, 2007; Dustmann and Görlach, 2015, for a survey). Parents in my sample have on average been in the United States for 20 years. Hence, my sample is likely to include those immigrants and their children that stay permanently in the U.S., since major return migration movements should have already happened before the survey had been conducted. However, this potentially selected sample should also reflect the policy-relevant population when studying determinants of successful long-term integration.

Selective attrition is another potential problem given my sample includes only those respondents who remain in the sample throughout all three waves. It might be the

case that attrition from the sample, especially at age 24, is correlated with educational success. Selective attrition could therefore bias my results. As a sensitivity check, I conduct the same analysis for earlier waves without imposing this sample restriction and the results remain unchanged.

It should be noted that this empirical approach has a couple of important advantages to methods applied in the previous literature. First, I exploit exogenous variation across origin countries in order to overcome the potential endogeneity problem that is present in all studies that analyze correlations between measures of immigrants' ethnic identity and assimilation outcomes. Second, compared to studies that apply the epidemiological approach in order to assess the effects of origin country characteristics on second-generation immigrants' outcomes, this approach allows to narrow down the channel through which this cultural effect works, in this case the origin attachment of parents. At the same time, I can control for many important characteristics that might bias results when applying the epidemiological approach, such as the education, labor market position, and years since migration of the parents.

2.4 Main Results

2.4.1 First Stage

In a first step, the first-stage relationship between the instrument and the independent variable of interest is investigated in detail. Table 2.1 presents OLS-estimates of the effect of national pride in the origin country on 'Origin Ties' and each of its components.

One can see that national pride in the country of origin has a strong and highly significant effect on all variables considered. Immigrants from countries with a higher average national pride are more likely to be very proud of their origin country. Furthermore, they are more likely to converse a lot with their children about the country, celebrate the origin country's holidays, buy from stores owned by people from their community, and consider contact with compatriots as very important. The principal component measuring national attachment is also significantly positively associated with national pride in the country of origin. The coefficients are not only statistically significant, also their magnitude is reasonably large. For example, a standard deviation increase in national pride in the country of origin (0.157) increases the probability that immigrant parents are very proud of their origin country by 6.7 percentage points, which corresponds to the magnitude of the negative effect of having a native partner. If one relates this effect to specific origin countries, a more illustrative example can be constructed: Immigrants from Germany, for instance, have a 14.6 percentage points lower probability of being very proud of their origin country than immigrants from France.

Table 2.1: National Pride in the Origin Country and the Origin Attachment of Immigrants

	Origin Ties (PCA) (1)	Very Proud of the country of Origin (2)	Talk a lot with Child about Origin (3)	Celebrate a lot Origin Holidays (4)	Buy from Origin-Stores (5)	Contact to Compatriots very important (6)
National Pride in Origin Country	2.395***	0.426***	0.465**	0.665***	0.509***	0.429***
	(0.410)	(0.139)	(0.216)	(0.131)	(0.145)	(0.126)
Parent Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes
Origin Country Controls	Yes	Yes	Yes	Yes	Yes	Yes
Child Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes
City Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Region of Origin Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Observations	715	715	715	715	715	715
R-Squared	0.1847	0.0933	0.0737	0.1966	0.1940	0.0938

Notes: The table reports estimates of the relationship between national pride in the origin country and national attachment of the parents in the CILS. The dependent variables are whether a parent is very proud of the country of origin (column (2)); whether a parent talks a lot about the origin country with her child (column (3)); whether a parent celebrates origin country holidays a lot (column (4)); whether a parent buys from shops owned by compatriots (column (5)); whether a parent agrees a lot that contact to compatriots is very important (column (6)); and the principal component of all five variables (column (1)). The main independent variable is the average national pride in the country of origin, based on a question in the IVS. The sample includes all foreign-born parents whose children participated in all three CILS-waves. All specifications include parent and origin level controls, as well as city fixed effects (Miami, Fort Lauderdale, San Diego) and region of origin fixed effects (Europe, Asia, South America, North America). Standard errors in parentheses are clustered by origin country. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1.

Overall, national pride in the country of origin appears to have strong explanatory power to predict the origin ties of immigrants, as well as all single variables that are combined in the composite measure. The results in Table 2.1 therefore support the empirical strategy to use national pride in the country of origin to instrument the national attachment of parents. Regarding the relevance of this instrument, one can also see in all Tables that report IV-estimates (Tables 2.2-2.7) that the instrument is clearly relevant, since the first stage is strong (see column (1) in all Tables), and all specifications have F-Statistics varying between 11 and 46.

2.4.2 Identity

Next, I turn to the main results of the IV-regressions. Here, the question is whether a strong national attachment of immigrant parents has a negative effect on the integration of second-generation immigrants in different dimensions. One of the major results of the theoretical model was that a stronger ethnic identity of parents is transmitted to the child. Furthermore, the theoretical discussion in Section 2.2.1 considered the transmission of a strong origin identity as one of the main channels through which parents' national attachment may affect the long-term integration of immigrant children. Table 2.2 presents the IV-results for the effect of parents' national attachment on the origin identity of children in all three CILS-waves.[21] The estimates show that a higher national attachment of parents significantly increases the probability that their children self-identify by their origin nationality. This result holds throughout all three waves, for children at age 14, 17, and 24. Also the magnitude of the effect is relatively sizable, since a standard deviation increase in origin ties of parents (1.371) leads to a 13.7 percentage points increase in the probability that a 14 years-old child will self-identify by its origin country.

The IV-results in Table 2.2 suggest that the origin identity is in fact more pronounced for those second-generation immigrants whose parents are more attached to their country of origin. Recalling the theoretical discussion, a stronger national identity of immigrant children could affect successful integration in two ways: First, a stronger origin identity of children could influence their social networks, language use and skills, and ultimately school performance and other integration outcomes. Second, it could affect school and other integration outcomes more directly since it may favor the formation of oppositional identities. In that case, immigrant children with a stronger

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[21]For ease of comparison, I report the corresponding OLS and reduced-form estimates for most integration outcomes in Table 2.B.5. The OLS estimates are closer to zero than the IV estimates, and mostly insignificant. The apparent bias does not support the idea that a failed integration of immigrants causes a stronger attachment to the origin country. A possible explanation for the positive bias of the OLS estimates could be an omitted variable bias, since there is some suggestive evidence in the data that immigrants who immigrated for political reasons are more attached to their origin country, and simultaneously have better integration outcomes than those who immigrated for other reasons.

Table 2.2: National Attachment and Identity

	First Stage	14 years-old	17 years-old	24 years-old
			Ethnic Self-Identity: National	
	(1)	(2)	(3)	(4)
Ties to Origin Country (PCA)		0.100***	0.113*	0.064*
		(0.038)	(0.059)	(0.038)
National Pride in Origin Country	2.312***			
	(0.413)			
Parent Individual Controls	Yes	Yes	Yes	Yes
Child Individual Controls	Yes	Yes	Yes	Yes
Origin Country Controls	Yes	Yes	Yes	Yes
City Fixed Effect	Yes	Yes	Yes	Yes
Region of Origin Fixed Effect	Yes	Yes	Yes	Yes
Observations	710	710	711	695
F-Statistic		31.4152	35.5453	40.3808

Notes: The table reports IV-estimates of the relationship between national attachment of parents and the self-identity of their children in different CILS-waves (child aged 14 in column (2), aged 17 in column (3), and aged 24 in column (4)). The dependent variable in all columns is whether the child self-identifies by origin nationality as opposed to self-identifying as Amercian, hyphenated, or in terms of race. The main independent variable is the national attachment of parents, a principal component of different variables indicating an attachment to the origin country. National attachment of parents is instrumented with the average national pride in the country of origin (variable from the IVS). The sample includes all children of foreign-born parents who participated in all CILS-waves. All specifications include parent, child and origin level controls, as well as city fixed effects (Miami, Fort Lauderdale, San Diego) and region of origin fixed effects (Europe, Asia, South America, North America). Standard errors in parentheses are clustered by origin country. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1.

origin identity might be more likely to reject or oppose the majority population and its norms. This latter channel is investigated in Table 2.3, where I analyze the effect of parents' national attachment on outcomes reflecting oppositional identities. The estimates in Table 2.3 do not indicate that a stronger attachment to the origin country of parents has a significant influence on the relationship of an immigrant child to the majority population. Immigrant children whose parents are more attached to their origin country are not less likely to self-identify as Americans. Additionally, the results do not suggest that there exist effects on agreeing or disagreeing to statements whether the U.S. is the best country, or whether Americans feel superior to foreigners when they interact with them.

Overall, the results in Tables 2.2 and 2.3 support the idea that national identity is transmitted across generations; however, this stronger national identity is not found to foster oppositional attitudes with regard to the majority society. In the following subsections, I will therefore investigate whether parents' identity choices affect the integration process of their children through the other main channel previously discussed, namely in terms of social networks, language use and skills, and ultimately school performance and labor market prospects.

Table 2.3: National Attachment and Oppositional Identities

		14 years-old			17 years-old			24 years-old
	First Stage	*Ethnic Self-Identity: American*	*USA best country*	*Americans feel superior*	*Ethnic Self-Identity: American*	*USA best country*	*Americans feel superior*	*Ethnic Self-Identity: American*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ties to Origin Country (PCA)		-0.063	-0.077*	0.078	0.001	0.059	0.060	0.035
		(0.063)	(0.046)	(0.053)	(0.039)	(0.068)	(0.045)	(0.046)
National Pride in Origin Country	2.312***							
	(0.413)							
Parent Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Child Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Origin Country Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
City Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region of Origin Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	710	710	711	710	711	710	715	695
F-Statistic		31.4152	33.3851	34.2461	35.5453	34.9089	34.1034	40.3808

Notes: The table reports IV-estimates of the relationship between national attachment of parents and outcomes regarding oppositional identities of their children in different CILS-waves (child aged 14 in columns (2)-(4), aged 17 in columns (5)-(7), and aged 24 in column (8)). The dependent variables are whether a child self-identifies as Amercian (columns (2) and (4)); whether a child agrees that the United States are the best country (columns (3) and (5)); and whether a child agrees that Americans feel superior when they interact with foreigners (columns (4) and (6)). The main independent variable is the national attachment of parents, a principal component of different variables indicating an attachment to the origin country. National attachment of parents is instrumented with the average national pride in the country of origin (variable from the IVS). The sample includes all children of foreign-born parents who participated in all CILS-waves. All specifications include parent, child and origin level controls, as well as city fixed effects (Miami, Fort Lauderdale, San Diego) and region of origin fixed effects (Europe, Asia, South America, North America). Standard errors in parentheses are clustered by origin country. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1.

2.4.3 Social Networks

As discussed in the theoretical discussion, the origin attachment of immigrants could affect their preferences with respect to the ethnic composition of their social networks. A stronger origin identity should therefore be reflected in more pronounced ethnic networks of parents and children. Results in Table 2.4 support this idea because the IV-estimates for outcomes regarding the ethnic composition of social networks in different CILS-waves point in this direction. Estimates in columns (2) and (3) show that parents with a stronger origin attachment live in neighborhoods with more foreign and less White American neighbors. Both coefficients are statistically significant at a 10 and 5 percent level, respectively. The magnitude of these effects is fairly large, as a standard deviation increase in origin ties leads to a 19.3 percentage points higher probability of living in a neighborhood with mostly foreign neighbors, and decreases the probability of living in a neighborhood with mostly White American neighbors by 18.9 percentage points. In columns (4) and (5), I further analyze the effect of parents' national attachment on the probability that their offspring has mostly foreign friends at age 14 or age 17, respectively. Both coefficients are positive, but it is statistically significant only for immigrant children at age 17. A standard deviation increase in origin ties of a second-generation immigrant's parent raises the probability of having mostly foreign friends at age 17 by 28.9 percentage points.

Results in Table 2.4 suggest that the national attachment of parents has an impact on the ethnic network of their children. They grow up in different neighborhoods where they are exposed to less natives and more foreigners. Furthermore, they have more foreign friends throughout their adolescence. These different and more ethnic social networks are likely to reduce the incentives that immigrant children would invest in destination country-specific and general human capital.

2.4.4 Language Use and Language Skills

Since the origin attachment of parents affects the ethnic composition of the social network of their children, theoretical considerations suggest that the returns to country-specific human capital might be lower for children whose parents are strongly attached to the origin country. For instance, growing up in an environment with fewer natives and having more foreign friends, immigrant children may not need to use or speak English often, and would therefore develop lower English skills. Tables 2.5 and 2.6 present the IV-results for outcomes regarding language use and skills, respectively. The estimates in columns (2), (4), and (5) in Table 2.5 illustrate that adolescents whose parents are more attached to the origin country are significantly less likely to speak English with their friends at all ages. The magnitude of this effect is relatively large throughout all waves. For example, a standard-deviation increase in origin ties of the parents

Table 2.4: National Attachment and Social Networks

	First Stage	Parents		14 years-old	17 years-old
		Most Neighbors Foreigners	Most N. White Americans	Most Friends Foreigner	Most Friends Foreigner
	(1)	(2)	(3)	(4)	(5)
Ties to Origin Country (PCA)		0.141*	-0.138**	0.057	0.210***
		(0.075)	(0.070)	(0.059)	(0.068)
National Pride in Origin Country	2.393***				
	(0.410)				
Parent Individual Controls	Yes	Yes	Yes	Yes	Yes
Origin Country Controls	Yes	Yes	Yes	Yes	Yes
Child Individual Controls	No	No	No	Yes	Yes
City Fixed Effect	Yes	Yes	Yes	Yes	Yes
Region of Origin Fixed Effect	Yes	Yes	Yes	Yes	Yes
Observations	714	714	714	698	690
F-Statistic		34.1189	34.1189	46.9338	32.8045

Notes: The table reports IV-estimates of the relationship between national attachment of parents and outcomes regarding the ethnic composition of the social networks of parents and their children in different CILS-waves (parents in columns (2)-(3), child aged 14 in column (4), aged 17 in column (5)). The dependent variables are whether most of the parents' neighbors are foreigners or whether most neighbors are White Americans (columns (2)-(3)); and whether most or all of the child's friends are foreigners (columns (4) and (5)). The main independent variable is the national attachment of parents, a principal component of different variables indicating attachment to the origin country. National attachment of parents is instrumented with the average national pride in the country of origin (variable from the IVS). The sample includes all foreign-born parents or their children if they have participated in all CILS-waves. All specifications include parent and origin level controls, as well as city fixed effects (Miami, Fort Lauderdale, San Diego) and region of origin fixed effects (Europe, Asia, South America, North America). Regressions on child-outcomes further include child characteristics. Standard errors in parentheses are clustered by origin country. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1.

increases the probability that 14 years-old children will not speak English with their friends by 27.6 percentage points. Furthermore, the origin attachment of parents significantly increases the probability that their offspring will not communicate in English with their parents (columns (3) and (6) for age 14 and 24). Finally, immigrant children at age 24, whose parents are very attached to the origin country, are less likely to want to raise their own children with English as the primary language at home (column (7)). Hence, potential differences are likely to be transmitted even to the third generation.

Generally, the results in Table 2.5 support the idea that a stronger origin attachment of parents lowers the incentives and habit of their children to speak English. In the following, it is further analyzed whether these lower incentives to speak the destination country's language also translate into disadvantages in terms of language skills. In fact, one can see in Tables 2.6 that the effect of origin ties on language skills is negative, but insignificant for parents and 14 years-old children. However, the coefficient becomes larger and statistically significant throughout adolescence. At 24 years old, a standard deviation increase in national attachment of parents lowers language skills by 0.18 points (measured on a scale from 1 to 4). This finding could be explained by a divergence throughout adolescence due to the different social surrounding and different language habits.

Table 2.5: National Attachment and Language Use

	First Stage	14 years-old		17 years-old		24 years-old	
		No English with Friends	Often / Always no English with Parents	No English with Friends	Only English with Friends	No English with Parents	Hope to raise Children in English
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Ties to Origin Country (PCA)		0.201***	0.134**	0.176***	-0.199***	0.109*	-0.236***
		(0.071)	(0.062)	(0.052)	(0.050)	(0.057)	(0.081)
National Pride in Origin Country	1.796***						
	(0.544)						
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Origin Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
City Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region of Origin Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	645	645	686	714	701	703	696
F-Statistic		10.8942	21.7827	34.0931	30.1623	30.0417	28.4388

Notes: The table reports IV-estimates of the relationship between national attachment of parents and variables regarding their children's language use in different CILS-waves (child aged 14 in columns (2)-(3), aged 17 in column (4), aged 24 in columns (5)-(7)). The dependent variables are whether the child speaks no/only English with friends (columns (2), (4), (5)); whether the child speaks (often/always) no English with its parents (columns (3) and (6)); and whether the child hopes to raise own children in English (column (7)). The main independent variable is the national attachment of parents, a principal component of different variables indicating an attachment to the origin country. National attachment of parents is instrumented with the average national pride in the country of origin (variable from the IVS). The sample includes all children of foreign-born parents who participated in all CILS-waves. All specifications include parent, child and origin level controls, as well as city fixed effects (Miami, Fort Lauderdale, San Diego) and region of origin fixed effects (Europe, Asia, South America, North America). Standard errors in parentheses are clustered by origin country. Statistical significance: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Overall, the results in this subsection indicate that there exist negative effects of the national attachment of parents on the language use and skills of second-generation immigrants. These findings are consistent with the results that they have stronger ethnic networks and a stronger origin country identity. The negative effects on language skills suggest that there exist in fact lower incentives to invest in country-specific human capital. Lower language skills are likely to affect the human capital formation of second-generation immigrants with consequences for labor market prospects.

Table 2.6: National Attachment and Language Skills

	First Stage	Parents English Skills	14 years-old English Skills	17 years-old English Skills	24 years-old English Skills
	(1)	(2)	(3)	(4)	(5)
Ties to Origin Country (PCA)		-0.084	-0.059	-0.109*	-0.132***
		(0.198)	(0.050)	(0.059)	(0.028)
National Pride in Origin Country	2.248***				
	(0.408)				
Parent Individual Controls	Yes	Yes	Yes	Yes	Yes
Child Individual Controls	No	No	Yes	Yes	Yes
Origin Country Controls	Yes	Yes	Yes	Yes	Yes
City Fixed Effect	Yes	Yes	Yes	Yes	Yes
Region of Origin Fixed Effect	Yes	Yes	Yes	Yes	Yes
Observations	698	698	715	715	652
F-Statistic		30.3671	34.1034	34.1034	33.6967

Notes: The table reports IV-estimates of the relationship between national attachment of parents and language skills of parents and their children in different CILS-waves (parents in column (2), child aged 14 in column (3), aged 17 in column (4), aged 24 in column (5)). The dependent variable English skills is a combination of different self-assessed language skills (speak, read, understand, write). The main independent variable is the national attachment of parents, a principal component of different variables indicating an attachment to the origin country. National attachment of parents is instrumented with the average national pride in the country of origin (variable from the IVS). The sample includes all foreign-born parents or their children if they have participated in all CILS-waves. All specifications include parent and origin level controls, as well as city fixed effects (Miami, Fort Lauderdale, San Diego) and region of origin fixed effects (Europe, Asia, South America, North America). Regressions on child-outcomes further include child characteristics. Standard errors in parentheses are clustered by origin country. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1.

2.4.5 School Performance

The previous results illustrate that immigrant children whose parents are more attached to the origin country have a different social network and speak English less frequently and worse, compared to those whose parents are less attached to their origin country. Different networks, and in particular different language skills, should also affect the integration of immigrant children in other dimensions, which are often considered as indicators of long-term integration. For example, they could lead to poorer performance of second-generation immigrants in schools and later in the labor market. I further investigate whether there exists this negative effect of parents' national attachment on the human capital formation of children in Table 2.7, where I report the IV-estimates of the relationship between parents' origin attachment and education outcomes of their

Table 2.7: National Attachment and Education

| | | 14 years-old | | | 17 years-old | 24 years-old | |
| | *First Stage* | *Math Achievement Percentile* | *Reading Achievement Percentile* | *Grade Point Average* | *Grade Point Average* | *Years of Education* | *College degree* |
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Ties to Origin Country (PCA)		-12.828**	-11.960***	-0.383***	-0.433**	-0.210	-0.129
		(6.313)	(4.636)	(0.138)	(0.187)	(0.297)	(0.079)
National Pride in Origin Country	2.431***						
	(0.474)						
Parent Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Child Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Origin Country Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
City Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region of Origin Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	663	663	689	711	711	703	702
F-Statistic		26.3463	29.2449	38.4368	38.4368	33.8465	33.4871

Notes: The table reports IV-estimates of the relationship between national attachment of parents and education outcomes of their children in different CILS-waves (child aged 14 in columns (2)-(4), aged 17 in column (5), aged 24 in columns (6)-(9)). The dependent variables are Standford math and reading achievement percentiles (columns (2) and (3)); the grade point average (columns (4) and (5)); years of education (column (6)); and whether the child has graduated from college in the last 5 years (column (7)). The main independent variable is the national attachment of parents, a principal component of different variables indicating an attachment to the origin country. National attachment of parents is instrumented with the average national pride in the country of origin (variable from the IVS). The sample includes all children of foreign-born parents who are if they and their parents have participated in all CILS-waves. All specifications include parent, child and origin level controls, as well as city fixed effects (Miami, Fort Lauderdale, San Diego) and region of origin fixed effects (Europe, Asia, South America, North America). Standard errors in parentheses are clustered by origin country. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1.

children.

Indeed, the results indicate that parents' origin identity negatively affects their children's education outcomes. A strong attachment of parents to their origin country has sizable and highly significant negative effects on their children's math and reading achievement test percentiles (columns (2) and (3)). For example, a standard deviation increase in parents' origin attachment leads to a 16 percentage points decrease in the reading percentile-rank of their children at age 14. In columns (4) and (5), one can further see that for both 14 and 17 years-old children, a higher national attachment of parents leads to a significantly poorer grade point average for them. The magnitude of this effect is quite large, since a standard deviation increase of parents' origin ties decreases the GPA of 17 years old children by about 20%. Among 24 years-old immigrant children, estimates point towards the same direction, but they are not statistically significant. Nonetheless, the coefficient in column (7) for the effect of parents' national attachment on the probability that 24 years-old immigrant children have graduated from college within the last five years, is very close to being significant at a ten percent level. The finding that there are no significant effects on the years of education and other measures of education at age 24 does not necessarily mean that there is no effect on the overall education of second-generation immigrants in the long run. It might instead be caused by the fact that these outcomes are not as precise and objective as test scores or grade point averages.

In sum, the results confirm that origin attachment of parents has sizable negative effects on the assimilation of their children. Second generation immigrants whose parents have a strong ethnic identity also develop a more pronounced ethnic identity. They grow up in different neighborhoods, have stronger ethnic networks, and have less contacts with natives. Additionally, they are less likely to speak English with their friends and families, and have lower language skills. Finally, a stronger origin identity of parents impedes the school performance of their children, especially objective measures such as test achievement scores and grade point averages.

2.5 Additional Results and Robustness Checks

2.5.1 Labor Market Outcomes in the CPS

The main results have shown that a strong origin attachment of parents leads to a weaker record of integration of their children in the dimensions of identity, social networks, language use and skills, and education. This weaker integration is likely to affect the labor market position of adult second-generation immigrants as well. Due to the low number of second-generation immigrants that are active in the labor force in the CILS data, in this section I use data from the Current Population Survey (CPS)

between 1994 and 2015. Since there is no information on parents included in the CPS, I estimate the reduced-form, analyzing the relationship between the average national pride in the origin country of second-generation immigrants and their labor market outcomes.

My sample includes second-generation immigrants who are aged between 25 and 65. I define second-generation immigrants in the CPS as respondents who were born in the United States, but have at least one foreign-born parent. The origin country of second-generation immigrants is defined as their mother's place of birth if she or both parents are foreign-born, and as the father's place of birth if only the father is foreign-born. I analyze the effect of national pride in the country of origin on classic labor market outcomes of second-generation immigrants. My dependent variables are whether respondents are active in the labor market or not; whether they are unemployed;[22] the natural logarithm of their yearly wage income; and the total income of the respondents.[23] The sample restrictions leave a total sample of 966,771 observations from 87 origin countries (492,368 women and 474,403 men). Since the income variables are obtained only once a year, the sample size for these outcomes is substantially smaller (29,356 women and 38,255 men). Summary statistics for second-generation immigrants can be seen in Table 2.B.4. The respondents in the second-generation immigrants sample are on average 44 years old, and they are relatively well educated (37% have at least a Bachelor's degree). Furthermore, their parents mostly immigrated from European or other North-American countries.

Using this sample of second-generation immigrants from the CPS, I estimate OLS-regressions of the following type:

$$Y_{iost} = \beta_0 + \beta_1 national\_pride_o + \beta_2 X_{iost} + \nu_s + \sigma_t + \lambda_r + u_{iost}. \tag{2.10}$$

The left hand side variable Y_{iost} represents the realization of a dependent variable for individual i in state s at time t, whose parents originate from country o. The variable of interest in these regressions is $national\_pride_o$, which represents the measure of the national pride in the parents' country of origin o that has been used as an instrument for national attachment of parents in the main analysis. This OLS-regression can therefore be interpreted as a reduced-form estimate and is very similar to the epidemiological approach. X_{iost} are individual and aggregate origin country control variables.[24] I further control for state fixed effects, year-month fixed effects, and region of origin fixed effects (ν_s, σ_t, and λ_r, respectively). The error terms are clustered at the origin country level.

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[22]Additional sample restriction that respondents are active in the labor market.

[23]Additional sample restriction that the respondents are full-time employed.

[24]Individual: Polynomials of age, gender, being non-white; Origin: English language, GDP per capita.

Table 2.8: National Pride in the Origin Country and Labor Market Outcomes

	Labor Force Participation		Unemployed		Log Wage		Log Total Income	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Men								
National Pride in Origin Country	-0.018*	-0.007	0.013***	0.009***	-0.121*	-0.071**	-0.116*	-0.065*
	(0.009)	(0.008)	(0.004)	(0.003)	(0.067)	(0.034)	(0.068)	(0.034)
Observations	474403	474403	410328	410328	38255	38255	38244	38244
R-Squared	0.1072	0.1269	0.0119	0.0178	0.1488	0.2446	0.1747	0.2884
Panel B: Women								
National Pride in Origin Country	-0.001	0.013	0.006	0.003	-0.101	-0.049	-0.082	-0.029
	(0.010)	(0.009)	(0.005)	(0.004)	(0.068)	(0.036)	(0.067)	(0.033)
Observations	492368	492368	364096	364096	29356	29356	29340	29340
R-Squared	0.0574	0.0847	0.0085	0.0146	0.1456	0.2584	0.1648	0.2936
Education Controls	No	Yes	No	Yes	No	Yes	No	Yes
Individual and Origin Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year-Month Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region of Origin Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The table reports estimates of the relationship between national pride in the country of origin and labor market outcomes of second generation immigrants in the CPS (1994-2015). The dependent variables are whether a second generation immigrant is active in the labor market (column (1) and (2)); whether a respondent is unemployed or not (column (3) and (4)); the natural logarithm of wage income (column (5) and (6)); and the natural logarithm of the second generation immigrants' total income (column (7) and (8)). The main independent variable is the average national pride in the country of origin (variable from the IVS). The sample includes all second generation immigrants who are between 25 and 65 years old. In columns (3)-(8), the sample further excludes respondents who are not active in the labor market. Finally, columns (5)-(8) include only those respondents who are full-time employed. All specifications include individual and origin level control variables. Even columns include education controls. Furthermore, year-month fixed effects, state fixed effects, and region of origin fixed effects (Europe, Asia, Middle East, Africa, Oceania, South America, North America) are included. Standard errors in parentheses are clustered by origin country. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1.

The results for second-generation immigrants in the CPS are presented separately for men and women in Panel A and B of Table 2.8, respectively. The reduced-form estimates for men suggest that there exist long-term disadvantages of national attachment on the labor market assimilation of second-generation immigrants. There is a significant negative effect on labor force participation, a positive effect on the probability of being unemployed, and a negative effect on both wage income as well as total income of male second-generation immigrants. When including controls for education of the respondents in even columns (one potential channel), the coefficients of national pride decrease in size, and the effect on labor force participation becomes insignificant. However, there exists a robust negative effect of national pride in the origin country on the other three outcomes in this stricter specification. A one standard deviation increase in national pride in the origin country leads to a 0.26 percentage points increase in the risk of unemployment ($0.009 * 0.298$). This corresponds to an increase of 17.7% (4.6/0.26). Compared to the effects of other relevant controls, such as originating from an English speaking country, the effect of a one standard deviation increase in origin national pride is about half the size. The negative significant effect of national pride on wage incomes in column (6) is also quite sizable: A one standard deviation increase in national pride in the origin country leads to a 2.1% decrease in wages for second-generation immigrant men. In comparison, the effect of coming from an English-speaking country is 7.2%.

For female second-generation immigrants, the results do not indicate any negative effects of national pride in the origin country on the labor market position. However, when running the main analysis from the previous section separately for male and female immigrant children, negative effects of parents' origin attachment are found to be similarly prevalent for both genders. One possible explanation for this gender difference could be that women, and in particular women with a migration background, have different employment careers than men. They are on average less attached to the labor market and are less likely to work full-time. Another possible explanation could be that they do in fact overcome the human capital differences over lifetime.

Overall, national pride in the country of origin is negatively associated with the labor market performance of male second-generation immigrants, while having no effect on females. However, since it is not possible in the CPS to control for parents' characteristics or attribute this effect to a specific channel, the negative effects of national pride in the origin country have to be interpreted as suggestive evidence for the long-run effects of national attachment.

2.5.2 Threats to the Exclusion Restriction

As discussed in Section 2.3.2, there exist two major threats to the exclusion restriction. First, the exclusion restriction could be violated if the aggregate measure of national pride proxies low unobserved human capital that is not captured by the control variables. As argued above, this problem is common in all studies that utilize aggregate culture proxies from immigrants' origin countries. The fact that I can control for parent characteristics such as age, years since migration, education, and the labor market position should decrease the problem of unobserved human capital to some extent. Also the origin-country controls GDP per capita and English-speaking, as well as the region of origin fixed effects aim to minimize this problem.

In addition, I address this concern in the first four rows of Table 2.B.6 by adding the following control variables that are supposed to proxy human capital quality in the origin country: The average years of education of women aged 25 and older in the country of origin (Gakidou et al., 2010);[25] an index of knowledge distribution that was constructed as the arithmetic mean of the percentage of students and the percentage of literates in the origin country (Vanhanen, 2003); the share of non-agricultural population as a percentage of total population (Vanhanen, 2003); and the Human Development Index (UNDP, 2004). The timing of those variables is as close to the year of migration of the parents as possible. The results in Table 2.B.6 show that my results are fairly robust to all additional independent variables that aim to control for the human capital quality in the origin country of immigrants.

In the fifth row of Table 2.B.6, I further investigate the problem of unobserved human capital by adding the math achievement percentile rank of children at age 14 as a control variable. This variable was used as an outcome variable in the main analysis, since the test is supposed to capture differences in skill learning among children. However, one might argue that math test scores could reflect to some extent unobserved human capital or intelligence. Since it is not clear whether this is the case, finding robust negative effects of parents' national attachment on children's integration outcomes with this specification should support the argument that the results are not driven by unobserved human capital. In fact, I find that the results do not change a lot when including math test score percentiles as an explanatory variable.

The specification tests in Table 2.B.6 do not suggest that the results are driven by unobserved human capital that is captured by the measure of national pride in the origin country.

Another concern with regard to the exclusion restriction could be that national pride in the origin country of immigrant children may affect them through other channels than their parents' origin attachment. As discussed in Section 2.3.2.2, the effects of

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[25]Same results for average years of education of men.

national pride through channels such as family ties or media consumption are likely to be minor compared to its effect that comes through parents' origin attachment.

In order to address remaining concerns regarding the exclusion restriction, I conduct a sensitivity analysis of the IV estimates to potential deviations from the exclusion restriction following the local-to-zero approximation method proposed in Conley, Hansen, and Rossi (2012). This approach allows for a direct effect of the instrument on the outcome variable and allows to infer how sensitive results from the following second stage equation of the 2SLS are to deviations from the perfect exclusion restriction:

$$Y_{cpod} = \beta_0 + \beta_1 \widehat{origin\_ties}_{pod} + \gamma \, national\_pride_o + \beta_2 X_{cpod} + \nu_d + \lambda_r + \varepsilon_{cpod}. \quad (2.11)$$

Following Conley et al. (2012), I then assume that the potential direct effect of the instrument $national\_pride_o$ on integration outcomes Y_{cpod}, γ, is uniformly distributed over an interval $[0, \delta]$ with $\delta > 0$ for outcomes with positive IV-estimates, and an interval $[\delta, 0]$ with $\delta < 0$ for outcomes with negative IV-estimates. By varying δ, I can then identify the threshold at which the second-stage coefficient on national attachment of parents becomes insignificant at the ten percent level.[26]

Figure 2.A.2 presents the results for different outcomes using my main specification. To gauge magnitudes and in order to compare the results across different outcome variables, I do not plot the interval size δ on the x-axis, but its share with respect to the reduced-form estimates of the national pride instrument on the respective outcomes.[27] Thus, moving along the x-axis shows how the confidence interval of the IV-estimate is affected if one allows for a larger direct effect of the instrument – measured as percentage share of the reduced-form estimate.

The results in Figure 2.A.2 are fairly similar across the different outcome variables: the thresholds for δ for all six integration outcomes is found to be at values that correspond to about 40% of the reduced-form estimates. For example, the threshold at which the IV-estimate for the outcome "English Skills (Age 24)" would turn insignificant is $\delta = -0.155$. That is, as long as the direct effect of the instrument on "English Skills (Age 24)" is of lower magnitude than -0.155, the second stage is still significant at the ten percent level. Relating this δ-threshold to the reduced-form effect, which is -0.330 (see Table 2.B.5), leads to a threshold of 47% of the size of the reduced-form effect.

Overall, Figure 2.A.2 suggests that to render the IV results insignificant, about 40% of the overall effect of the instrument would have to come through some omitted third variable that is also captured by average national pride in the origin country. Given

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[26]Satyanath et al. (2017) implement the Conley et al. (2012) local-to-zero approach very similarly in order to identify thresholds at which their IV-estimates turn insignificant.

[27]The reduced-form estimate is obtained in the regression $Y_{cpod} = \beta_0 + \beta_{RF} national\_pride_o + \beta_2 X_{cpod} + \nu_d + \lambda_o + u_{cpod}$, and the results are presented in Panel B of Table 2.B.5. The values on the x-axis in Figure 2.A.2 are therefore calculated as follows: $\frac{\delta}{\beta_{RF}}$.

the discussion in Section 2.3.2.2, it seems implausible that national pride in the origin country would affect children's integration through channels like family ties or media consumption with a magnitude as large as 40% of the total effect. Furthermore, it seems unlikely that unobserved human capital would cause so much endogeneity given the detailed control variables included in the main specification, and the previous robustness checks. Hence, the local-to-zero approach of Conley et al. (2012) supports the robustness of my main results.

2.5.3 Alternative Samples

Another concern about the main results may be that the particular composition of immigrant populations in the cities where the Children of Immigrants Longitudinal Survey took place or the sample composition may drive the results. In order to test for this, Table 2.B.7 presents IV-results of the main specification for different subsamples. More specifically, in the first three rows I drop the main immigrant groups, since one might be concerned that the large number of second-generation immigrants with parents from Mexico or the Philippines could cause the results. As one can see, results are very robust to these changes of the sample.

The sample restriction to only keep the respondents who are observed throughout all three CILS-waves could bias my results, if selective attrition exists. The robustness check in row 4 of Table 2.B.7 addresses this concern, where this restriction is dropped. The results remain unchanged. Hence, selective attrition seems not to drive the main results.

Furthermore, one could question the validity of the main results because the sample includes a large number of immigrant children who were born abroad and migrated at an age younger than nine. This sample choice is based on the critical period hypothesis. Literature in psychology and economics suggests that immigrants who arrived at age nine or younger from non-English-speaking countries are able to learn English better than those who arrived at an older age. They are ultimately able to speak English just as well as immigrant children who migrated from English-speaking countries. On the contrary, immigrant children who immigrated at an age above nine from non-English-speaking countries have significantly poorer English-skills, and perform worse with respect to socioeconomic outcomes in the long term (e.g., Bleakley and Chin, 2010). In addition to this argument, results in row 5 of Table 2.B.7 illustrate that restricting my sample to those children that immigrated at an age below four does not affect my results.

2.5.4   Alternative Measures of National Pride

Finally, the empirical strategy of this study relies on only one measure of national pride in the origin countries. As argued in Section 2.3.2.1, the national pride measure from the IVS is very similar to measures of national pride in other surveys, and it rather reflects the concept of nationalism than that of constructive patriotism. The disadvantage of other surveys, such as the ISSP, is that it has only been conducted in a few countries. In Table 2.B.8, one can see reduced-form estimates where different measures of national pride (columns (1)-(3)), nationalism (column (4)), and civic pride (column (5)) are used as independent variables. The source of those variables are the Integrated Values Survey (IVS, columns (1)-(2)), and the International Social Survey Programm in 2003 (ISSP, columns (3)-(5)). The dependent variables cover parent and child outcomes from the different integration dimensions analyzed in the main analysis (i.e., identity, social networks, language use and skills, education). Due to the low number of origin countries covered in the ISSP, IV-regressions were not always feasible. However, it should support the credibility of the measure used in the main analysis if it gains similar reduced-form estimates than other measures of national pride. In column (1), reduced-form estimates of the measure of national pride that is used as an instrument in the main analysis are presented. The coefficients are significant for all outcomes and point in the same direction as the corresponding IV-estimates. The estimates in column (2) show that simply using the mean value of national pride from origin countries produces the same results as using country fixed effects from regressions in the IVS. Column (3) reports the results for the identical question regarding national pride from the ISSP. One can see that the number of observations is much lower than for the variables from the IVS, but the estimates are fairly similar to those in the first two columns, even if they are not always significant. Columns (4) and (5) report the reduced-form estimates for the composite measures on nationalism and civic pride that have been introduced in Section 2.3.2.1. The direction of the coefficients is again the same as for the IVS-variables on national pride. However, the coefficients of the nationalism-variable seem to be slightly more in line with the main results than those of civic pride. Overall, the results in Table 2.B.8 support the idea that the results do not depend on some artifact of the national pride variable in the Integrated Values Survey.

2.6   Conclusion

In recent years, the identity of immigrants has increasingly attracted attention in public debates on integration in many countries. In particular, a strong attachment to the origin country of immigrants, especially among the second and third generation, is

often considered a problem for successful integration or as a symptom of a weak record of integration. At the same time, the identity of immigrants is increasingly becoming a focus of interest for policy makers, since they actively try to establish norms and values of the destination society among immigrants through compulsory integration courses or through requirements for citizenship.

This paper examines how the national identity of immigrants, measured as attachment to their origin country, influences the long-term integration of the second generation. The empirical analysis relies on data from the Children of Immigrants Longitudinal Study (CILS) and an IV strategy, where the national attachment of parents is instrumented with an aggregate measure of national pride in the country of origin. I find that the origin attachment of immigrant parents negatively affects the integration of their children. Children whose parents are strongly attached to the origin country develop a stronger ethnic identity, have less contact with natives, speak English less frequently and more poorly, and perform worse in school compared to peers whose parents are less attached to their origin country. Furthermore, results from the CPS suggest that a stronger origin identity leads to disadvantages in the labor market for adult male second-generation immigrants.

This study has some important implications for the public and political debate on the integration of immigrants in many countries, since it illustrates that the long-term integration of immigrants and their children does not only depend on factors such as potential or education. Instead, the results indicate that also the national identity of immigrants influences their development. Whether immigrants orient themselves towards their origin country or whether they are open to the new society, matters for the integration success of immigrants and their descendants.

The results of this study support inclusive policies that promote incentives for immigrants to participate in the new society. Policy makers could address this issue by offering better economic, social and political opportunities to immigrants, since greater participation in these dimensions might weaken immigrants' origin ties and encourage the formation of a destination country identity. Further, it may reduce the probability that immigrants develop a strong origin identity in response to negative experiences in the destination country. Policies in question include a liberal access to citizenship and other measures that promote the feeling of belonging to the destination society. The recent efforts in many countries for targeting the identity of immigrants more directly through compulsory immigration courses or citizenship requirements could be another way to support the long-term integration of immigrants.

Appendix

2.A Additional Figures

Figure 2.A.1: Heterogeneity in the Wage-Penalty of Second-Generation Immigrants
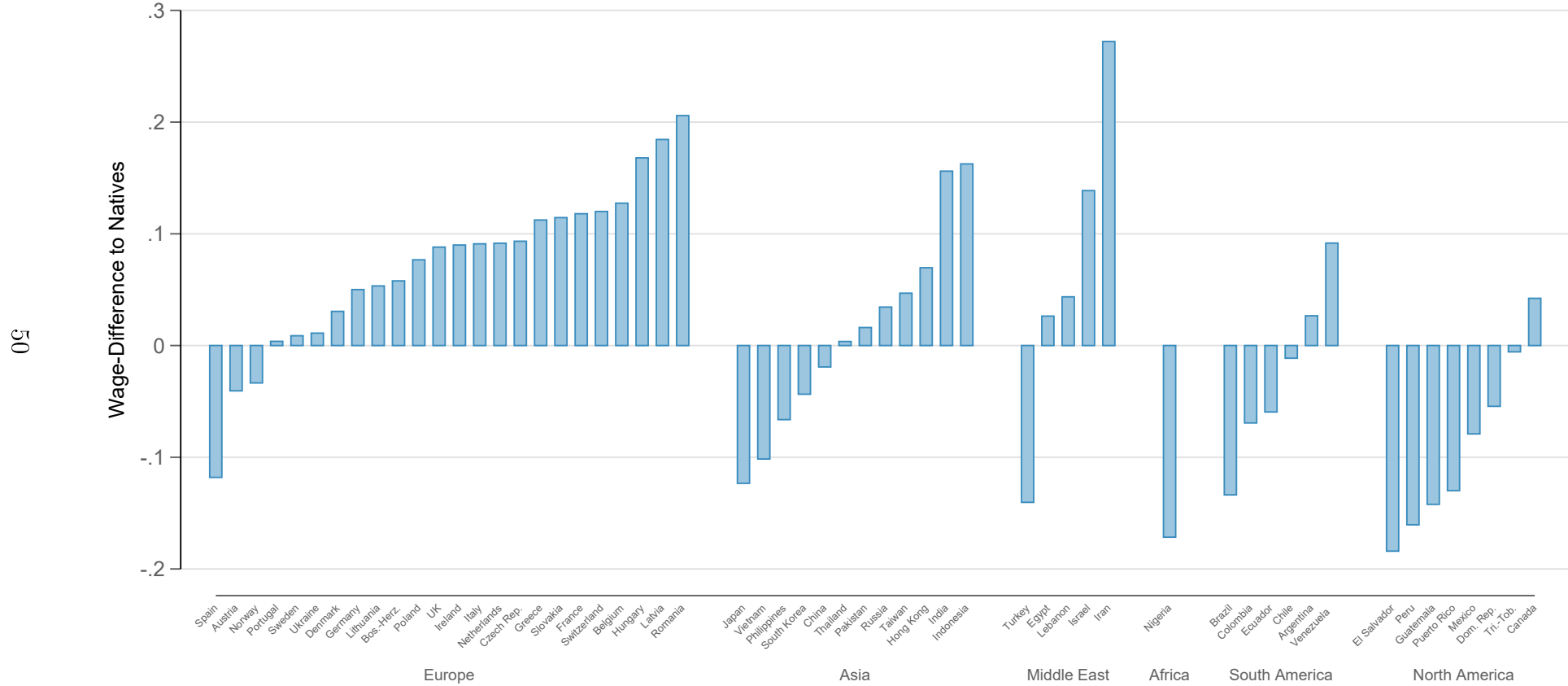
Notes: The graph displays coefficients from log-wage regressions for men in the CPS (1994-2015). The coefficients refer to dummy variables indicating second-generation immigrants by their origin. Additional to these second-generation immigrant indicators, the regression includes an indicator for first-generation immigrants, polynomials of age, education controls, month-year fixed effects, and state fixed effects.

Figure 2.A.2: Local-to-Zero Approximation Bounds (Conley et al., 2012)

2.B   Additional Tables

Table 2.B.1: Origin Countries of Respondents in the CILS

Origin Country	**Main Sample** (1)	**Less restricted** (2)
Argentina	15	18
Canada	4	5
Chile	1	1
China	12	22
Colombia	65	83
Dominican Republic	25	41
Ecuador	16	23
Egypt	0	1
El Salvador	7	15
Germany	3	4
Guatemala	9	14
Hungary	5	6
India	8	9
Indonesia	3	3
Iran, Islamic Rep.	0	1
Italy	0	1
Japan	7	10
Mexico	198	325
Peru	15	20
Philippines	264	343
Romania	2	2
Russian Federation	1	1
South Korea	0	3
Spain	1	1
Taiwan	3	8
Thailand	3	8
United Kingdom	4	4
Vietnam	128	246
Total	799	1,218

Notes: The table reports the number of observations for the different origin countries in the CILS. The sample includes immigrant children, who have at least one foreign-born parent and who were born in the U.S., or who immigrated at an age younger than nine. Furthermore, the sample is restricted to those children, whose parents are observed in the parent survey. In column (1), the sample is restricted to those children who are observed in all three waves. In column (2), this restriction is not imposed.

Table 2.B.2: Summary Statistics of the CILS

	Main Sample		Less restricted	
	Mean	Std.Dev.	Mean	Std.Dev.
Parents:				
Ties to Origin Country (PCA)	-0.166	1.371	-0.0984	1.372
Very proud of the country of origin	0.783	0.413	0.792	0.406
Talk a lot with Child about Origin	0.501	0.500	0.519	0.500
Celebrate a lot Origin Holidays	0.338	0.473	0.362	0.481
Buy from Origin-Stores	0.213	0.410	0.240	0.428
Contact to Compatriots very important	0.451	0.498	0.459	0.499
Most Neighbors Foreigners	0.289	0.453	0.293	0.455
Most Neighbors White Americans	0.338	0.473	0.341	0.474
English Skills	3.002	0.858	2.859	0.899
14-Years Old:				
Ethnic Self-Identity: National Origin	0.287	0.453	0.326	0.469
Ethnic Self-Identity: American	0.076	0.264	0.070	0.255
USA best country	0.626	0.484	0.605	0.489
Americans feel superior	0.738	0.440	0.733	0.443
Most Friends Foreigner	0.606	0.489	0.599	0.490
No English with Friends	0.630	0.483	0.682	0.466
Often/Always no English with Parents	0.841	0.366	0.854	0.354
English Skills	3.789	0.378	3.650	0.541
Math Achievement Percentile	56.93	29.95	54.43	29.87
Reading Achievement Percentile	48.41	29.36	43.64	29.55
Grade Point Average	2.834	0.856	2.765	0.895
17-Years Old:				
Ethnic Self-Identity: National Origin	0.400	0.490	0.434	0.496
Ethnic Self-Identity: American	0.027	0.161	0.023	0.150
USA best country	0.744	0.437	0.719	0.450
Americans feel superior	0.826	0.379	0.811	0.392
Most Friends Foreigner	0.593	0.492	0.585	0.493
No English with Friends	0.516	0.500	0.588	0.492
English Skills	3.809	0.375	3.705	0.476
Grade Point Average	2.816	0.933	2.734	0.951
24-Years Old:				
Ethnic Self-Identity: National Origin	0.268	0.443	0.264	0.441
Ethnic Self-Identity: American	0.027	0.162	0.026	0.158
Only English with Friends	0.561	0.497	0.529	0.499
No English with Parents	0.345	0.476	0.381	0.486
Hope to raise Children in English	0.301	0.459	0.279	0.449

English Skills	3.853	0.366	3.818	0.415
Years of Education	14.527	1.672	14.495	1.704
College degree	0.366	0.482	0.362	0.481
Controls:				
Parent: Female	0.601	0.490	0.606	0.489
Parent: Native Partner	0.130	0.337	0.113	0.317
Parent: Years since Migration	20.18	7.550	18.65	8.128
Parent: Age	46.551	6.558	46.331	7.093
Parent: High education	0.250	0.433	0.212	0.409
Parent: Medium education	0.478	0.500	0.472	0.499
Parent: Unemployed	0.049	0.216	0.055	0.228
Parent: Out of Labor Force	0.202	0.401	0.253	0.435
Child: Female	0.534	0.499	0.501	0.500
Child: Foreign-born	0.431	0.495	0.507	0.500
Origin: National Pride	2.637	0.157	2.632	0.165
Origin: Share of immigrants from origin	0.031	0.027	0.031	0.029
Origin: English Language	0.350	0.477	0.296	0.457
Origin: Real GDP per Capita	5672	3875	5620	3818
Region of Origin:				
Europe	0.019	0.136	0.015	0.121
Asia	0.537	0.499	0.536	0.499
Middle East	0	0	0.002	0.041
South America	0.121	0.327	0.103	0.304
North America	0.323	0.468	0.345	0.476
Total	799		1218	

Notes: The table reports summary statistics for the CILS sample. The sample includes immigrant children, who have at least one foreign-born parent and who were born in the U.S., or who immigrated at an age younger than nine. Furthermore, the sample is restricted to those children, whose parents are observed in the parent survey. In the two columns on the left, the sample is restricted to those observations who are observed in all three waves. On the right, this restriction is not imposed.

Table 2.B.3: Macro Variables on National Pride and National Feelings

| Country | National Pride | | | Nationalism | Civic Pride |
| | IVS: Country-FE | IVS: Mean | ISSP: Mean | ISSP: Principal C. | ISSP: Principal C. |
	(1)	(2)	(3)	(4)	(5)
Albania	2.326	2.462	.	.	.
Algeria	2.492	2.619	.	.	.
Andorra	2.229	2.256	.	.	.
Argentina	2.442	2.445	.	.	.
Armenia	2.349	2.472	.	.	.
Australia	2.595	2.667	2.649	0.643	0.681
Austria	2.301	2.405	2.394	0.416	0.771
Azerbaijan	2.404	2.485	.	.	.
Bangladesh	2.646	2.724	.	.	.
Belarus	1.995	2.069	.	.	.
Belgium	1.964	2.033	.	.	.
Bosnia & H.	1.908	2.055	.	.	.
Brazil	2.298	2.357	.	.	.
Bulgaria	2.009	2.130	1.927	-0.292	-1.130
Burkina Faso	2.731	2.806	.	.	.
Canada	2.533	2.589	2.656	0.751	1.027
Chile	2.416	2.471	2.719	0.246	0.065
China	2.049	2.121	.	.	.
Colombia	2.767	2.821	.	.	.
Croatia	2.197	2.258	.	.	.
Cyprus	2.376	2.495	.	.	.
Czech Rep.	2.010	2.100	1.995	-0.415	-0.911
Denmark	2.210	2.266	2.215	0.228	0.796
Dom. Rep.	2.674	2.675	.	.	.
Ecuador	2.827	2.892	.	.	.
Egypt	2.671	2.702	.	.	.
El Salvador	2.721	2.805	.	.	.
Estonia	1.902	1.967	.	.	.
Ethiopia	2.610	2.648	.	.	.
Finland	2.347	2.366	2.311	0.051	0.524
France	2.114	2.167	2.166	-0.476	0.336
Georgia	2.564	2.642	.	.	.
Germany	1.771	1.834	1.708	-0.532	-0.010
Ghana	2.893	2.931	.	.	.
Greece	2.418	2.505	.	.	.
Guatemala	2.765	2.827	.	.	.
Hong Kong	1.542	1.623	.	.	.

Hungary	2.193	2.379	2.390	-0.289	-0.431
Iceland	2.520	2.535	.	.	.
India	2.571	2.649	.	.	.
Indonesia	2.335	2.394	.	.	.
Iran	2.616	2.691	.	.	.
Iraq	2.604	2.633	.	.	.
Ireland	2.640	2.707	2.726	-0.046	0.488
Israel	2.282	2.345	2.299	-0.200	-0.515
Italy	2.178	2.246	.	.	.
Japan	1.875	1.871	2.326	0.333	0.114
Jordan	2.680	2.736	.	.	.
Kazakhstan	2.499	2.561	.	.	.
Kosovo	2.780	2.866	.	.	.
Kyrgyzstan	2.363	2.359	.	.	.
Latvia	2.063	2.106	2.050	-0.763	-1.233
Lebanon	2.093	2.147	.	.	.
Libya	2.685	2.738	.	.	.
Lithuania	1.834	1.904	.	.	.
Luxembourg	2.274	2.360	.	.	.
Macedonia	2.316	2.429	.	.	.
Malaysia	2.550	2.625	.	.	.
Mali	2.787	2.884	.	.	.
Malta	2.584	2.702	.	.	.
Mexico	2.611	2.644	.	.	.
Moldova	1.856	1.942	.	.	.
Montenegro	2.014	2.111	.	.	.
Morocco	2.558	2.632	.	.	.
Netherlands	1.884	1.963	1.965	-0.362	0.554
New Zealand	2.524	2.637	2.667	0.508	0.368
Nigeria	2.497	2.526	.	.	.
Norway	2.283	2.347	2.220	-0.105	0.348
Pakistan	2.700	2.781	.	.	.
Palestine	2.556	2.625	.	.	.
Peru	2.615	2.660	.	.	.
Philippines	2.690	2.767	2.760	0.375	0.126
Poland	2.476	2.595	2.369	-0.278	-0.978
Portugal	2.408	2.545	2.502	-0.041	-0.654
Puerto Rico	2.793	2.892	.	.	.
Romania	2.157	2.269	.	.	.
Russia	2.004	2.064	2.200	-0.093	-1.488
Rwanda	2.745	2.787	.	.	.
Saudi Arabia	2.650	2.684	.	.	.
Serbia	2.207	2.289	.	.	.
Singapore	2.338	2.400	.	.	.
Slovakia	2.046	2.155	2.168	-0.602	-1.289

Slovenia	2.387	2.469	2.487	-0.520	-0.416
South Africa	2.604	2.560	2.640	0.574	0.500
South Korea	1.987	2.116	2.003	-0.212	-0.779
Spain	2.319	2.435	2.338	0.043	0.580
Sweden	2.190	2.244	2.168	-0.387	0.254
Switzerland	2.083	2.163	2.165	-0.886	0.877
Taiwan	1.682	1.754	2.279	0.050	-0.470
Tanzania	2.707	2.743	.	.	.
Thailand	2.722	2.839	.	.	.
Trinidad & Tob.	2.781	2.872	.	.	.
Tunisia	2.430	2.503	.	.	.
Turkey	2.531	2.655	.	.	.
Uganda	2.548	2.554	.	.	.
Ukraine	1.823	1.890	.	.	.
United Kingdom	2.312	2.399	2.310	0.028	0.440
United States	2.617	2.667	2.772	0.598	0.892
Uruguay	2.472	2.602	2.680	0.037	0.199
Venezuela	2.861	2.915	2.911	0.405	0.418
Vietnam	2.676	2.782	.	.	.
Yemen	2.718	2.790	.	.	.
Zambia	2.475	2.493	.	.	.
Zimbabwe	2.666	2.687	.	.	.
Total	2.387	2.459	2.357	-0.036	0.002

Notes: The table reports the macro variables on national feelings for different countries. Columns (1) and (2) show the measures of national pride from the Integrated Values Survey (1981-2014). Column (3) shows the mean value of national pride in the ISSP (2003). Column (4) and (5) displays the country averages of different composite measures on nationalism and civic pride.

Table 2.B.4: Summary Statistics of the CPS

| | LFP-Sample | | | | Wage-Sample | | | |
| | Men | | Women | | Men | | Women | |
	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.
Labor Force Participation	0.865	0.342	0.739	0.439	1.000	0.000	1.000	0.000
Unemployed	0.046	0.210	0.043	0.202	0.040	0.197	0.030	0.172
Log Wage	10.564	0.960	10.060	1.073	10.678	0.821	10.369	0.776
Log Total Income	10.186	2.116	8.992	3.062	10.754	0.775	10.450	0.725
Age	44.041	11.475	43.994	11.505	41.845	10.518	41.533	10.558
Race: non-white	0.122	0.328	0.122	0.327	0.136	0.342	0.155	0.361
High Education	0.370	0.483	0.361	0.480	0.387	0.487	0.407	0.491
Medium Education	0.546	0.498	0.561	0.496	0.540	0.498	0.541	0.498
Low Education	0.084	0.278	0.078	0.268	0.073	0.260	0.052	0.221
Origin: National Pride	2.359	0.298	2.365	0.295	2.385	0.298	2.399	0.294
Origin: English Language	0.305	0.460	0.304	0.460	0.279	0.449	0.276	0.447
Origin: Real GDP per Capita	16939	9068	16833	9077	15817	9074	15285	9096
Region of Origin:								
Europe	0.461	0.498	0.454	0.498	0.407	0.491	0.382	0.486
Asia	0.134	0.340	0.130	0.336	0.136	0.343	0.146	0.353
Middle East	0.014	0.119	0.014	0.116	0.013	0.112	0.012	0.108
Africa	0.005	0.072	0.005	0.071	0.005	0.072	0.005	0.069
Oceania	0.005	0.068	0.004	0.066	0.004	0.066	0.004	0.064
South America	0.019	0.137	0.018	0.134	0.024	0.153	0.024	0.154
North America	0.362	0.481	0.375	0.484	0.411	0.492	0.428	0.495
Observations	474,403		492,368		38,255		29,356	

Notes: The table reports summary statistics for the samples of male and female second-generation immigrants in the CPS (1994-2015). The sample includes second-generation immigrants who are aged between 25 and 65. Second-generation immigrants are defined as respondents who were born in the United States, but have at least one foreign-born parent. The LFP-Sample includes all individuals who are active in the labor market. Since wages are observed only once a year, the Wage-Sample includes less observations. Furthermore it is restricted to full-time employed respondents.

Table 2.B.5: OLS and Reduced-Form Results

	Identity		Socialization		Language use and skills				Education	
	A14: Et. Self-Id.: Nat.	A17: Et. Self-Id.: Nat.	P: Most N. White Am.	A17: Most Fr. For.	A14: No Eng. w/ Fr.	A17: No Eng. w/ Fr.	A24: Only Eng. w/ Fr.	A24: Eng. Skills	A14: GPA	A17: GPA
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Panel A: OLS										
Ties to Origin Country (PCA)	-0.002	0.011	-0.008	0.041***	0.007	0.016	-0.011	0.009	0.056	0.016
	(0.014)	(0.012)	(0.014)	(0.007)	(0.011)	(0.014)	(0.012)	(0.006)	(0.034)	(0.041)
Observations	710	711	714	690	645	714	701	652	711	711
R-Squared	0.0890	0.2012	0.1385	0.1223	0.2790	0.3586	0.3047	0.0712	0.2656	0.2477
Panel B: Reduced Form										
National Pride in Origin Country	0.230**	0.269*	-0.331**	0.540***	0.360*	0.423***	-0.472***	-0.330***	-0.968***	-1.094**
	(0.098)	(0.147)	(0.149)	(0.155)	(0.175)	(0.133)	(0.145)	(0.059)	(0.282)	(0.418)
Observations	710	711	714	690	645	714	701	652	711	711
R-Squared	0.0906	0.2025	0.1414	0.1196	0.2819	0.3620	0.3099	0.0758	0.2673	0.2563
Parent Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Origin Country Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Child Individual Controls	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
City Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region of Origin Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The table reports OLS and reduced-form estimates for outcomes regarding social networks (columns (1)-(2)), language use and skills (columns (3)-(6)), identity (columns (7)-(8)), and education (columns (9)-(10)) in the different CILS-waves (P: Parents; A14: Age 14; A17: Age 17; A24: Age 24). The main independent variable in Panel A is the national attachment of parents, a principal component of different variables indicating an attachment to the origin country. In Panel B, the main independent variable is the average national pride in the country of origin (variable from the IVS). The specifications correspond otherwise to the main analysis. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1.

Table 2.B.6: Robustness to Other Explanatory Variables

	Identity		Social Networks		Language use and skills				Education	
	A14: Et. Self-Id.: Nat. (1)	*A17: Et. Self-Id.: Nat.* (2)	*P: Most N. White Am.* (3)	*A17: Most Fr. For.* (4)	*A14: No Eng. w/ Fr.* (5)	*A17: No Eng. w/ Fr.* (6)	*A24: Only Eng. w/ Fr.* (7)	*A24: Eng. Skills* (8)	*A14: GPA* (9)	*A17: GPA* (10)
Origin: Female Avg. Years of Edu.	0.110** (0.045)	0.091 (0.057)	-0.134* (0.069)	0.184*** (0.054)	0.186** (0.073)	0.161*** (0.053)	-0.196*** (0.053)	-0.147*** (0.038)	-0.402*** (0.155)	-0.462** (0.210)
Origin: Index of Knowledge Distr.	0.090** (0.045)	0.118** (0.056)	-0.149* (0.081)	0.237*** (0.049)	0.216*** (0.081)	0.165*** (0.063)	-0.191** (0.079)	-0.127*** (0.030)	-0.345** (0.138)	-0.387** (0.166)
Origin: Non-Agricultural Pop.	0.068 (0.073)	0.233*** (0.079)	-0.194 (0.128)	0.346*** (0.109)	0.232** (0.105)	0.187** (0.081)	-0.210*** (0.078)	-0.172*** (0.054)	-0.305** (0.154)	-0.339* (0.204)
Origin: Human Development Index	0.078* (0.044)	0.141** (0.057)	-0.185* (0.098)	0.278*** (0.053)	0.207*** (0.067)	0.187*** (0.054)	-0.204*** (0.059)	-0.143*** (0.032)	-0.350** (0.142)	-0.397* (0.206)
Child: Math Achievement Percentile	0.127** (0.062)	0.115** (0.048)	-0.078 (0.061)	0.218*** (0.066)	0.186*** (0.067)	0.183*** (0.066)	-0.195*** (0.051)	-0.134*** (0.032)	-0.221* (0.122)	-0.224 (0.196)

Notes: The table reports IV-estimates for outcomes regarding identity (columns (1)-(2)), social networks (columns (3)-(4)), language use and skills (columns (5)-(8)), and education (columns (9)-(10)) in the different CILS-waves (P: Parents; A14: Age 14; A17: Age 17; A24: Age 24). The main independent variable is the national attachment of parents, a principal component of different variables indicating an attachment to the origin country. National attachment of parents is instrumented with the average national pride in the country of origin (variable from the IVS). IV models include the same control variables as in the main specification, but vary in different additional characterstics that are used to test the robustness of the main results. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1.

Table 2.B.7: Robustness to Alternative Samples

	Identity		Social Networks		Language use and skills				Education	
	A14: Et. Self-Id.: Nat.	*A17: Et. Self-Id.: Nat.*	*P: Most N. White Am.*	*A17: Most Fr. For.*	*A14: No Eng. w/ Fr.*	*A17: No Eng. w/ Fr.*	*A24: Only Eng. w/ Fr.*	*A24: Eng. Skills*	*A14: GPA*	*A17: GPA*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Drop Mexicans	0.118**	0.132***	-0.101*	0.189***	0.184**	0.160***	-0.209***	-0.143***	-0.342**	-0.388**
	(0.047)	(0.049)	(0.061)	(0.054)	(0.076)	(0.054)	(0.058)	(0.030)	(0.143)	(0.182)
Drop Philipponos	0.088**	0.162**	-0.160**	0.229***	0.204***	0.178***	-0.199***	-0.116***	-0.433***	-0.494***
	(0.040)	(0.065)	(0.063)	(0.064)	(0.068)	(0.061)	(0.052)	(0.032)	(0.135)	(0.187)
Drop Mex. and Phil.	0.099	0.245***	-0.188*	0.262***	0.277***	0.176**	-0.240***	-0.156***	-0.495***	-0.555***
	(0.067)	(0.074)	(0.098)	(0.070)	(0.096)	(0.075)	(0.081)	(0.039)	(0.152)	(0.213)
Drop Attrition Restrictions	0.151***	0.226**	-0.157*	0.212***	0.213**	0.185***	-0.197***	-0.125***	-0.502*	-0.593*
	(0.051)	(0.096)	(0.088)	(0.069)	(0.089)	(0.065)	(0.047)	(0.025)	(0.272)	(0.326)
Age at Arrival < 4	0.035	0.123*	-0.109*	0.224***	0.237***	0.161***	-0.167**	-0.110***	-0.400***	-0.461**
	(0.042)	(0.066)	(0.061)	(0.077)	(0.078)	(0.060)	(0.068)	(0.030)	(0.144)	(0.192)

Notes: The table reports IV-estimates for outcomes regarding identity (columns (1)-(2)), social networks (columns (3)-(4)), language use and skills (columns (5)-(8)), and education (columns (9)-(10)) in the different CILS-waves (P: Parents; A14: Age 14; A17: Age 17; A24: Age 24). The main independent variable is the national attachment of parents, a principal component of different variables indicating an attachment to the origin country. National attachment of parents is instrumented with the average national pride in the country of origin (variable from the IVS). The different rows show results for different sample-restrictions. All specifications correspond to the main analysis. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1.

Table 2.B.8: Alternative Measures of National Pride in Origin Country

	National Pride			National-ism	Civic Pride
	IVS: Country-FE (1)	IVS: Mean Value (2)	ISSP: Mean-Value (3)	ISSP: Principal C. (4)	ISSP: Principal C. (5)
Age 14: Ethnic Self-Id. National	0.230**	0.197**	0.157	0.212	0.546***
	(0.098)	(0.094)	(0.407)	(0.317)	(0.143)
Observations	710	710	254	254	254
R-Squared	0.0906	0.0904	0.1113	0.1114	0.1169
Parent: Most N. White Americans	-0.331**	-0.305**	-1.198**	-1.199*	-1.148***
	(0.149)	(0.140)	(0.452)	(0.613)	(0.229)
Observations	714	714	253	253	253
R-Squared	0.1414	0.1414	0.1273	0.1279	0.1391
Age 17: No English with Friends	0.423***	0.356**	0.608***	0.505*	0.064
	(0.133)	(0.146)	(0.171)	(0.245)	(0.170)
Observations	714	714	254	254	254
R-Squared	0.3620	0.3611	0.0948	0.0938	0.0914
Age 24: Only English with Friends	-0.472***	-0.402**	-0.385	-0.190	-0.120
	(0.145)	(0.154)	(0.301)	(0.345)	(0.274)
Observations	701	701	249	249	249
R-Squared	0.3099	0.3088	0.0907	0.0895	0.0895
Age 24: English Skills	-0.330***	-0.318***	-0.252	-0.072	-0.134
	(0.059)	(0.058)	(0.159)	(0.125)	(0.103)
Observations	652	652	249	249	249
R-Squared	0.0758	0.0760	0.0652	0.0643	0.0651
Age 14: Grade Point Average	-0.968***	-0.881***	-1.314**	-0.947	-0.092
	(0.282)	(0.257)	(0.560)	(0.821)	(0.646)
Observations	711	711	253	253	253
R-Squared	0.2673	0.2667	0.2151	0.2133	0.2109
Age 17: Grade Point Average	-1.094**	-0.946**	-0.785	-0.797*	-0.280
	(0.418)	(0.367)	(0.437)	(0.370)	(0.400)
Observations	711	711	253	253	253
R-Squared	0.2563	0.2548	0.2922	0.2923	0.2914

Notes: The table reports reduced-form estimates where different measures of national pride (columns (1)-(3)), nationalism (column (4)), and civic pride (column (5)) are used as main independent variables. The source of those variables are the International Values Survey (IVS, columns (1)-(2)), and the International Social Survey Programm (ISSP, columns (3)-(5)). The dependent variables are outcomes of parents and children in the different areas covered in the main analysis (social networks, language use and skills, identity, education). All specifications include the same control variables as the main specifications. Standard errors in parentheses are clustered by origin country. Statistical significance: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Chapter 3

Citizenship and Social Integration

3.1 Introduction

The dramatic pictures and stories of refugees crossing the Mediterranean and Aegean Sea into Europe are still fresh in people's mind. In 2015 alone, more than 1.4 million applications for asylum were submitted in Europe, most of them in Germany. The large inflows of refugees and other migrants in their wake has brought the issue of immigration back to the center of public attention in destination countries, many with sizable immigrant populations ranging from 10% in Italy to 12-15% in France, Germany, the U.K. and the U.S. and almost 30% in Australia or Switzerland.

The recent refugee crisis has reignited an increasingly emotional political debate about the costs and benefits of immigration and whether immigrants integrate into the host society or not. Anti-immigration sentiments have dominated the "Brexit" referendum in the U.K. to leave the European Union (e.g., The Economist, 2016). A similar rhetoric, mostly against non-EU immigrants from Muslim countries, has emerged during the electoral campaigns in the Netherlands and France. And one of Trump's first executive orders in office was a travel ban for immigrants from certain Muslim countries under the notion that they pose a threat to national security and American culture.

How can we explain this resurgence of skepticism or outright anti-immigration sentiments? Part of the explanation is related to economic concerns about increased competition for jobs or housing and the associated fiscal costs of immigration. Yet, a number of studies show that economic concerns alone cannot explain the negative atti-

tudes toward immigration (see, e.g., Card et al., 2012; Hainmueller et al., 2015; Mayda, 2006; Scheve and Slaughter, 2001). Rather, it appears that the perceived cultural or social impacts of immigration on the host society play a key role (e.g., Card et al., 2012; Hainmueller et al., 2015).

Many people think, for instance, that immigrants, rather than adapting to the values and norms of the host country, are tied to the social norms and values of their country of origin instead. The visibility of other ethnic or religious identities and different lifestyles in the local community are then often interpreted as a sign that integration has failed. The reaction might be intolerance, overt or covered discrimination by the majority society and feelings of alienation among the immigrant population. Hostility between immigrants and natives may then not only threaten the social cohesion in the host country, but also prevent that immigrants reach their full potential – with large economic and social costs to immigrants and destination country alike.

These societal challenges raise the question what governments can do to support the integration of immigrants and thus support the social cohesion in society. One of the most important policy instruments to further integration is the citizenship policy of the host country. While most countries have the option to naturalize, they differ a lot in their eligibility requirements, in particular with respect to the number of years an immigrant has to reside in the country in order to get eligible for naturalization. Traditional immigration countries like Canada and the U.S. allow immigrants to naturalize after only four or five years of residency. In contrast, countries with traditionally restrictive immigration policies like Austria or Switzerland require 10 or even 12 years of residence.

Little is known, however, whether a liberal citizenship policy with short waiting periods helps or hinders the integration of immigrants. Identifying the causal effect of liberal access to citizenship poses substantial empirical challenges. Countries that impose different residency requirements also vary along many other dimensions which influence the selection of destination and immigrant's choices after arrival. Residency requirements are typically shorter in traditional immigration countries which have accumulated a lot of experience with large-scale migration and integration. Residency requirements at times vary between groups within a given country. Immigrants who are married to natives, for example, may naturalize faster than immigrants on a work visa. Yet, marrying a native is likely to speed up the assimilation process even independently of the residency requirement (Meng and Gregory, 2005).

In this paper, we contribute to the contentious, current debates on immigration by providing much needed causal evidence on the link between citizenship and integration. In particular, our article addresses three questions: Does a more liberal access to citizenship speed up the assimilation of immigrants in the host society? What role do immigrant expectations about their assumed waiting time play for their long-term de-

cisions? And finally, is there evidence for the widespread concern that some immigrant groups do not assimilate at all – even under a liberal citizenship policy?

In tackling these questions, we rely on two national reforms that liberalized access to citizenship in Germany. Traditionally, citizenship in Germany was closely tied to ancestry and ethnic origin. In 1991, however, the federal government introduced for the first time explicit criteria how immigrants could naturalize. In particular, the reform imposed age-dependent residency requirements for naturalization: immigrants who arrived at the age of 15 or older could naturalize after 15 years of residency. Yet, there were two exceptions to this rule: immigrants who arrived between the ages of 8 and 14 could naturalize after only 8 years. And foreign-borns who arrived before the age of 8 could naturalize when they turn 16. The second reform in 2000 reduced the residency requirement to 8 years for all immigrants arriving at age 8 or older; younger immigrants still get eligible when they turn 16. The timing of the reforms provides additional variation across immigrants depending on their year of arrival: older immigrants arriving in Germany prior to 1985 had to wait 15 years, while those arriving between 1986 and 1991 had to wait less than 15 years – as they got eligible with the second reform in 2000. Our basic estimation approach then compares the choices of immigrants from the same arrival cohort who get eligible for citizenship in different years while controlling flexibly for year of birth, general assimilation, age and time effects.

We first show that giving immigrants faster access to citizenship makes them more likely to naturalize. Yet, conditional on naturalizing, there is no evidence that immigrants with faster access to citizenship naturalize earlier than immigrants with longer residency requirements. This result is somewhat surprising because all immigrants eventually become eligible for naturalization. That immigrants with short residency requirement have a higher propensity to naturalize suggests that a liberal citizenship policy influences how immigrants perceive their position in the host society, for example, because they feel more welcome or accepted as equals.

We then turn to the question how a more liberal citizenship policy affects the social assimilation of immigrants. Here, we focus on long-term decisions like whom to marry and when to have children for several reasons.[1] Fertility and marriage decisions are strongly linked to how much immigrant women invest in human capital and participate in the labor market – which are important indicators for women's economic and actual independence. These decisions thus reveal a lot about preferences or norms about women's rights and opportunities among immigrants relative to the host society. How contentious the issue of women's rights and gender equality has become in the

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[1]Clearly, there are other dimensions, such as social interaction with natives, location choices or engagement in churches or local clubs, that might matter for social assimilation. Given the data available to us, we decided to focus on revealed preferences about long-term decisions rather than social activities or the perceived interaction with natives, for instance.

wake of the refugee crisis is illustrated by the recent political debate about child marriages among refugees and whether these should or should not be annulled in Germany (Spiegel Online, 2016).

Even more importantly, marriage and fertility decisions shape, through the quantity-quality trade-off and parental investments, the cultural traits and social norms embodied in the next generation. This issue is especially pressing in countries like Germany where almost one-third of children under six now have at least one foreign-born parent. Furthermore, a strong preference for preserving cultural or religious traits is often associated with a high propensity to marry within one's own ethnic or religious group (Bisin et al., 2004). Hence, partnership and marriage choices determines whether the host society has cross-cutting social ties between different social and ethnic groups; or whether it is segregated into exclusive social groups instead with little interaction between these groups. The degree of segregation in turn has important implications for social mobility and the public support for redistribution, for instance (e.g., Alesina et al., 2001; Dahlberg et al., 2012). As such, social integration is a crucial determinant of the cohesion and future conflicts in the host society. Finally, while there is a sizable literature on the determinants of economic assimilation, economists have paid little attention to other dimensions of integration. Yet, the extent and speed of integration may vary substantially between economic, social, cultural or political integration outcomes (see, e.g., Abramitzky et al., 2016; Algan et al., 2012).

Economic theory suggests three channels why a more liberal citizenship policy could affect social assimilation: income, human capital and social norms. Citizenship removes any existing restrictions on career access and mobility that immigrants might face in the labor market. Naturalized immigrants may work in any job, at any time and place, which should improve the match quality between workers and firms, for instance. To the extent that these jobs and newly attainable career options offer better pay or working conditions than jobs available to the average immigrant, citizenship raises the lifetime income of immigrants. Higher lifetime income would in turn affect fertility and marriage choices through an income effect. A second channel is human capital: If match quality and career opportunities are complements to worker skill, both factors should raise the returns to host country skills like language or training. Additional human capital does not only influence the set of potential partners one meets but also the opportunity costs of early marriage and childbearing, for instance. Finally, citizenship may influence which norms or values immigrants may choose to follow or feel obliged to adhere to. Immigrants are exposed both to the norms and values of their country of origin but also to those of the host country. Access to citizenship could increase the importance of the host country's norms and values relative to those in the country of origin, for instance, because immigrants feel more welcome or less discriminated. As a result, marriage and fertility decisions might converge to those in

the native population. All three arguments suggest that faster access to citizenship could speed up the social assimilation of immigrants.

Our empirical results support the hypothesis that citizenship is a catalyst for integration. First, we show that faster access to citizenship reduces the demand for children. Because not all women in our sample have completed their fertility, the declining number of children reflects in part a postponement of births among immigrants. In line with such an interpretation, we document a sizable increase in the age at first birth. Both the decline in fertility and the rise in the age at first birth indicate that immigrants converge to the fertility choices of natives: if immigrants face a 8-year rather than 15-year residency requirement, for example, the immigrant-native gap in total fertility declines by up to 20 percent. The immigrant-native age gap at first birth is 4.1 years and declines by 1.3 years or 31% with a shorter waiting period. Second, a more liberal citizenship policy also influences marriage choices: both men and women are less likely to be currently or ever married. As eligibility has few effects on marital stability and cohabitation, the main channel for the decline in marriage is that immigrants postpone their marriage to search for a suitable match. As immigrant women marry on average at age 20, the postponement reduces the immigrant-native gap in women's age at first marriage by up to 20 percent. Interestingly, immigrants with faster access to citizenship do not have higher intermarriage rates or fewer endogamous partnerships. This result is surprising as intermarriage rates are often taken as evidence for a successful integration (Furtado and Trejo, 2013).

Our unique setting allows an additional test whether immigrants anticipate the future benefits of citizenship. The timing of the reforms was such that they came as a complete surprise for many immigrants. All immigrants arriving before 1990, for instance, arrived in Germany under the assumption that naturalization was basically unattainable – until the first reform was passed in 1990. For these immigrants, the actual waiting period for citizenship they faced after the 1991 reform was much shorter than they expected. If expected future benefits influence fertility and marriage choices, as theory would predict, immigrants who get surprised by the option to naturalize make different choices than those that knew their actual waiting period. Our estimates indicate that immigrants who were surprised by the reforms converge much less in their fertility and marriage choices than immigrants who anticipated their waiting period. This pattern supports the notion that immigrants take the future expected benefits of citizenship into account when making long-term decisions like when to marry or have children.

Finally, we show that social assimilation varies a lot with the cultural background of the immigrant. Immigrants who originate from more traditional cultures with high fertility rates are more likely to be married and have more children than immigrants from countries with low fertility rates. Even more importantly, they also assimilate

more slowly under a liberal citizenship policy. These pattern indicate not only that the speed of assimilation varies substantially across immigrant groups; but also that differences in marriage and fertility choices between natives and some immigrant groups persist to the next generation.

The article proceeds as follows. The next section discusses the related literature and why a more liberal citizenship policy may influence fertility, marriage and partner choices. Section 3.3 introduces the reforms of citizenship policy in Germany, while Section 3.4 describes the data and empirical strategy. Section 3.5 reports the main results on social integration and the role of expectations, while Section 3.6 presents a range of sensitivity checks to demonstrate the robustness of the results. Section 3.7 investigates whether some immigrant group fail to integrate. Section 3.8 discusses the implications of our findings in the light of the recent refugee crisis and concludes.

3.2 Related Literature and Theoretical Mechanisms

3.2.1 Related Literature

Our study is closely related to the literature on citizenship which investigates how an immigrant's decision to naturalize affects labor market assimilation (e.g., Chiswick, 1978; Bratsberg et al., 2002; Bevelander and Devoretz, 2008; Gathmann and Keller, 2017). We make three contributions here: first, we analyze whether changes in the citizenship policy of the host country, rather than the individual decision to naturalize, can speed up or delay integration. Second, we can rely on arguably exogenous variation in eligibility rules from two national immigration reforms for identification. Finally, we investigate the impact on marriage and fertility decisions rather than labor market performance. Closest to our analysis is Hainmueller et al. (2015, 2017) who use local referenda about citizenship applications in Switzerland to study whether winning the referendum improves social and political integration. Yet, they investigate a very different policy and a more subjective set of social outcomes, like the intention to stay or whether an immigrant feels discriminated, rather than revealed preferences about family and fertility choices as we do.

A few recent papers study the link between birthright citizenship for second generation immigrants and parental decisions (Avitabile et al., 2014, for fertility choices; Felfe et al., 2016, for educational attainment; and Avitabile et al., 2013, for social contact to natives). Our analysis differs from these earlier studies in several ways: we focus on how first-generation immigrants (rather than second-generation immigrants) respond to a more liberal citizenship policy. In addition, we study differences in the waiting period for citizenship rather than a citizenship by birth policy. Finally, we focus on actual partnership, marriage and fertility choices of eligible adults.

Our study also contributes to a large literature on immigrant assimilation. Most studies in economics have focused on assimilation in the labor market (e.g., Algan et al., 2010; Borjas, 1985, 1995; Card, 2005; Hu, 2000; LaLonde and Topel, 1997; Lubotsky, 2007; Duleep, 2015, provides a recent survey). Yet, as noted by Algan et al. (2012), the extent and speed of economic integration might be very different from social or cultural integration; and some groups might integrate faster along some dimensions than others. A small literature analyzes cultural assimilation measured, for instance, by immigrant's national identity (e.g., Dustmann, 1996; Manning and Roy, 2010), their self-assessed values and beliefs (Algan et al., 2012; Bisin et al., 2011a) or the choice of names in the host country (Abramitzky et al., 2016). A much larger literature in economics and sociology compares natives and immigrants with respect to family formation and fertility behavior (e.g., Ben-Porath, 1973; Bleakley and Chin, 2010; Adserà and Ferrer, 2015; Furtado and Trejo, 2013, survey the literature). Rather than studying immigrants relative to natives, we compare the social integration of immigrants who face a more or less liberal citizenship policy.[2] Our main contribution here is that we can directly evaluate whether host country policies speed up or rather delay social integration. As such, our study has direct implications for policy-makers who wish to promote immigrant integration and foster social cohesion in their countries.

Finally, we contribute to a recent literature examining the impact of culture and identity on economic and social behavior (e.g., Akerlof and Kranton, 2000; Alesina and Giuliano, 2011; Bisin et al., 2004; Blau, 1992; Blau et al., 2011; Fernández and Fogli, 2009; Giuliano, 2007). Key questions in this rapidly growing literature are how alternative identities affect the behavior and position of immigrants in the host country; and through which conditions the identity as a (minority) group gets strengthened or weakened. The literature highlights that the integration process is not a one-way street where immigrant's identities slowly diffuse into the host society. Minorities may preserve their cultural or religious identity, for instance, if parents have a strong preference that their children keep the same ethnic and cultural traits (e.g., Bisin et al., 2004). Our empirical results demonstrate in a different setting that norms and values shape how immigrants respond to the integration offer by the host country and may maintain persistent differences.

A mostly empirical strand in this literature investigates how the culture of the country of origin influences outcomes like female labor supply (Blau, 1992; Blau et al., 2011; Fernández and Fogli, 2009), fertility (Fernández and Fogli, 2009) or living arrangements (Giuliano, 2007) in the host country among second- or third-generation immigrants (see Fernández, 2011, for a survey).[3] Our contribution here is that we

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[2]Similarly, LaLonde and Topel (1997) and Blau et al. (2011) also use different immigrant cohorts to study the link between years since migration and economic integration.

[3]The basic idea of the epidemiological approach is that immigrants have been exposed to different traditions and values, either in the country of origin or, for second-generation immigrants, through

investigate two questions that have not been analyzed so far: can faster access to citizenship tilt the choices of an immigrant in the direction of the host country? And does the cultural background of an immigrant speed up or delay this integration process?

3.2.2   Three Channels: Income, Human Capital and Social Norms

A liberal citizenship policy may affect the marriage and fertility decisions of eligible immigrants through three channels: income, human capital and social norms. The option to naturalize faster in the host country improves the earnings of immigrants in the labor market (see Bratsberg et al., 2002; Gathmann and Keller, 2017, for empirical evidence). Citizenship removes entry barriers and any restrictions on career mobility that immigrants face. Immigrants may work in any job, at any time and place, which should improve the match quality between workers and firms. Furthermore, employers might be more willing to invest in an employee who has signaled a long-term commitment to the host country – which could eliminate explicit or implicit impediments to training or promotion (see, e.g., LaLonde and Topel, 1997).[4]

A second important channel is that access to citizenship encourages additional investments in human capital. If match quality and training opportunities by employers are complements to worker skill, the returns to formal education and possibly language skills increase. Faster eligibility guarantees a longer time period to reap these higher returns. Available evidence indeed shows that citizenship encourages investments in language skills and vocational training (Gathmann and Keller, 2017).

A third potential channel is that citizenship opens the door for immigrants to become equal members of the host society with all rights and responsibilities. As a result, the option to naturalize could influence the social norms or values that immigrants want or feel obliged to follow or reduce the tendency of oppositional identities among immigrants (Akerlof and Kranton, 2000). First-generation immigrants are raised and educated in accordance with the traits and norms of their respective source country. The option to naturalize could, for instance, change the weight immigrants attach to the values and norms of the host culture relative to the values and norms they were raised with. We next turn to a discussion how the three channels might influence the marriage and fertility choices of immigrants.

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parents and ethnic neighborhoods, but face the same institutional and economic incentives in the host country. Under certain assumptions, immigrants from different source countries can then be used to separate the influence of culture and norms from other institutional factors in a host country.

[4]In addition, non-EU citizens, even with a permanent residency status, still require visa to travel into other EU countries. As such, employers might hesitate to hire a non-EU citizen for a job with extensive traveling or assignments abroad due to additional visa costs and reduced flexibility.

3.2.3 Consequences for Fertility, Family Formation and Partner Choice

3.2.3.1 Fertility

Access to citizenship could have consequences for fertility decisions among immigrants through all three channels. A better economic position generates both an income and substitution effect on fertility (Becker, 1960; Hotz et al., 1997, survey the literature). The income effect raises the demand for children, while the substitution effect increases the opportunity cost of children and hence, reduces parental demand. If the better economic condition is mostly the result of more human capital and more labor market attachment, the rise in opportunity costs might dominate the income effect. In that case, access to citizenship is likely to reduce the total demand for children among immigrant women.[5]

More education and better career opportunities in the labor market should affect the timing of birth as well. In economic models of fertility, couples time fertility to maximize lifetime income. Two factors determine the timing of birth: whether skills depreciate during parental leave, and whether credit markets are perfect or imperfect. With no skill depreciation and perfect credit markets, fertility is high early in the labor market career when female wages are low. With imperfect credit markets, income is difficult to shift intertemporally; as a result, fertility moves with the husband's income. If skills deteriorate during labor market absence, the additional cost from human capital loss pushes women to postpone their birth. As faster access to citizenship encourages educational investments, we expect that eligible women postpone their first birth to later ages.

Immigrants often come from countries with much higher fertility rates and very different norms about the family and the role of women in society, for example. If faster access to citizenship increases the weight on norms about fertility prevalent in the host country, we would expect that immigrant women have lower fertility and later birth.

3.2.3.2 Family Formation

Access to citizenship should improve the position of immigrants in the marriage market. A passport of the host country is itself a valuable asset, especially among recently arrived immigrants, because foreign spouses may naturalize after only three years in the country. In addition, higher income and more education are also attractive traits

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[5]Note that women may adjust not only the number of children, but also the quality of their offspring. While we will focus on the quantity effect, our prediction apply to the quality-constant demand for children; hence, the prediction regarding the number of children are ambiguous once the quality dimension is taken into account (see, e.g., Hotz et al., 1997).

and hence, make eligible immigrants more desirable spouses in the marriage market. Finally, an improved economic position, better education and language skills are likely to change the immigrant's social network at work or in their neighborhood. Eligible immigrants might have more interactions with (or face less reservations from) natives. In a marriage market with search frictions, all three factors would raise the reservation value for accepting a partner as spouse. As a result, we would expect that eligible immigrants search for a spouse longer, marry later, and potentially find a better match (Becker, 1973, 1974; Burdett and Coles, 1999; Browning et al., 2014, for a comprehensive survey).

Access to citizenship might also affect the likelihood of divorce. Within a dynamic search or matching framework, a divorce may occur due to an unexpected shock to spouse quality, to match productivity, or to outside options (Becker, 1981; Burdett and Coles, 1999). An unexpected increase in women's earning capacity, for instance, seems to raise the divorce risk (see Weiss and Willis, 1997, for evidence). At the same time, an increase in joint household income raises the gains from the marriage which works in the opposite direction. A better economic position also improves the options for re-marriage which would again increase the divorce risk (Becker, 1981; Browning et al., 2014, for a survey). Overall then, the link between citizenship and divorce is theoretically ambiguous.[6]

The influence of cultural norms and values in the country of origin should influence family formation in a similar way than fertility. If access to citizenship tilts the weight immigrants attach to the norms and values in the host country, we expect that immigrants marry later, for instance.

3.2.3.3 Partner Choice

How would access to citizenship affect partner choice? In models of assortative matching, couples are formed when traits are complements in the production or consumption of household goods (see Becker, 1973; Lam, 1988).[7] Immigrants often marry within their own ethnic or cultural group, for instance, because such a couple finds it easier to raise children who share the same cultural values and norms (Bisin et al., 2004). Marrying a native, in contrast, has the benefit of fast access to naturalization.

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[6]In addition, an increase in the relative earnings of women would also shift the bargaining power within the household in favor of women - as long the bargaining weight depends on women's relative earnings. How the shift in bargaining power shifts the risk of divorce, depends on which partner wants to leave the marriage and whether the couple can reach an efficient bargaining agreement or not (see, e.g., Browning et al., 2014).

[7]In the absence of search costs, this matching maximizes aggregate surplus in the marriage market. In a world with search costs, however, individuals need to consider the option value of continued search relative to the search cost. Here, choices will also depend on the availability of information, the spatial distribution of traits in the population and any restrictions on spousal choice imposed by the immigrant community. We abstract from these additional factors here.

With access to citizenship, immigrants can obtain the passport of the host country without intermarriage. Eligible immigrants also become more desirable spouses, especially for recent arrivals who do not yet qualify for naturalization. Both factors reduce incentives for eligible immigrants to marry a native. At the same time, naturalization should reduce reservations in the native population, while better language skills, education and income should increase contacts with natives.[8] Both might then increase the likelihood of intermarriage. Finally, if the culture of the source country favors endogamous marriages, we would accept that access to citizenship should reduce the pressure to marry within one's ethnic or cultural group. Overall, it is not obvious whether access to citizenship increases or decreases intermarriage rates.

Access to citizenship could influence assortative matching along other characteristics like age, education or income as well. Researchers typically find positive assortative matching in education which seems related to consumption and leisure complementarities (Stevenson and Wolfers, 2007). Immigrants in turn often downgrade in the marriage market by having a less educated partner; and immigrant women often accept a larger age difference (Adserà and Ferrer, 2015). With access to citizenship, immigrants become more desirable spouses which should reduce the need to downgrade in the marriage market. We now turn to our empirical setting and the reforms of citizenship policy.

3.3   Institutional Background

Today, more than 12 million – or about 15% – of Germany's population is foreign-born (United Nations Population Division, 2018). After World War II, most immigrants, especially from Turkey, Yugoslavia and Italy came to Germany as guest workers. From the late 1950s until the program was abolished, the guest worker program actively recruited mostly low-skilled workers to supply labor to Germany's booming industry. The guest worker program was originally intended as a short- to medium-run measure. In practice, however, many guest workers stayed, brought their families, and settled down in Germany.[9] Since the late 1980s and especially after the fall of the Berlin Wall, new waves of immigrants arrived in Germany from Eastern Europe and the former Soviet Union. In the early 1990s, over one million immigrants, about 1% of its population, arrived in Germany each year.[10] These gross flows are comparable to the

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[8]Evidence from the European Social Survey supports the interpretation: naturalized immigrants indeed feel much less discriminated against in Germany than non-naturalized immigrants (OECD, 2011, Figure 8.1).

[9]The Federal Constitutional Court played a key role here arguing that a denial of family reunification infringed upon Germany's Basic Law which guarantees basic individual rights of freedom.

[10]Many of these were ethnic Germans (i.e., immigrants with some German ancestry), mostly from Eastern Europe and the former Soviet Union. While the number of admitted ethnic Germans was 397,000 in 1990, it fell to 222,000 in 1994 and to 105,000 in 1999, in part because of government

immigration to the United States during the era of mass migration.

Despite a sizable immigrant population, Germany had no explicit naturalization policy at the time. Prior to 1991, access to citizenship was closely tied to ancestry (jus sanguinis) as laid down in the law of 1913. Explicit criteria how a foreign-born immigrant without German roots would qualify for naturalization did not exist. The official doctrine was that foreigners were only temporary residents – though many had lived in the country for several decades. Instead, guest workers initially obtained work and residence permits for just one year. The regulations after that depended on the country of origin. For Turkish guest workers, the largest immigrant group in Germany, the work permit was tied to a particular employer and occupation for the first years. Only after three years could guest workers apply for other jobs within the same occupation.[11] Furthermore, temporary work permits are subject to a proof of precedence which requires that no German or EU employee is available for the job. Permanent work permits and hence, full job mobility could only be obtained after 4 years of gainful employment in addition to 6 (before 2005) or 5 (since 2005) years of residence.

The passage of the Alien Act by the federal parliament on April 26, 1990 (and the upper house on May 5, 1990) marked a turning point in Germany's approach to citizenship. The reform which came into effect on January 1, 1991 defined, for the first time, explicit rules and criteria for naturalization. Most importantly, the new law imposed age-dependent residency requirements for citizenship. Immigrants who arrived at age 15 or older became eligible for citizenship after fifteen years of residence in Germany. In contrast, immigrants who arrived between the ages of 8 and 14 got eligible after only eight years in Germany. Immigrants arriving under the age of 8 could naturalize when they turn 16.[12] These residency requirements are still quite restrictive compared to traditional immigration countries where immigrants may naturalize after 4 (Canada) or 5 years (U.K. and U.S.). Yet, they are comparable to countries like Sweden, Austria or Switzerland, for instance, where residency requirements are 9, 10 and 12 years respectively.

Applicants for German citizenship had to fulfill several other criteria: first, they had to renounce their previous citizenship upon naturalization as the new law did not allow dual citizenship. Few exemptions to this rule existed at the time. The most important exception applied to EU citizens who could keep their citizenship if their country of

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restrictions on inflows and financial assistance (Bundesministerium des Inneren, 2009). Below, we drop ethnic Germans from our sample as they can naturalize within 3 years of arrivals and are thus not affected by the immigration reforms we study.

[11]Regulations for guest workers from Yugoslavia and most countries in Africa were somewhat more restrictive, but overall similar to those for Turkish guest workers.

[12]See § 85 and 86 of the Alien Act. If the applicant stayed abroad for no more than 6 months, the period of absence still counted toward the residency requirement. Temporary stays abroad (between 6 months and 1 year) may still count for the residency requirement.

origin allowed dual citizenship as well.[13] A third requirement was that the applicant must not be convicted of a criminal offense.[14] Older immigrants (age of arrival 15 and older) further had to demonstrate economic self-sufficiency, i.e., they should be able to support themselves and their dependents without welfare benefits or unemployment assistance. Younger and child immigrants (under age 15 upon arrival) in contrast had to have completed a minimum of six years of schooling in Germany, of which at least four years had to be general education. Note that these criteria are actually less restrictive than the requirements for obtaining a permanent residence or work permit. Finally, an applicant had to declare her loyalty to the democratic principles of the German constitution. Spouses and dependent children of the applicant could be included in the application for naturalization even if they did not fulfill the criteria individually. With the exception of the need to renounce the citizenship of the source country, similar criteria for naturalization are found in many developed countries.

The second reform came into effect on January 1, 2000 and reduced the residency requirement to eight years for all immigrants older than 8 upon arrival. All other requirements (absence of a criminal record, loyalty to democratic principles and economic self-sufficiency) remained in place supplemented by the requirement to demonstrate German language skills prior to naturalization. As before, the Citizenship Act of 2000 did not recognize dual citizenship though exemptions became more common in practice.[15] The 2000 reform further introduced elements of citizenship by birthplace into German law. A child born to foreign parents after January 1, 2000 was eligible for citizenship if one parent had been a legal resident in Germany for eight years and had a permanent residence permit for at least three years. Since our analysis focuses on first-generation immigrants, our sample is not directly affected by the jus soli provisions of the 2000 reform.[16]

It is not a coincidence that Germany remodeled its citizenship policy shortly after

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[13]Children of bi-national marriages, for example, did not have to give up their dual citizenship until they turned 18. Other exceptions were granted if the country of current citizenship did not allow the renunciation of citizenship or delayed the renunciation for reasons outside the power of the applicant; if the applicant was an acknowledged refugee or if the renunciation imposed special hardships on older applicants. In practice, few exceptions to the general rule were granted in the 1990s.

[14]Applicants with minor convictions, such as a suspended prison sentence up to 6 months (which would be abated at the end of the probation period), a fine not exceeding 180 days (calculated according to the net personal income of the individual), or corrective methods imposed by juvenile courts, were still eligible. Convictions exceeding these limits were considered on a case-by-case basis by the authorities.

[15]In addition to citizens of the EU member states, it became easier for older applicants and refugees to keep their previous citizenship.

[16]There might be an indirect effect on first-generation immigrants, however. Before the 2000 reform, second-generation immigrants could only become naturalized if their parents applied for citizenship. After the 2000 reform, newborn children had access to German citizenship independently of their parents' decision (subject to parental residency requirements). Hence, the reform of 2000 might have actually decreased the inter-generational benefits of citizenship for foreign parents with newborn children. We address this question in the robustness section below.

the fall of the Iron curtain and unification.[17] A jus sanguinis policy was useful in a divided Germany with many ethnic Germans scattered across Eastern Europe and the Former Soviet Union. With unification, the need to integrate dissidents and refugees from East Germany, for instance, ceased to be a concern. Changes in Germany's population structure were a second motor for reform: while in 1960, only 700,000 foreigners lived in Germany, the number had soared to over 7 million in the 1980s. Many of these were second- and third-generation immigrants who were born and educated in Germany but could not naturalize while ethnic Germans from Eastern Europe or the Former Soviet Union even without speaking the language could naturalize within three years.

Responding to this differential treatment, several large cities like Hamburg or Berlin wanted to grant foreigners voting rights in local elections. In 1990, the Federal Constitutional Court ruled these attempts unconstitutional on the grounds that the basic principle of popular sovereignty could only be executed by Germany's citizens. Yet, the Court also mandated that a change in citizenship law was required to allow the permanent immigrant population to naturalize (see Morjé Howard, 2008, for a detailed discussion of the reform process). The 2000 reform in turn was made possible after the 1998 general election which brought about a leftist coalition of Social Democrats and Greens favorable to granting foreigners political rights.

This discussion highlights that the reforms were not motivated by concerns about the actual or perceived lack of immigrant integration – as foreigners were still considered temporary residents at the time. The question of how to best integrate immigrants into society became a political issue only in the 21st century.

3.4 Data and Empirical Strategy

3.4.1 Data Sources

To study social assimilation, we use the German Microcensus, a repeated cross-sectional survey of 1% of the population. Three features make the data uniquely suited to study family formation and fertility choices: first, the data contain detailed information on the composition and socio-demographic characteristics of each household. In particular, we can identify married or cohabiting couples, observe each partner's education, labor supply and personal income as well as the number and age structure of all children in the family. Most importantly, the Microcensus has large, representative samples of about 50,000 foreigners per year including information on their year of arrival, year of birth as well as current and previous citizenship. We use data between 2005 and 2010

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[17]While several reform attempts were made during the 1980s, mostly from left-wing parties, all of them were defeated by the political opposition or influential social groups.

for the analysis as we only observe a person's current citizenship prior to 2005. Even more importantly, the immigrants in our sample arrived in Germany as young children or teens (the mean age of arrival is 12 years), and most are still in full-time education or training when they become eligible for citizenship. By focusing on the 2005-2010 period, we can study whether immigrants with faster access to citizenship as teen or youth change their marriage and fertility decisions as adults.

The sample is restricted to first-generation immigrants, i.e., immigrants born abroad. We drop ethnic Germans as they are not affected by the 1991 and 2000 citizenship reforms. Ethnic Germans have some German ancestry and can therefore apply for citizenship within three years of arrival.[18] Our sample contains economic immigrants, mostly guest workers and their families, as well as refugees, which came to Germany as asylum seekers. We further restrict the analysis to immigrants arriving between 1976 and 2002 who become eligible some time between 1991 and 2010. To make the sample even more homogeneous, we focus on immigrants who arrived in Germany between the ages of 0 and 22.

Our main outcome variables are fertility choices, family formation and the characteristics of partners. To study changes in fertility behavior, we analyze whether an immigrant woman has any children, the total number of children born, the age when she gave birth to her first child, and whether she is a single mother. With respect to family formation, we study whether an immigrant is currently married, has ever been married, has had a divorce, or is cohabiting without being married. To investigate a postponement in marriage decisions, we analyze the age at first marriage, which is observed in the 1999-2004 Microcensus. Finally, we also analyze the characteristics of partners immigrants choose: whether the partner is a native; an immigrant from the same region of origin; the partner's duration of residence in Germany as well as their age, education and personal income.[19] Figure 3.1 shows that immigrants and natives in the same age range differ substantially in their marriage and fertility behavior: immigrants are much more likely to be married and less likely to be divorced; they also have much higher fertility than natives in the same age group.

The main control variables are year of birth, year of arrival, the number of years living in Germany and current age. To account for differences across source countries, we define ten regions of origin: the traditional EU-15 member states (e.g., Italy or Portugal), immigrants from countries that recently joined the European Union (the EU-12, e.g., Poland or the Czech Republic), immigrants from Turkey, former Yugoslavia

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[18]In our sample, we define ethnic Germans as individuals born abroad who naturalized within three years (which is legally impossible for regular immigrants) and whose previous nationality was Czech, Hungarian, Kazakh, Polish, Romanian, Russian, Slovakian or Ukrainian (Birkner, 2007).

[19]Personal income combines labor earnings, income from self-employment, rental income, public and private pensions as well as public transfers (like welfare or unemployment benefits, child benefits or housing subsidies) but is net of taxes and other contributions. We deflate personal income with the national consumer price index to 2005 prices.

Figure 3.1: Immigrant-Native Gap in Family Formation and Fertility Choices
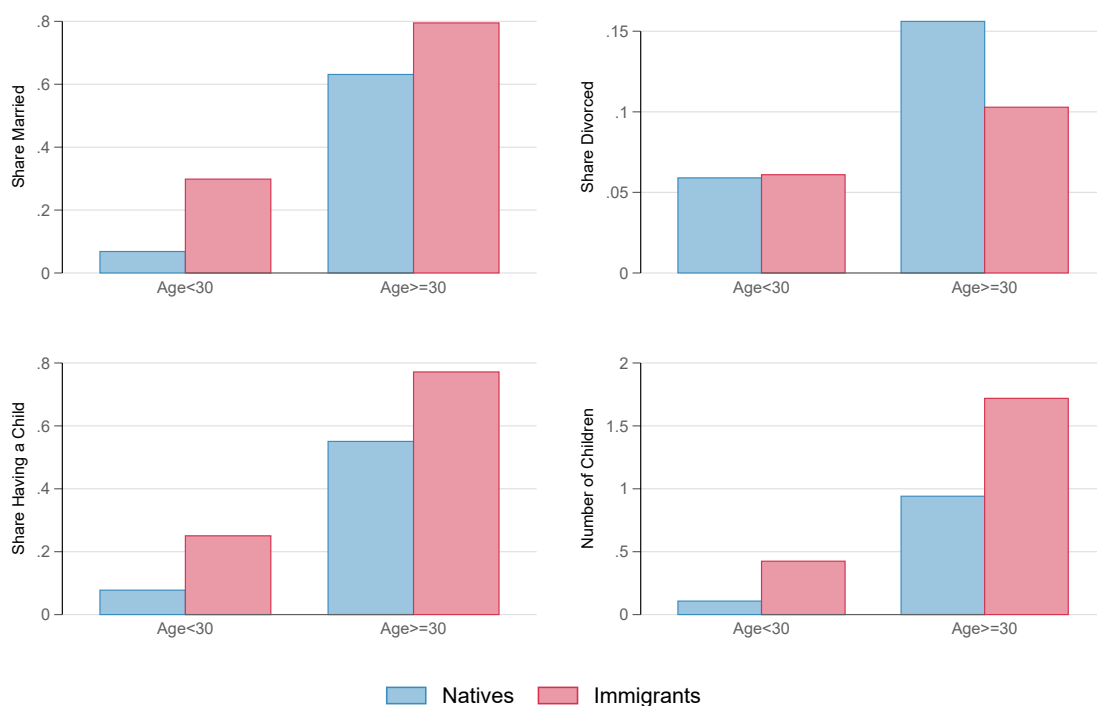
Notes: The graph shows summary statistics for selected social integration outcomes (on the y-axis) for immigrants and natives in the age range 16 to 48. Source: Microcensus (2005-2010).

(except Slovenia) and the Former Soviet Union (except the Baltic states). We lump together other immigrants into broad regions of origins (Asia, Africa, the Middle East and North or South America).

To shed light how the culture of the country of origin influences the process of social integration, we follow the epidemiological literature and use characteristics of the immigrant's country of origin as a proxy for culture in the source country. In particular, to trace attitudes and norms about fertility and women's role in the country of origin, we use information on fertility rates in the source country (The World Bank, 2016).[20] Data on total fertility rates in the source country are consistently available in 5-year intervals since 1975. To merge these data to our sample of immigrants, we assume that immigrants who leave their country between 1976 and 1980, for instance, are imprinted with the source country culture in 1975. Hence, we take the total fertility rate in Turkey in 1975, for example, as the relevant reference point for all Turkish immigrants who arrived in Germany between 1976 and 1980. Information for other years and source countries are merged accordingly.

Table 3.A.1 shows summary statistics for our sample of first-generation immigrants.

[20]Alternatively, we used the average age at first marriage for women in the country of origin as our proxy for the cultural influence of the source country. The results we find are very similar to the ones we report here using the fertility rates in the country of origin.

The largest immigrant groups come from Turkey, Eastern Europe, former Yugoslavia and the European Union. Table 3.A.1 further illustrates that our sample is quite young (the average age is 30) and has lived in the country for almost two decades. The share of naturalized immigrants in our sample is with 38% very similar to the aggregate naturalization rates of 35-40% for Germany (OECD, 2015). We next discuss our estimation strategy.

3.4.2 Identifying Variation and Estimation Strategy

The liberalization of citizenship law after the 1991 and 2000 reforms creates variation in the waiting period immigrants face before they can naturalize. More specifically, the waiting period for citizenship varies from 8 years to 16 years depending on an immigrant's age and year of arrival. For a given year of arrival, we can distinguish three groups of immigrants: child immigrants (who arrive in Germany before the age of 8) can naturalize when they turn 16 - or after 9 to 16 years in Germany. Teen immigrants (who arrive in Germany between the ages of 8 and 14) can naturalize after 8 years in Germany. Finally, older immigrants (who arrive in Germany at the age of 15 or older) can naturalize after 15 years since 1991 and after 8 years since 2000. It is important to stress here that there is no linear relationship between an immigrant's age of arrival and the waiting period: child immigrants face longer residency requirements than teen immigrants who in turn face a shorter waiting period than older immigrants.

The timing of the reforms creates additional variation depending on their year of arrival. For arrivals until 1982, teen immigrants have to wait longer than 8 years because they can only naturalize after the first reform came into effect in 1991. For the same reason, child immigrants arriving before 1983 might had to wait longer than age 16 to get eligible for citizenship. The 2000 reform in turn reduces the waiting period for older immigrants: arrivals between 1986 and 1991 had to wait between 9 and 14 years, while arrivals since 1991 get eligible after 8 years in Germany. Table 3.1 summarizes the variation in residency requirements for child, teen and older immigrants and within each group for different arrival cohorts (shown in parentheses). The last column shows the share of each group in our sample.

Our empirical approach then relates the waiting time immigrants face to their family and fertility choices as adults. In particular, we estimate variants of the following model:

$$Y_{iabt} = \alpha Wait_{ab} + \sum_{l=1}^{L} \beta_l Coh_{al} + \sum_{k=1}^{K} \mu_k YB_{bk} + \gamma_1 YSM_{at} + \gamma_2 YSM_{at}^2$$
$$+\pi_1 Age_{bt} + \pi_2 Age_{bt}^2 + \theta_t + \varepsilon_{iabt}$$

(3.1)

where Y_{iabt} is a social integration outcome (like fertility or marriage choices) of im-

Table 3.1: Variation in Access to Citizenship after the 1991 and 2000 Citizenship Reforms

	Age of Arrival in Germany	Residency Requirement for Citizenship	Access to Citizenship at Age	% in the Sample
	(1)	(2)	(3)	(4)
Child Immigrant	Ages 0-7	9-16 Years (possibly longer for arrival cohorts 1976-1982)	Age 16 (older for arrival cohorts 1976-1982)	23.9%
Younger Immigrant	Ages 8-14	8 Years (9-15 years for arrival cohorts 1976-1982)	Ages 16-22 (older for arrival cohorts 1976-1982)	26.7%
Older Immigrant	Ages 15-22	15 Years (9-14 years for arrival cohorts 1986-1991) 8 Years (arrival cohorts 1992-2000)	Ages 30-38 (younger for arrival cohorts 1986-1991) Ages 23-30 (arrival cohorts 1992-2000)	49.4%

Notes: The table reports the variation in residency requirements induced by Germany's citizenship reforms in 1991 and 2000. The main variation is for immigrants of different ages (column (1)). In addition, residency requirements also vary within the same immigrant group for different cohorts of arrivals because of the timing of reforms: Column (2) in the table shows the typical residency requirement faced by each immigrant group as well as the deviations in parentheses. Column (3) shows at which age an immigrant group typically gets access to citizenship as well as the deviations for some arrival cohorts in parentheses. Column (4) shows the share of each immigrant group in our sample.

migrant i from birth cohort b who arrived in year a and is observed in calendar year t. The main independent variable is the waiting period ($Wait_{ab}$) which, as discussed above, varies by arrival year a and birth year b.

Equation (3.1) controls for separate fixed effects for each cohort of arrival (Coh_a) to adjust for changes in the quality of immigrants coming to Germany over time. We further include individual year of birth fixed effects (YB_b) to control for differences in fertility and marriage decisions across birth cohorts as well as year fixed effects (θ_t) to adjust for aggregate changes in fertility and marriage behavior over time.

We also need to control for general assimilation effects as the time spent in the host country is likely to influence fertility and marriage choices independently of citizenship; likewise, age plays an important role for fertility and marriage choices. Yet, we cannot control for years since migration or age nonparametrically as we face two well-known adding-up constraints: year of arrival plus years since migration as well as year of birth plus age are both equal to the current calendar year. Therefore, we include in our main analysis a second-order polynomial of years since migration (YSM_{at}, YSM_{at}^2) and age (Age_{bt}, Age_{bt}^2). We show in Section 3.6.1 below that more flexible parametric specifications do neither affect our results nor improve model fit.

Additional controls include region of origin fixed effects to allow fertility and marriage decisions to differ across source countries. We also include state fixed effects and state-specific linear trends to capture differences across state of residence and changes therein over time. Finally, we estimate all models separately by gender. Marriage and partner choices are likely to differ for immigrant men and women, for example, because immigrant women have been much less attached to the labor market than men. All standard errors are clustered by age $*$ arrival year to adjust for the level of aggregation in the treatment variable.

The main parameter of interest is α which measures whether and how a longer waiting period affects social integration in the host country.[21] This intent-to-treat effect is the primary parameter of interest for policy makers who aim to improve the integration of immigrants in the host country. For immigrants, the reduced-form represents the option value of naturalization.[22] Conditional on year of arrival, year of birth, year fixed effects and other controls, the parameter is identified from the interaction between year of arrival and year of birth. Our identifying assumption is then that social integration outcomes have an (arbitrary) year of birth pattern that remains constant across arrival cohorts conditional on our control variables. This assumption would be violated, for example, if younger birth cohorts had children earlier than older birth cohorts among

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[21]It is important to stress that the residency requirements we observe have a limited range which is, however, policy-relevant for many countries with traditionally restrictive citizenship policies.

[22]Note that this option value may affect marriage and fertility choices even in the absence of an effect on naturalization rates if eligibility changed the norms immigrants follow or reduces discrimination by natives.

recent immigrants, while the opposite pattern is observed for the same birth cohorts among earlier arrival cohorts. Note that our identifying assumption does not imply that 20 year-olds arriving in 1980 have to make the same fertility choices than 20 year-olds arriving in 2000, for example. The reason is that they belong to different birth and arrival cohorts which are accounted for by our fixed effects. As we show in Section 3.6.1 below, allowing for even more flexible dependencies between birth and arrival cohorts does not alter our results.

Another potential concern with equation (3.1) is that we cannot control for age of arrival effects because of adding-up constraints. As is well-known, immigrants arriving as young children have better language skills and labor market outcomes, among others (Bleakley and Chin, 2010). Finally, our estimates in equation (3.1) could be affected by selective outmigration if emigration is correlated with the waiting period immigrants face. We test for the influence of age of arrival effects and selective migration after we present our main results; overall, we find that these alternative factors cannot account for our findings.

3.4.3 Access to Citizenship and Naturalization

We start out with examining whether the citizenship reforms actually encouraged naturalization. The aggregate statistics seem to suggest that. Prior to the 1991 reform, less than 20,000 persons became naturalized on average each year. After 1991, naturalizations increased to 60-70,000 per year; and after 2000, the number of naturalizations jumped to over 180,000 and then stabilized above 100,000 per year. Relative to the stock of immigrants, the annual propensity to naturalize was below 0.4% prior to 1991 and increased to 2% after 1991.

Yet, is that increase caused by the more liberal citizenship policy or just a time effect? To answer this question, we estimate equation (3.1) where the dependent variable is the propensity to naturalize or the timing of naturalization. The first specification in Table 3.2 (in columns (1) and (2)) shows that immigrants with longer waiting periods are less likely to naturalize. Taking the 7 year-difference between the reduced 8-year and the regular 15-year requirement, immigrants are 9 percentage points $(7 * -0.13)$ less likely to naturalize when facing the longer waiting period – an increase of 25% (0.091/0.358). Column (2) adds formal education to the specification; here, the results suggest a positive relationship between being naturalized and formal education. Note that this relationship does not identify a causal effect of education as access to citizenship is likely to encourage additional educational investments.

Does faster access to citizenship also affect the timing of naturalization? In the second specification (columns (3) and (4) of Table 3.2), we use the number of years since an immigrant has naturalized conditional on naturalizing. The results in column

Table 3.2: Does the Residency Requirement Matter for Naturalization Decisions?

	Naturalized		Years since Naturalized	
	(1)	(2)	(3)	(4)
Residency Requirement (in years)	-0.013***	-0.014***	-0.079***	-0.074**
	(0.001)	(0.001)	(0.030)	(0.030)
Years since Migration	0.029***	0.029***	-0.108	-0.106
	(0.004)	(0.004)	(0.102)	(0.103)
Years since Migration2	-0.000	-0.000	0.018***	0.018***
	(0.000)	(0.000)	(0.003)	(0.003)
Age	0.030***	0.023***	0.253**	0.235*
	(0.006)	(0.006)	(0.127)	(0.137)
Age Squared	-0.000***	-0.000**	-0.001	-0.001
	(0.000)	(0.000)	(0.002)	(0.002)
Medium-skilled		0.089***		0.238**
		(0.005)		(0.093)
High-skilled		0.166***		-0.688***
		(0.009)		(0.181)
In School		0.009		-0.063
		(0.011)		(0.202)
Observations	56,462	56,462	20,226	20,226
R Squared	0.262	0.271	0.395	0.397
Mean of Dependent Variable	0.358	0.358	10.51	10.51

Notes: The table reports results from estimating equation (3.1). The dependent variable in columns (1) and (2) is a binary indicator equal to one if a migrant has naturalized in a given year and zero otherwise. The dependent variable in columns (3) and (4) is the number of years an immigrant has naturalized conditional on naturalizing. Even columns add controls for the education of the immigrant. The sample includes all immigrants who arrived in Germany between 1975 and 2002 and were between 0 and 22 years old when they arrived in Germany. We exclude ethnic Germans, i.e., immigrants with German ancestry who had faster access to German citizenship than regular immigrants. The residency requirement denotes the number of years an immigrant has to wait before becoming eligible for citizenship in Germany; it varies between 8 and 16 years (see Table 3.1). All specifications include in addition year of arrival and year of birth fixed effects, current year and state fixed effects, state-specific linear trends and ten region of origin fixed effects (traditional EU countries, new EU entrants (EU-12), ex-Yugoslavia, Turkey, Middle East, Asia, Africa, North and South America, Russia and other former Soviet Union republics, other or no citizenship). Standard errors in parentheses are clustered by age $*$ arrival year. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1. Source: Microcensus (2005-2010).

(3) show some, albeit a small effect on the timing of naturalization: an immigrant facing an 8-year rather than a 15-year waiting period naturalizes about half a year ($0.553 = 7 * 0.079$) earlier. Yet, this effect is small relative to the sample mean of 10.5 years since naturalization or relative to the 7-year difference in the waiting period. Adding education (in column (4)) shows that the medium-skilled naturalize earlier and the high-skilled later than low-skilled immigrants.

Overall, while shorter residency requirements indeed raise naturalizations, the propensity to naturalize in Germany remains low in international comparison: by 2007, only around 40% of first-generation immigrants with more than ten years of residency had naturalized; the share is about 60% in the United Kingdom and over 80% in Canada (OECD, 2011). We next turn to our main results.

3.5 Main Results

3.5.1 Fertility Choices

We now turn to the question whether the liberalization of citizenship policy also affects long-term choices like fertility, for instance. As Figure 3.1 indicates that immigrants have more children at a younger age than natives, we would expect that the option to naturalize encourages immigrant women to make fertility choices closer to those of native women. To test this prediction, we estimate equation (3.1) for a number of fertility outcomes. Table 3.3 indeed shows substantial effects of the waiting period on fertility behavior: Facing a shorter residency requirement reduces both the likelihood of having at least one child (in column (1)) and the total number of children born (in column (2)). In column (3), we use the number of children conditional on having at least one child as the dependent variable. The evidence there shows that the demand for children declines mostly at the extensive margin; there is little effect on the number of children beyond the first birth.[23]

To put these estimates in perspective, we compare the fertility choices of immigrant and native women. In our data, 62% of immigrant women have at least one child, while only 44% of native women in the same age range do – resulting in an immigrant-native gap of around 18 percentage points. How fast do immigrants adjust to the native fertility level when they face shorter residency requirements? Taking the 7 year difference in residency requirements, the share of having children among immigrant women declines about 4 percentage points ($0.005 * 7$). Hence, facing a shorter waiting period closes about 19% of the immigrant-native gap in the share of mothers. Similarly, the immigrant-native gap in the number of children is about 0.6. Evaluated at the 7 year difference, facing the shorter residency requirement reduces the average number of children born to immigrant women by 0.08 ($7*0.011$). Here, faster access to citizenship closes the immigrant-native gap in number of children by about 13%, mostly because fewer women have had their first birth.[24]

Because not all women in our sample have completed their fertility, the decline in the number of children may reflect in part a tempo effect. Column (4) of Table 3.3 indicates that immigrant women indeed postpone their first birth: women facing a 8-year residency requirement have their first child a stunning 1.3 years ($7 * -0.184$) later than women facing a 15-year residency requirement. Hence, how much does the

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[23]For ease of comparison, we report the corresponding OLS estimates for fertility choices of naturalized immigrants in the top panel of Table 3.A.2.

[24]Is the effect of the residency requirement really linear? Adding a quadratic term for the residency requirement does not suggest that non-linearities matter much. In addition, we created two binary indicators equal to one if an immigrant faces an 8 year or up to 10 years of residency requirement; and zero otherwise. For both binary treatments, we find that facing a shorter waiting period influences fertility choices (not reported).

Table 3.3: Residency Requirements and Fertility Choices

	Having Children (1)	No. of Kids (incl. 0) (2)	No. of Kids (if >0) (3)	Age at First Birth (4)	Single Mother (5)
Residency Requirement (in years)	0.005***	0.011**	-0.001	-0.184***	-0.005**
	(0.002)	(0.005)	(0.007)	(0.029)	(0.002)
Years since Migration	-0.007	0.027*	0.022	-0.170***	0.005
	(0.006)	(0.015)	(0.014)	(0.063)	(0.005)
Years since Migration Squared	-0.000	-0.002***	-0.001**	0.007***	0.000
	(0.000)	(0.000)	(0.000)	(0.002)	(0.000)
Age	0.070***	0.128***	0.209***	0.887***	0.011
	(0.007)	(0.020)	(0.031)	(0.132)	(0.012)
Age Squared	-0.001***	-0.002***	-0.003***	-0.005***	-0.000
	(0.000)	(0.000)	(0.000)	(0.002)	(0.000)
Year of Arrival Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year of Birth Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Region of Origin Fixed Effects	Yes	Yes	Yes	Yes	Yes
State Fixed Effects and Linear Trends	Yes	Yes	Yes	Yes	Yes
Observations	29,319	29,319	18,273	18,273	18,273
R-Squared	0.414	0.386	0.174	0.227	0.034
Mean of Dependent Variable	0.623	1.318	2.114	23.34	0.138

Notes: The table reports reduced form estimates between the residency requirement immigrants face and their fertility choices. The dependent variables are whether a female immigrant has any child (column (1)); the number of children born to the female immigrant including zero (column (2)); the number of children if there is at least one (column (3)); the age of the mother at the birth of her first child (column (4)); and whether she is a single mother (column (5)). The sample includes all immigrant women who arrived in Germany between 1975 and 2002 and were between 0 and 22 years old when they arrived. We exclude ethnic Germans, i.e., immigrants with German ancestry who had faster access to German citizenship than regular immigrants. The residency requirement denotes the number of years an immigrant has to wait before becoming eligible for citizenship in Germany; it varies between 8 and 16 years (see Table 3.1). All specifications include in addition year of arrival and year of birth fixed effects, current year and state fixed effects, state-specific linear trends and ten region of origin fixed effects (traditional EU countries, new EU entrants (EU-12), ex-Yugoslavia, Turkey, Middle East, Asia, Africa, North and South America, Russia and other former Soviet Union republics, other or no citizenship). Standard errors in parentheses are clustered by age * arrival year. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1. Source: Microcensus (2005-2010).

timing of first birth converge to that of natives? Immigrant women have their first child at age 23.3 on average, while native women have it at age 27.5 or more than 4 years later. Hence, a shorter waiting period reduces the immigrant-native gap in age at first birth by 31%.[25] Finally, faster access to citizenship also raises the likelihood of single motherhood by about 4 percentage points ($7 * -0.005$). As for the other fertility outcomes, we find that a liberal citizenship policy contributes substantially to a convergence between the fertility choices of immigrants and natives.

Overall, the evidence shows that a liberal citizenship policy reduces the demand for children and encourages women to postpone childbirth. In light of the theoretical discussion in Section 3.2, the evidence is in line with the hypothesis that higher opportunity costs of women's time, through more human capital and labor market opportunities, outweigh any income effect. The evidence is also in line with the argument that access to citizenship shifts the weight immigrants put on the fertility norms in the host country. A liberal citizenship policy is however, not a viable instrument to boost

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[25]We also find that the postponement effect is much stronger among more educated immigrants (not reported). This result is in line with the idea that the costs of labor market disruptions are higher for educated women, for example, their skills and networks depreciate during labor market absence.

the host country's total fertility rate in the long-run. As immigrants converge in their behavior to natives over time, our evidence thus casts doubt that higher immigration rates may solve population aging in countries with fertility rates below replacement levels.

3.5.2 Family Formation

Does faster access to citizenship affect marriage decisions among immigrants as well? Our estimates are again based on equation (3.1) where the dependent variables are now whether and when immigrants get married or cohabitate. The top panel of Table 3.4 shows that faster access to citizenship reduces women's marriage rates: both the probability of being currently married in column (1) and the probability of ever being married in column (2) are higher among immigrants facing longer residency requirements. The bottom panel of Table 3.4 reveals that we observe the same pattern for men.[26]

A lower share married might reflect either that marriages have become less stable or that immigrants are more likely to cohabitate rather than getting married. Columns (3) and (4) of Table 3.4 indicate that higher divorce or cohabitation rates are unlikely explanations for the lower marriage rates observed. Another explanation for the lower marriage rates is that immigrants postpone marriage because the gains from searching for a mate have increased (see the discussion in Section 3.2). A longer search process would imply that immigrants are more likely to live alone without a partner – which is confirmed by column (5) of Table 3.4.

A second indicator for longer search would be that immigrants marry at a later age. To investigate this explanation, we use data on age at first marriage in the 1999-2004 Microcensus; the specification is the same as before.[27] Column (6) in Table 3.4 shows that women indeed postpone their marriage: their age of first marriage increases by almost one year ($7 * -0.132 = -0.92$). Men in turn actually marry at a younger age: their age at first marriage decreases by one year ($7 * 0.156 = 1.09$). As immigrant women marry almost 3 years earlier than immigrant men, a liberal citizenship policy narrows the gender gap in age at first marriage by almost two-thirds.

What do these patterns imply for the process of social integration? To answer this question, we again compare immigrants to natives. Take the example of being currently

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[26]Table 3.A.2 reports in Panel B the marriage choices of naturalized immigrants. Interestingly, we find no relationship between naturalization and marriage behavior for women; for men, in turn, we find the opposite pattern than in the reduced-form: men are more likely to be married and less likely to be divorced and cohabitating. These differences point to the importance of selection effects into naturalization or reverse causality as intermarriage facilitates naturalization, for example.

[27]In the 1999-2004 Microcensus, we only observe current citizenship but not the country of origin of a person. We therefore classify citizenship into the same 10 categories as countries of origin but add German as an additional category to the specification. Otherwise, the model is the same as in equation (3.1).

Table 3.4: Residency Requirements and Family Formation

	Currently Married (1)	Ever Married (2)	Divorced (3)	Cohabitation (if a Partner) (4)	Single Household (5)	Age at First Marriage (6)
Panel A: Immigrant Women						
Residency Requirement (in years)	0.010***	0.010***	-0.000	0.000	-0.007***	-0.132***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.032)
Observations	29,362	29,362	20,639	18,997	8,723	14,312
R-Squared	0.371	0.528	0.033	0.127	0.128	0.191
Mean of Dependent Variable	0.627	0.703	0.108	0.080	0.871	20.33
Panel B: Immigrant Men						
Residency Requirement (in years)	0.004***	0.005***	-0.001	-0.002	-0.004**	0.156***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.033)
Observations	27,298	27,298	16,108	15,897	11,190	10,860
R-Squared	0.447	0.540	0.034	0.139	0.134	0.256
Mean of Dependent Variable	0.544	0.589	0.0767	0.103	0.882	23.23
Year of Arrival Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year of Birth Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Region of Origin Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effects and Linear Trends	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The table reports reduced form estimates of the relationship between the residency requirement immigrant face and family formation. Results in Panel A are for women, those in Panel B are for men. The dependent variables are whether an immigrant is currently married (column (1)); whether an immigrant has ever been married (column (2)); whether the immigrant is divorced (column (3)); whether an immigrant is cohabitating with a partner without being married; the variable is zero if the person is married (column (4)); whether an immigrant lives without a partner (column (5)); and the age at first marriage (column (6)). The sample includes all immigrants who arrived in Germany between 1975 and 2002 and were between 0 and 22 years old when they arrived. We exclude ethnic Germans, i.e., immigrants with German ancestry who had faster access to German citizenship than regular immigrants. The residency requirement denotes the number of years an immigrant has to wait before becoming eligible for citizenship in Germany; it varies between 8 and 16 years (see Table 3.1). All specifications include in addition year of arrival and year of birth fixed effects, current year and state fixed effects, state-specific linear trends, second-order polynomials in current age and years since migration as well as ten region of origin fixed effects (traditional EU countries, new EU entrants (EU-12), ex-Yugoslavia, Turkey, Middle East, Asia, Africa, North and South America, Russia and other former Soviet Union republics, other or no citizenship). Standard errors in parentheses are clustered by age * arrival year. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1. Sources: Microcensus (2005-2010); Microcensus (1999-2004) for column (6).

married: the shares married are 62.7% among immigrant women and 47.3% among native women for an immigrant-native gap of 15.4 percentage points. Hence, faster access to citizenship reduces the share of married immigrant women by 7 percentage points – closing the immigrant-native gap in marriage rates by 45%. For men, the immigrant-native gap in marriage rates is 13.4 percentage points which declines by 2.8 percentage points or 21% with shorter waiting periods. We also find sizable convergence in women's age at first marriage. As the average immigrant woman marries early (at age 20.3), the immigrant-native gap is 4.9 years. A liberal citizenship policy reduces this gap by 0.9 years or 19%.

While faster access to citizenship results in substantial convergence in marriage rates and age, we do not find effects on divorce or cohabitation behavior. The absence of an effect on divorce rates remains even if we condition on immigrants who are married when they have lived in the country for eight years (not reported). Given sizable immigrant-native gaps in divorce (immigrants are around 6 percentage points less likely to be divorced) and cohabitation (immigrants are 11 percentage points less likely to be cohabitating), immigration actually slows down the upward trend in divorce and cohabitation rates observed in many developed countries.

3.5.3   Partner Characteristics

Given that immigrants search longer and marry later, we might expect them to choose different partners as well. To investigate this, we restrict our sample to married or cohabitating immigrants. We first investigate intermarriage which is often taken as a proxy for successful integration. Around 20% of immigrants in our sample have a native partner, while slightly over 70% have a partner from the same region of origin (which leaves between 8-10% who have a migrant partner from a different origin). Intermarriage rates are thus substantially lower than in France or the Netherlands where about one-third of immigrants have a native partner (Adserà and Ferrer, 2015). Yet, intermarriage rates among natives are 5-6% in Germany and hence, comparable to other European countries (where the share ranges from 5% to 7%).

Table 3.5 suggests that women with shorter residency requirements are not more or less likely to marry or cohabitate with a native (column (1)). They are however, slightly less likely to marry or cohabitate with an immigrant from the same region of origin (column (2)) or a second-generation immigrant from the same country of origin (column (3)).[28] We find very similar results – and hence no intermarriage effect – if we restrict the sample to married couples instead. For men, we even find a small negative effect on the likelihood of marrying a native.

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[28]We show the corresponding OLS estimates for naturalized immigrant men and women in Table 3.A.3.

Table 3.5: Residency Requirements and Partner Characteristics

	Native Partner (1)	Partner from Same Origin (2)	Partner Same Origin, 2nd Generation (3)	Partner's YSM at Marriage (4)	Gap in Education (in years) (5)	Age Gap between Partners (6)	Personal Income of Partner (7)
Panel A: Immigrant Women							
Residency Requirement (in years)	0.001	0.003*	0.006***	0.185***	-0.015	0.107***	2.830
	(0.002)	(0.002)	(0.002)	(0.066)	(0.018)	(0.033)	(7.969)
Observations	18,493	14,683	13,688	8,298	18,188	18,493	18,493
R-Squared	0.235	0.118	0.103	0.083	0.032	0.100	0.061
Mean of Dependent Variable	0.191	0.932	0.0788	6.260	0.678	4.396	1617
Panel B: Immigrant Men							
Residency Requirement (in years)	0.005**	-0.001	0.007***	0.246***	0.017	0.011	6.180
	(0.002)	(0.002)	(0.003)	(0.065)	(0.017)	(0.024)	(3.950)
Observations	15,367	11,963	10,932	6,065	15,124	15,367	15,367
R-Squared	0.186	0.100	0.124	0.060	0.038	0.084	0.097
Mean of Dependent Variable	0.212	0.914	0.107	4.189	-0.231	-2.361	508.9
Year of Arrival Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year of Birth Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region of Origin Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effects and Linear Trends	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The table reports reduced form estimates of the relationship between the residency requirement immigrants face and the characteristics of partners or spouses. Results in Panel A are for immigrant women, those in Panel B for immigrant men. The sample includes both married and cohabitating couples. The dependent variables are whether an immigrant has a native partner or spouse (column (1)); whether the partner or spouse comes from the same region of origin (column (2)); whether the partner or spouse is a second generation immigrant from the same region of origin (column (3)); the number of years an immigrant partner or spouse has lived in the host country when they married (column (4)); the gap in years of education between partners or spouses (column (5)); the age gap between partners or spouses (column (6)); and the personal income (including non-workers) of the partner or spouse (column (7)). The sample includes all immigrants who arrived in Germany between 1975 and 2002 and were between 0 and 22 years old when they arrived. We exclude ethnic Germans, i.e., immigrants with German ancestry who had faster access to German citizenship than regular immigrants. The residency requirement denotes the number of years an immigrant has to wait before becoming eligible for citizenship in Germany; it varies between 8 and 16 years (see Table 3.1). All specifications include in addition year of arrival and year of birth fixed effects, current year and state fixed effects, state-specific linear trends, second-order polynomials in current age and years since migration as well as ten region of origin fixed effects (traditional EU countries, new EU entrants (EU-12), ex-Yugoslavia, Turkey, Middle East, Asia, Africa, North and South America, Russia and other former Soviet Union republics, other or no citizenship). Standard errors in parentheses are clustered by age * arrival year. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1. Sources: Microcensus (2005-2010); Microcensus (1999-2004) for column (4).

One explanation for the absence of an effect on intermarriage is that eligible immigrants become more attractive marriage partners for recent arrivals (as spouses of German citizens can apply after 3 years of residency).[29] If access to citizenship is indeed an asset on the marriage market, partners of immigrants with shorter waiting periods should have arrived in Germany more recently. To investigate this possibility, we use the time period the partner of an eligible immigrant has lived in Germany. As we do not observe the year a partnership outside of marriage was first formed, the sample is restricted to immigrants with foreign-born spouses. Column (4) of Table 3.5 shows that immigrants facing shorter residency requirements are indeed more likely to marry partners with fewer years in Germany. The higher incidence of marrying a foreigner with short residency might just offset any more intense contact with natives for immigrants with shorter waiting periods – implying a net intermarriage effect of zero.

In addition to the migratory background, faster access to citizenship could affect assortative matching along other attractive traits like education, income or age. Column (6) of Table 3.5 shows that the age gap between partners declines for women indicating that they improve their position in the marriage market. Hence, immigrant women with shorter waiting periods have to downgrade less with respect to partner age. We find no effects for partner's education or income of immigrant men and women (see columns (5) and (7) of Table 3.5).[30]

Overall, Table 3.5 suggests that faster access to citizenship has only modest effects on the type of partner chosen – in contrast to our evidence on marriage and fertility choices. At the same time, the results also show that intermarriage rates might not be a good indicator for social integration, especially when analyzing naturalization policies.

3.5.4 The Surprise Element of the 1991 and 2000 Reforms

The results so far point to the conclusion that a liberal citizenship policy has important implications for long-term decisions like whom to marry or when to have children. As immigrants marry and have children early, many make these lifelong decisions even before they get eligible for citizenship. In our sample, 83% of the immigrants are married and 71% have a child prior to eligibility.[31] If immigrants are forward-looking, marriage and fertility decisions should reflect the options and benefits of future naturalization.

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[29]The immigrant has to be married for at least two years by the time he or she applies for naturalization; furthermore, the spouse has to be naturalized for at least two years. Finally, the couple has to have a permanent resident permit.

[30]Given that faster access to citizenship increases investments in formal education (for both men and women), the results in column (5) indicate that partner's education goes up. Yet, the gap in education between partners remains roughly constant.

[31]In contrast, just under 20% are married and only 5% have a child before they even arrive in Germany. As these shares are uncorrelated with the residency requirement, they have no consequences for our findings.

Immigrants might then search longer for a partner, for instance, and reap the benefits later when they get eligible for or have obtained citizenship.

Our empirical setting allows to test directly whether expectations of future benefits from eligibility indeed matter for these long-term decisions. The timing of the 1991 and 2000 reforms implies that many immigrants were surprised by the new citizenship policy: all immigrants arriving in Germany prior to 1990, for instance, had no idea that they would get access to citizenship after 1991. They arrived in Germany under the notion that naturalization was basically unattainable. Furthermore, all older immigrants who arrived in Germany after 1990 (at the age of 15 or older) expected to wait for 15 years before they could naturalize. Only in 1999 did they learn that they had to wait only 8 years rather than 15 years to get eligible for citizenship. We would expect that immigrants who get surprised by the reform make fertility and marriage choices that are more a reflection of the norms in their culture of origin compared to immigrants who knew their actual waiting period. To test this prediction, we create an indicator whether an immigrant's expected waiting period is longer than the actual waiting period; the indicator is zero if actual and expected waiting period coincide.

The top panel of Table 3.6 shows that immigrants who are caught by surprise are more likely to have a child and have higher fertility overall; they also marry at a younger age and have their first child much earlier than immigrants who knew their waiting period. The bottom panel of Table 3.6 adds the surprise indicator to our baseline specification. The effect of the residency requirement remains economically and statistically significant; in some cases, the coefficient is even larger (in absolute terms) than in the baseline. Yet, expectation still play an important role: immigrants who get surprised by the reform make systematically different choices even conditional on the actual residency requirement.

This pattern in line with the idea that immigrants take future options and benefits into account when making fertility and marriage choices. The findings in Table 3.6 are, however, difficult to reconcile with the view that some unobservable characteristics correlated with the residency requirement drive our results. Rather, the patterns provide additional credibility to our finding that a liberal citizenship policy has a strong influence on immigrants' long-term decisions like when to marry and have children.

3.6 Additional Results

3.6.1 Specification Checks

We now demonstrate that our main results remain unchanged when we relax the functional form and identifying assumptions in equation (3.1). Recall that our empirical strategy imposes a second-order polynomial for general assimilation and age effects.

Table 3.6: Reform Surprise and Social Integration

Sample: Immigrant Women	Having Children (1)	No. of Kids (incl. 0) (2)	Age at First Birth (3)	Single Mother (4)	Currently Married (5)	Ever Married (6)	Divorced (7)	Age at First Marriage (8)
Surprised by the Reforms	0.075***	0.213***	-1.411***	0.001	0.010	0.021	0.018*	-1.162***
	(0.016)	(0.038)	(0.179)	(0.014)	(0.015)	(0.014)	(0.011)	(0.172)
Observations	29,319	29,319	18,273	18,273	29,362	29,362	20,639	14,312
R-Squared	0.415	0.387	0.228	0.034	0.370	0.528	0.033	0.193
Residency Requirement (in years)	0.007***	0.016***	-0.242***	-0.005**	0.010***	0.011***	0.000	-0.179***
	(0.002)	(0.005)	(0.030)	(0.002)	(0.002)	(0.002)	(0.002)	(0.032)
Surprised by the Reforms	0.083***	0.231***	-1.719***	-0.006	0.021	0.033**	0.019*	-1.405***
	(0.016)	(0.039)	(0.174)	(0.014)	(0.015)	(0.014)	(0.011)	(0.167)
Observations	29,319	29,319	18,273	18,273	29,362	29,362	20,639	14,312
R-Squared	0.415	0.388	0.232	0.034	0.371	0.529	0.033	0.195
Year of Arrival Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year of Birth Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region of Origin Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effects and Linear Trends	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The table shows reduced form estimates of an indicator equal to one if the expected waiting period was larger than the actual waiting period; and zero otherwise ("Surprised by the reform"). The top panel only includes the indicator in addition to all control variables except the residency requirement. The bottom panel adds the residency requirement immigrants actually faced to the specification. All other control variables are based on equation (3.1) and the same as in previous tables. See Table 3.3 and 3.4 for a description of the dependent variables. The sample includes all immigrants who arrived in Germany between 1975 and 2002 and were between 0 and 22 years old when they arrived. We exclude ethnic Germans, i.e., immigrants with German ancestry who had faster access to German citizenship than regular immigrants. The residency requirement denotes the number of years an immigrant has to wait before becoming eligible for citizenship in Germany; it varies between 8 and 16 years (see Table 3.1). Standard errors in parentheses are clustered by age * arrival year. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1. Sources: Microcensus (2005-2010); Microcensus (1999-2004) for column (8).

To check whether our results are sensitive to this assumption, we allow for a linear up to a quartic in years since migration; all other control variables are the same as before. The first four columns of Appendix Table 3.A.4 indicate that the estimate for the waiting period are very stable for all fertility and marriage outcomes. The AIC criterion reported at the bottom of each panel further suggests little improvements beyond the quadratic specification. Similarly, columns (5)-(8) of Table 3.A.4 allow for a linear up to a quartic function in current age instead. As before, higher-order polynomials have little effect on our estimates. We also find only modest improvements in model fit beyond the quadratic specification. Overall then, alternative specifications for general assimilation and age effects have little influence on our results.

A second concern with equation (3.1) is that our identifying assumption might be too restrictive. Recall that the effect of the waiting period is identified from the interaction between year of arrival and year of birth. Given that we control for year of arrival and year of birth effects, the coefficient on the residency requirement would pick up any differential trends in birth cohorts across subsequent arrival cohorts. Hence, if immigrants from the same birth cohort and country of origin have higher fertility among earlier than later arrivals, our estimates would be biased. To address this concern, we include interaction between year of arrival and 10-year birth cohorts (in column (1) of Table 3.A.5) and between year of arrival and 5-year birth cohorts (in column (2) of Table 3.A.5). The results are again unchanged suggesting that our sample is not subject to differential year of birth trends.

3.6.2 Age of Arrival Effects and the Impressionable Years Hypothesis

Our findings so far indicate that a more liberal citizenship policy boosts social integration among eligible immigrants. Yet, there might be two alternative explanations for this pattern. Eligible immigrants not only face different waiting periods but also arrive in Germany at different ages. Research in psychology suggests that immigrants who migrate at younger ages are more likely to learn the host country's language than immigrants arriving at an older age (e.g., Birdsong, 2006; Newport, 2002). In particular, psychologists speak of a sensitive period for learning foreign languages that ends around age 10 or 11. As a result, immigrating arriving before age 11 might be better integrated into the host society because better language skills facilitate the social contact with natives, for instance. It is not obvious how age of arrival effects would affect our results as residency requirements do not vary linearly with arrival age (see Table 3.1): younger immigrants (arrival age 8-14) face a shorter waiting period than child immigrants (arriving under the age of 8) as well as older immigrants (arrived at ages 15 and older).

To test for the influence of age of arrival effects, we run two additional tests: first, we include a variable equal to one if an immigrant arrived prior to age 11 and zero if she arrived at a later age (following Bleakley and Chin, 2010).[32] Second, we drop all child immigrants arriving before age 8. The results in columns (3) of Table 3.A.5 show that our estimates become economically and statistically somewhat weaker when we control for age of arrival effects. Column (4) however, shows that our main results hold for immigrants arriving at age 8 or later. The only exception is being married which suggests that lower marriage rates are more prevalent among immigrants who arrived as young children.

Another alternative explanation for our findings is that immigrants who get eligible at particular ages are more prone to integrate. Research in social psychology suggests that core attitudes, beliefs, and values crystallize during a period of great mental plasticity in adolescence and early adulthood (the so-called impressionable years) and remain largely unchanged thereafter. Empirical studies have documented that political socialization takes place mainly around the ages of 17 and 18 (Krosnick and Alwin, 1989; Sears, 1975, 1983). Suppose immigrants are more likely to take over the values, norms and aspirations of the host country when they get eligible during these impressionable years. Then, child and younger immigrants (who get eligible at the ages 16-22) make choices closer to the native norms compared to older immigrants (who get eligible at age 30 or older). To test this alternative explanation, we drop the group of older immigrants from the estimation. The last column of Table 3.A.5 shows that the effects of the waiting period are even stronger if we restrict the sample to child and younger immigrants. The only exceptions are age at marriage and first birth which seems especially important in the older immigrant group. Overall then, neither age of arrival effects nor the impressionable years hypothesis explain our findings.

3.6.3 Selective Return Migration

Our results could be affected by selective in- or out-migration. The immigration reforms could have changed the selection of immigrants arriving in Germany. As our empirical approach controls for cohort of arrival and region of origin, our estimates are not affected by changes in the composition of arrivals over time. Table 3.A.5 further demonstrated that our results remain unchanged when allowing for birth cohorts effects to differ across arrival cohorts. These robustness checks suggest that the residency requirement is not correlated with unobserved immigrant quality conditional on arrival year, region of origin and our other control variables in equation (3.1).

A potentially more severe issue is selective out-migration.[33] The literature finds

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[32]Note that we cannot control for a full set of age of arrival fixed effects because of a third adding-up constraint: age minus years since migration equals age of arrival.

[33]As the immigrant sample is relatively young − its age varies from 16 to 49 during the 2005-2010

that up to 50% of an immigrant cohort leaves within 10 years of arrival (Lubotsky, 2007; Dustmann and Görlach, 2015). Selective out-migration could account for the patterns of social assimilation we find if the following two conditions hold: immigrants with a shorter waiting period (who tend to be younger and have arrived more recently) are less likely to return, possibly in response to the more liberal citizenship policy; and those with less success in the labor market or values closer to their source country are more likely to return home. Under these two assumptions, we would overestimate the effect of the waiting period on social integration.[34]

As we cannot directly test for return migration in the repeated cross-sections of the Microcensus, we use two alternative strategies to address this concern. Our first strategy tests whether the distribution of predetermined characteristics in our sample remains stable over time. If selective return migration is not an issue, predetermined characteristics like age or country of origin should not change for a given arrival cohort between 2005 and 2010. Panel A of Table 3.A.6 shows that the age distribution indeed remains very stable for all arrival cohorts; this is reassuring as arrival cohort and age are important determinants of the waiting period. Turning to the region of origin, the share of two of the three largest immigrant groups changes over time for recent arrivals: immigrants from former Yugoslavia are less likely to leave the sample, while immigrants from the traditional EU-15 member states are more likely to return. These differences across source countries are not a direct issue for our estimation as we control in all our estimations for the region of origin. Yet, it might raise concerns that other un-observables are correlated with both our treatment variable and out-migration. Given that differential out-migration is concentrated among recent arrivals, we re-estimate equation (3.1) dropping all arrivals after 1995. The result shown in the first row of Table 3.A.7 remain qualitatively unchanged which indicates that recent return migration does not alter our conclusions.

Our second test for the influence of selective return migration is to estimate bounds on the average treatment effect (Lee, 2009). Given that the bounds approach applies to binary treatments, we re-define the waiting period into a binary variable equal to one if an immigrant is eligible after 8 years, and zero otherwise. We further assume that immigrants with an 8-year residency requirement, i.e., the treatment group, are either 3% or 5% less likely to leave the sample – possibly because of faster access to

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period − survivor bias due to mortality is of minor concern.

[34]If instead immigrants with a shorter waiting period are less likely to leave and the most successful leave; or if immigrants with a shorter waiting period are more likely to leave and the least successful leave, we would actually estimate a lower bound (in absolute terms). If immigrants with a shorter waiting period and those most successful are more likely to leave, we would again get an overestimate. That last scenarios seems, however, unlikely because the citizenship policy should reduce return migration and prior evidence points, if anything, to negative selection into return migration (Constant et al., 2009).

citizenship.[35] The basic idea of the bounds approach is to trim the outcome distribution of the treatment group by the excess attrition in the control group from the top and bottom to obtain the lower and upper bound on the average treatment effect. We implement this procedure for our two quasi-continuous variables age at marriage and age at first birth. For comparison, we first report our baseline model with the binary treatment variable in Panel B in Table 3.A.6. We then report the raw bounds, but also use countries of origin (as Panel A shows them to be important for return migration) and whether immigrants lived in the country for more than fifteen years (as return migration typically declines with time in the host country) to tighten the bounds. The raw bounds are wide and sometimes become negative (see columns (4)-(5) and (9)-(10) in Table 3.A.6, Panel B). The tightened upper and lower bounds (in columns (6)-(7) and (11)-(12) of Panel B) show that a shorter residency requirement still postpones both marriage and fertility. There is only one case where the lower bound for age at first birth includes zero. Taken together, these additional tests suggests that selective return migration cannot account for our results.[36]

3.6.4 Changes in Sample Composition

Our sample might be affected by other changes in sample composition. After the opening of the Iron Curtain, for example, many asylum seekers arrived in Germany which prompted the government to tighten access to political asylum in 1993.[37] Unfortunately, as in most data sources, our data do not record whether an immigrant arrives as a refugee or applies for asylum. As a proxy, we use immigrants from former Yugoslavia and the Middle East as they formed the largest groups of refugees over the period. Dropping all potential refugees from our sample weakens the statistical significance for the demand for children, but has otherwise little effect on our estimates (see row (2) in Table 3.A.7). Further, our sample might still contain some ethnic Germans who are not affected by the immigration reforms. Row (3) therefore restricts the data to the 2007-10 Microcensus where immigrants can be identified as ethnic Germans or not. The results again remain unchanged.

Immigrants may also qualify for citizenship through marrying a native. To check

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[35]Alternatively, the age pattern of return migration in earlier studies (Constant et al., 2009) show that younger workers are somewhat more likely to return. It is important to stress however, that our treatment group is at most 5 years younger on average than the control group which would imply a differential attrition of at most 3%. Even more importantly, our immigrant sample has lived in the country for almost 20 years where attrition rates are substantially lower than for recent cohorts of arrivals.

[36]As a third test, we also employed the Socio-Economic Panel (SOEP) to check whether attrition from the sample due to out migration or mortality is systematically correlated with the residency requirement immigrants face but do not find any effect (not reported).

[37]Refugees who are granted political asylum face the same naturalization criteria as all other immigrants. In some cases, however, the resident requirement might be reduced to six years which would introduce measurement error in our treatment variable.

for the importance of this alternative route to citizenship, we drop in row (4) all immigrants who report having a native spouse in 2005-2010.[38] The results are very similar to the overall sample. Similarly, the 2000 reform not only changed the residency requirement for adult immigrants but also granted citizenship to children born in Germany to foreign-born parents. Immigrants with dependent children had a higher incentive to naturalize prior to 2000 because they could include spouses and dependent children in their application. After 2000, newborn children were eligible for citizenship independently of their parents. Hence, the benefits of citizenship might have declined for parents with children born since 2000. Controlling for the presence and age structure of children (in row (5)) in the household does however not alter our results. We also reran our analysis dropping all immigrants with children under fifteen in the household (in row (6)). Children in the remaining eligible households were all born prior to 1995 and hence not directly affected by the reform.[39] In all cases, our estimates are robust to these alternative definitions of the sample.

3.7 Who Integrates?

3.7.1 Non-EU and Turkish Immigrants

Our findings so far indicate that a more liberal citizenship policy speeds up the convergence in fertility and marriage choices between immigrants and natives. Yet, do we observe such convergence among all immigrants? Or, do some immigrant groups adapt little or not all to the host society? These are important questions as the support for liberal immigration policies in the native population hinges on the perception that immigrants try to fit in. To investigate them, we focus on two groups which have been at the center of political debates on failed assimilation: immigrants from outside the EU and Turkish immigrants.

Table 3.7 shows the impact of a short waiting period on fertility and marriage outcomes. The results are obtained from estimating equation (3.1) on the sample of immigrant women from outside the EU (excluding Turkey) and Turkey. Interestingly,

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[38]Note that we only observe their current spouse, not the spouse or partner an immigrant had when she first arrived or when she got eligible for citizenship. Some immigrants we drop from the sample might have naturalized through the provisions of the 1990 or 2000 reforms but married a native only afterward. And some immigrants might have naturalized through a native spouse, but got divorced before we observe them in the 2005-2010 sample period. We think that the number of immigrants we misclassify should be small relative to the number of immigrants with a native spouse in the 2005-2010 period.

[39]The 2000 reform also included a transitory provision: Parents with children born between 1990 and 1999 could apply for citizenship for their child between 2000 and 2001. The parent had to fulfill the other requirements of the 2000 reform granting citizenship by birthplace (most importantly, an 8-year resident requirement). In practice, less than 10 percent of parents did apply which suggests that children older than fifteen did rarely benefit from the jus soli provision.

Table 3.7: Effects of Citizenship for Immigrants Outside the EU and Turkey

Sample: Immigrant Women	Having Children (1)	No. of Kids (incl. 0) (2)	Age at First Birth (3)	Single Mother (4)	Currently Married (5)	Ever Married (6)	Divorced (7)	Age at First Marriage (8)
Panel A: Outside European Union (excluding Turkey)								
Residency Requirement (in years)	0.010***	0.016**	-0.023	0.001	0.016***	0.016***	0.000	-0.037
	(0.003)	(0.007)	(0.050)	(0.004)	(0.003)	(0.003)	(0.003)	(0.044)
Observations	12,033	12,033	6,341	6,341	12,046	12,046	7,118	6,541
R-Squared	0.413	0.373	0.213	0.053	0.382	0.516	0.058	0.151
Mean Dependent Variable (Turkey)	0.527	1.081	23.41	0.153	0.527	0.591	0.108	20.96
Panel B: Turkey								
Residency Requirement (in years)	0.011***	0.029***	-0.257***	-0.007**	0.010***	0.007***	-0.005*	-0.179***
	(0.003)	(0.009)	(0.041)	(0.003)	(0.003)	(0.002)	(0.003)	(0.045)
Observations	9,966	9,966	7,947	7,947	9,987	9,987	8,674	4,905
R-Squared	0.431	0.340	0.221	0.040	0.335	0.566	0.030	0.110
Mean Dependent Variable (Turkey)	0.797	1.874	22.48	0.109	0.795	0.869	0.0842	18.76

Notes: The table reports reduced form estimates between the residency requirement and their fertility and marriage choices of immigrant women. Panel A shows results for immigrants from the European Union, Panel B for immigrants outside the EU and not from Turkey, and Panel C for Turkish immigrants. The dependent variables for fertility are whether a female immigrant has any child (column (1)); the number of children born to the female immigrant (column (2)); the age of the mother at the birth of her first child (column (3)); and whether she is a single mother (column (4)). For marriage choices, the dependent variables are whether the immigrant is currently married (column (5)); has ever been married (column (6)); whether she is divorced (column (7)); and the age at her first marriage (column (8)). The sample includes all immigrant women who arrived in Germany between 1975 and 2002 and were between 0 and 22 years old when they arrived. We exclude ethnic Germans, i.e., immigrants with German ancestry who had faster access to German citizenship than regular immigrants. The residency requirement denotes the number of years an immigrant has to wait before becoming eligible for citizenship in Germany; it varies between 8 and 16 years (see Table 3.1). All specifications include in addition year of arrival and year of birth fixed effects, current year and state fixed effects, state-specific linear trends, a second-order polynomial in current age and years since migration as well as ten region of origin fixed effects (traditional EU countries, new EU entrants (EU-12), ex-Yugoslavia, Turkey, Middle East, Asia, Africa, North and South America, Russia and other former Soviet Union republics, other or no citizenship). Standard errors in parentheses are clustered by age * arrival year. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1. Sources: Microcensus (2005-2010); Microcensus (1999-2004) for column (8).

a shorter waiting period has even stronger effects on the demand for children and marriage for non-EU women (in the top panel) and Turkish women (in the bottom panel) compared to the full sample. The most striking result is how much Turkish women postpone their marriage and childbearing: their age at first birth increases by 1.8 years $(7 * -0.257)$ compared to around 1.3 years in the full sample. Similarly, the age at first marriage increases by a sizeable 1.25 years $(7 * -0.179)$. Turkish women marry young at age 19 and have their first child at age 22 on average. As such, the sizeable postponement effect observed yield a convergence in the immigrant-native gap in age at first marriage that is quite similar than in the full sample: 19% (1.25/6.44 years, where 6.44 is the immigrant-native gap in age at first marriage) which equals the 19% observed in the full sample.

Overall then, Table 3.7 does not support the widespread public concern that immigrants from outside the European Union fail to integrate; instead, the evidence clearly supports the idea that a liberal citizenship policy encourages social assimilation among non-EU immigrants including Turkish immigrants, the largest group in Germany.[40]

The discussion of the theoretical mechanisms in Section 3.2 provides a potential explanation for this result: on the one hand, immigrants from outside the EU should benefit the most from unhindered access to the labor market and better career options associated with citizenship. If the income effect on marriage and fertility is important, non-EU immigrants have strong incentives to assimilate. On the other hand, immigrants from outside the EU come from cultural backgrounds that might impose very different norms about marriage and fertility. To the extent that the cultural background influences family and fertility choices directly, it might slow down the speed of social assimilation. We next turn to a more systematic analysis of how the cultural background influences the process of assimilation.

3.7.2   The Influence of Source Country Culture

To identify the role of the cultural background for the integration process more systematically, we turn to the epidemiological approach. The basic idea here is that immigrants are imprinted with the values and norms of their source country through parents, immigrant peers and the local community. At the same time, immigrants from different countries of origin face a similar institutional environment and similar incentives in the host country, for example, with respect to labor market access or parental leave legislation. By comparing immigrants from different source countries in the same

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[40]The evidence for social assimilation among Turkish immigrants differs from a recent study by Bisin et al. (2011a) who find for the U.K. that Muslim immigrants assimilate more slowly in terms of their religiosity than non-Muslim immigrants. One potential explanation for this difference is that religious values might exhibit even more persistence than fertility and marriage choices. An alternative reason is that there are differences in the degree of assimilation between Turkish immigrants and other immigrants of Muslim faith.

policy environment, we can identify whether the cultural background delays or boosts social assimilation.

Here, we employ the epidemiological approach to test whether immigrants from diverse cultural backgrounds respond differentially to a more liberal citizenship policy. Empirically, we focus on the sample of immigrants from outside the EU who, without a German passport, face similar restrictions in the labor market. A potential concern with our approach is that immigrants are not a random sample of the population in the country of origin. This concern is however, not an issue here as immigrants are actually our population of interest; we do not want to make claims about the average individual in the source country. A second potential concern is that the migration process itself disrupts or delays fertility or family formation. Such disruption or delay are less of a concern here as our sample has lived in Germany for almost two decades; furthermore, we only compare immigrants from the same arrival cohort who would have experienced similar delays in their family formation.

As proxy for source country culture, we use the fertility rate (TFR) in the country of origin just before an immigrant left.[41] The fertility rate in the home country should reflect the norms about women's role in society that immigrants were socialized with. To simplify interpretation, we convert the TFR rate into a binary indicator whether the source country has a fertility rate above the median in that year. Accordingly, Turkey, Iraq or Kosovo are high-fertility countries, while Croatia, Serbia or Russia are low-fertility countries.

The top panel of Table 3.8 reruns the baseline for the set of immigrants for which we could merge the TFR rate. The bottom panel of Table 3.8 adds the source country characteristic and its interaction with the residency requirement to equation (3.1). The main effect of the TFR rate indicates whether cultural norms have a direct effect on fertility or marriage choices; the interaction effect in turn indicates whether immigrants from high fertility countries assimilate faster or slower with access to citizenship. As expected, fertility is substantially higher for immigrant women from high-fertility countries (see Table 3.8, columns (1) and (2)); they also have children much earlier (column (3)) than the average non-EU immigrant.

More surprisingly, we find that immigrants from high-fertility countries reduce their fertility less when facing a liberal citizenship policy. Take the estimates for the probability of having kids (bottom panel of Table 3.8, column (1)): women from low-fertility countries are 11.9 percentage points ($7 * 0.017$) less likely to have a child when facing short waiting periods; while the decline is only 6.3 percentage points ($7 * (0.017 - 0.008)$)

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[41]Alternatively, we use the female labor force participation rate in the country of origin. The results are qualitatively very similar to the ones reported here. Women from countries with high female labor participation have a lower probability to be married and marry later. Women from source countries with a high female employment rate postpone their marriages more when facing a shorter residency requirement than women from countries with low female labor force participation.

Table 3.8: The Influence of Source Country Culture on Fertility and Marriage Choices

Sample: Immigrant Women	Having Children (1)	No. of Kids (incl. 0) (2)	Age at First Birth (3)	Single Mother (4)	Currently Married (5)	Ever Married (6)	Divorced (7)	Age at First Marriage (8)
Residency Requirement	0.012***	0.022***	-0.210***	-0.006**	0.015***	0.013***	-0.004*	-0.140***
	(0.002)	(0.007)	(0.035)	(0.002)	(0.002)	(0.002)	(0.002)	(0.032)
Observations	18,521	18,521	12,405	12,405	18,550	18,550	13,677	9,891
R-Squared	0.478	0.415	0.208	0.036	0.421	0.588	0.027	0.194
Residency Requirement	0.017***	0.036***	-0.250***	-0.005	0.022***	0.021***	-0.000	-0.070*
	(0.003)	(0.008)	(0.050)	(0.004)	(0.003)	(0.003)	(0.003)	(0.036)
Res. Requirement*High Fertility Country	-0.008***	-0.019***	0.047	-0.001	-0.010***	-0.012***	-0.004	-0.127***
	(0.003)	(0.007)	(0.042)	(0.003)	(0.003)	(0.002)	(0.003)	(0.027)
High Fertility Country of Origin	0.161***	0.437***	-1.048**	-0.019	0.155***	0.158***	0.004	-2.610
	(0.028)	(0.068)	(0.409)	(0.034)	(0.029)	(0.025)	(0.029)	(3.101)
Observations	18,521	18,521	12,405	12,405	18,550	18,550	13,677	9,891
R-Squared	0.481	0.417	0.209	0.036	0.423	0.589	0.028	0.197
Year of Arrival Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year of Birth Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region of Origin Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effects and Linear Trends	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mean of Dependent Variable	0.670	1.486	22.79	0.121	0.671	0.737	0.0902	19.90

Notes: The table reports reduced form estimates for fertility and marriage choices of female immigrants. The sample is restricted to immigrants from outside the European Union. The dependent variables for fertility choices are whether the immigrant has any child (in column (1)); the number of children born including zero (in column (2)); the age at first birth for immigrants with at least one child (in column (3)); and whether the immigrant is a single mother or not (in column (4)). For marriage choices, the dependent variables are whether the immigrant is currently married (column (5)); has ever been married (column (6)); is divrced (column (7)); and the age when she first got married (column (8)). The top panel shows the baseline estimates for the subsample for which we have valid information on the fertility rates in the country of origin prior to immigration. The bottom panel augments the basic model using fertility rates in the country of origin as a proxy for culture. The variable "High Fertility Country of Origin" is an indicator equal to one if the respective country of origin has fertility rates above the median in the sample for that year; the indicator is zero otherwise. The interaction effect between this indicator and the residency requirement tells us whether longer waiting periods have a differential effect on fertility and marriage choices for immigrants from high fertility countries of origin. All specifications include the same controls as in previous tables. See notes to Tables 3.3 and 3.4 for details. Standard errors are clustered at the age * arrival year level. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1. Sources: Microcensus (2005-2010); Microcensus (1999-2004) for column (8); The World Bank (2016).

for women from high-fertility countries. We see the same pattern for the number of kids (in column (2)). In contrast to the total demand for children, all immigrant women – independently of their cultural background – postpone their first birth by about 1.75 years $(7 * -0.25)$. We find a similar pattern for marriage choices (see the right-hand side of Table 3.8): women from countries with a low fertility rate reduce their marriage rate by 15 percentage points $(7 * 0.022)$ when facing an 8-year rather than a 15-year waiting period (Table 3.8, column (5)). Women from countries with a high fertility rate respond to the same incentive with a decline of only 8 percentage points $(7 * (0.022 - 0.010))$.

To illustrate the social assimilation graphically, Figure 3.2 shows how the total number of children (in the top panel) and the share currently married (in the bottom panel) varies with the residency requirement. We start from the mean number of children (or share currently married) among immigrants from low-fertility countries facing an 8-year waiting period. We then use our estimates (in the bottom panel of Table 3.8, columns (1) and (5)) to calculate how fertility and marriage changes with longer residency requirements. Figure 3.2 illustrates that immigrants from high-fertility countries adapt their fertility and marriage choices less in response to a liberal citizenship policy than immigrants from low-fertility countries; the figure also reveals that the differential response is more pronounced for fertility than for marriage behavior.

One explanation for the slower speed of assimilation is that immigrants from more traditional cultural backgrounds are less likely to naturalize, or benefit less from citizenship in the labor market. To investigate this possibility, Table 3.A.8 reruns the same analysis where the dependent variables are now the propensity to naturalize, the formal education and labor supply of immigrant women. While women from more traditional societies have the same likelihood of naturalizing, they do invest less in formal education and are less likely to work than other immigrant women.

Overall then, cultural values and norms influence fertility and marriage choices through at least two channels: first, there is a direct effect as immigrant women from more traditional source countries have higher marriage rates and fertility rates to start with. Furthermore, they converge more slowly to the marriage and fertility choices of the native population – with the exception of the timing of birth and marriage. This muted response is in part explained by fewer investments in human capital which result in lower opportunity costs of childbearing, for example. The influence of culture implies that sizable differences in marriage and fertility between non-EU immigrant and native women will persist in the long-run.

Our results differ from a recent study by Abramitzky et al. (2016) who find that immigrants from more distant cultures were less likely than other immigrants to use foreign-sounding names in the U.S. during the Age of Mass Migration. Similarly, Manning and Roy (2010) document that immigrants from culturally distant countries

Figure 3.2: Access to Citizenship, Source Country Culture and Assimilation

Cultural Heterogeneity: Number of Children

Cultural Heterogeneity: Married
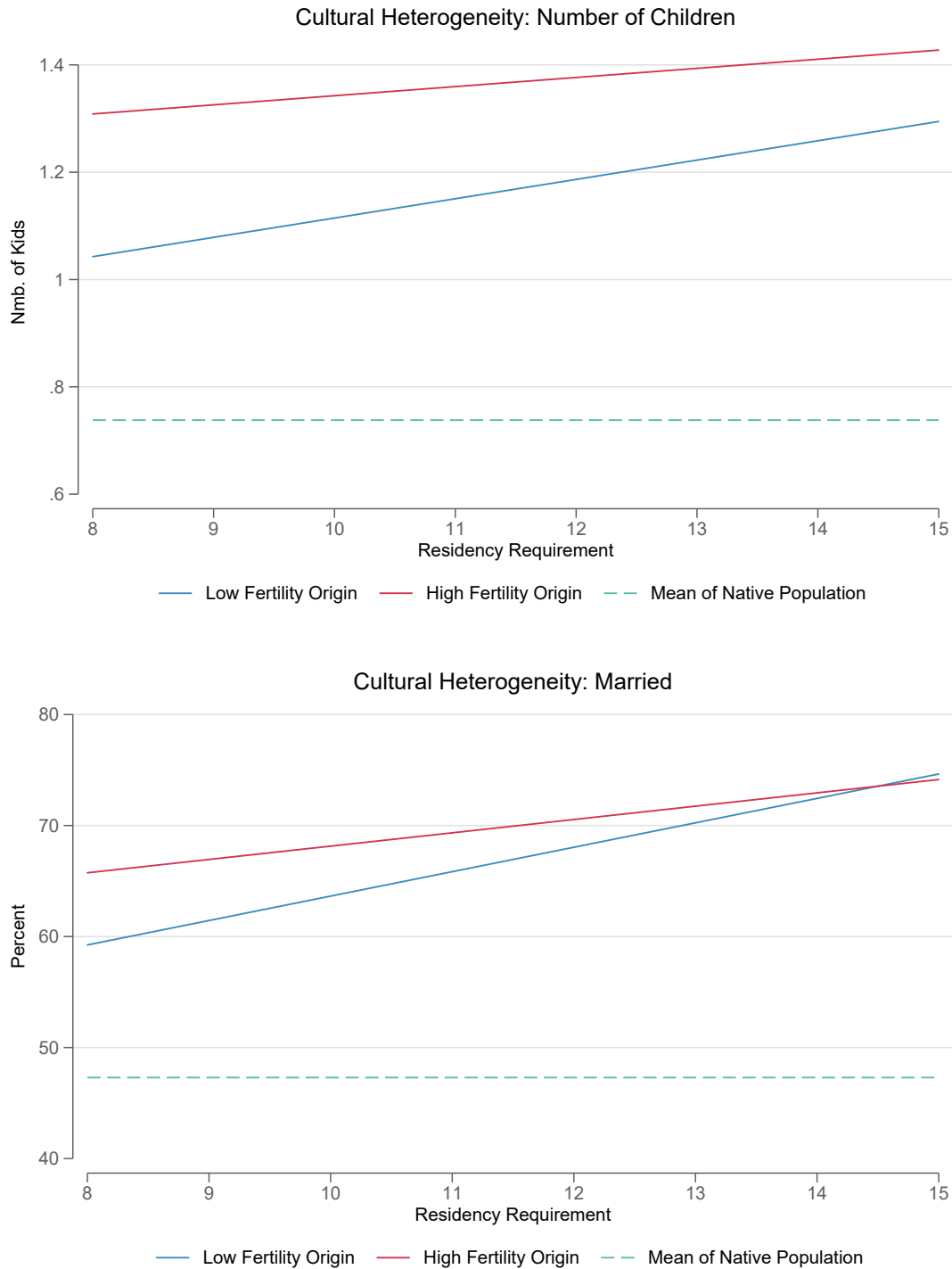
Notes: The figure illustrates the differential effects of residency requirement for immigrant women from low and high fertility countries. The dependent variable in the upper graph is the number of children born including 0; in the bottom graph, the dependent variable is whether an immigrant is currently married. We first use the mean of the dependent variable for natives and immigrants from low fertility countries who face an 8-year residency requirement to define the starting point at 8 years. We then calculate the mean for immigrants from high fertility countries who face an 8-year residency requirement as the sum of the value for immigrants from low fertility countries plus the main effect in Table 3.8. We then use the estimates of the interaction effects in Table 3.8 (column (2) and (5)) to calculate how fertility and marriage behavior changes with a higher residency requirement. See notes to Table 3.8 for details on the sample and the definition of high fertility countries. Source: Microcensus (2005-2010); The World Bank (2016).

are more likely to declare their national identity as British than immigrants from cultures closer to the U.K. There are two potential explanations for these different findings: first, integration is not a uniform process. The subjective identification with the host country or the choice of a name might be easier to change than lifetime decisions about family and children which are heavily influenced by the cultural norms and traditions of one's family and broader community. As such, social assimilation might be much harder to achieve, especially for immigrants who were brought up with very different norms and values. Second, the two studies mentioned analyze the assimilation process more broadly while we focus on how immigrants respond to the option to naturalize in the host country.

3.8 Conclusion

In recent years, Germany which long denied to be an immigration country has ranked second as destination country for immigrants – just behind the United States but before other traditional immigration countries like Australia and Canada. Over the last couple of years, the refugee crisis has brought many more refugees to Germany as asylum seekers. The large stock and sizable inflows of immigrants raise important questions on how to integrate the new members into society economically and socially. Traditionally, Germany, like many other Continental European countries, has had a relatively weak record of integration compared to traditional immigration countries.

Over the past decades, Germany has overhauled most of its immigration and citizenship policy. Starting in 1991, Germany has moved from a country where citizenship was closely tied to ancestry to a more liberal understanding of citizenship and naturalization. To identify how a more liberal citizenship policy affects integration, we exploit variation in residency requirements immigrants faced following the 1991 and 2000 reforms. We find that faster access to citizenship speeds up social assimilation: Immigrant women have fewer children and have their children at a later age. Both men and women are less likely to be married and converge in their age of first marriage to the native population. While immigrants from outside the EU assimilate at a similar speed to the native population, non-EU immigrants from more traditional cultures do assimilate at a slower pace than immigrants from less traditional cultures. Hence, while access to citizenship pulls immigrants in the direction of the native population, the pull factor is not uniform across immigrant groups. As such, sizable differences in social integration outcomes will persist into the next generation.

Our study yields some tentative insights for the recent refugee crisis. Our evidence clearly demonstrates that policies that provide incentives to integrate and feel welcome can speed up integration, even for long-term decisions like fertility and marriage. At the same time, most of the immigrants who came to Germany in the recent wave come

from very different cultural backgrounds with high fertility rates, for instance. Hence, we are likely to see persistent differences in these long-term choices as these immigrants adapt more slowly to the majority culture.

More generally, the findings in this study have important implications for the political debate on citizenship policy. One view, often found in more conservative circles, is that citizenship should be used as a reward the host country bestows on immigrants who are well integrated. In that perspective, access to citizenship should be restricted to those "worthy of naturalization". The polar opposite view builds on the idea that access to citizenship actually boosts integration. In that perspective, a more liberal citizenship policy acts as a motor for integration. Our results are more in line with the latter view that access to citizenship speeds up integration efforts among immigrants. From this perspective, recent proposals in Germany and other European countries to restrict access to citizenship and mandate more integration prior to naturalization seem ill-conceived and are likely to undermine the incentives inherent in a liberal citizenship policy.

Appendix

3.A   Additional Tables

	Female Immigrants		Male Immigrants	
	Mean	Std.Dev.	Mean	Std.Dev.
Having Children	0.623	0.485	0.479	0.500
Total Number of Children (including 0)	1.318	1.306	1.027	1.278
Total Number of Children (if at least 1)	2.114	1.026	2.145	1.006
Age at First Birth	23.343	4.349	26.382	5.027
Single mother	0.138	0.345	0.014	0.116
Currently Married	0.627	0.484	0.545	0.498
Ever Married	0.703	0.457	0.590	0.492
Divorced	0.108	0.310	0.077	0.266
Cohabitating	0.080	0.271	0.103	0.304
Single Household	0.871	0.335	0.882	0.323
Age at First Marriage	20.33	3.764	23.23	4.390
Partner: German	0.191	0.393	0.212	0.409
Partner: Same Origin	0.932	0.251	0.914	0.281
Partner: Same Origin (2nd Generation)	0.079	0.269	0.107	0.309
Partner: Years in Germany	21.874	9.802	17.403	9.379
Partner: Years in Germany at Marriage	6.261	6.402	4.189	5.949
Partner: Age	39.155	8.686	34.343	7.777
Partner: Age Gap	4.396	5.284	-2.361	4.731
Partner: Years of Education	11.862	2.866	11.318	2.767
Partner: Years of Education Gap	0.678	2.618	-0.231	2.626
Share Naturalized	0.348	0.476	0.370	0.483
Years since Naturalized (if naturalized)	10.691	7.176	10.343	7.063
Residency Requirement (in years)	10.757	2.983	11.082	3.014
Years in Germany	18.042	7.915	19.190	7.839
Age	31.676	9.240	31.846	9.754
Low Education	0.506	0.500	0.440	0.496
Medium Education	0.370	0.483	0.423	0.494
High Education	0.061	0.240	0.064	0.245
Region of Origin				
Traditional EU member States (EU-15)	0.122	0.327	0.153	0.360
New EU Member States (EU-12)	0.128	0.334	0.083	0.275
Former Yugoslavia	0.104	0.305	0.106	0.308
Turkey	0.340	0.474	0.330	0.470
Middle East	0.071	0.257	0.097	0.296
Africa	0.040	0.196	0.048	0.213
Asia	0.057	0.233	0.054	0.227
America	0.022	0.147	0.019	0.138
Former Soviet Union (without EU-12)	0.102	0.303	0.093	0.290
Other or No Citizenship	0.014	0.119	0.017	0.128
Observations	29,365		27,303	

Notes: The table reports summary statistics for first-generation immigrants who arrived in Germany between 1976 and 2002 and who were between 0 and 22 years old when they arrived. We exclude ethnic Germans, i.e., immigrants with German ancestry who had faster access to German citizenship than regular immigrants. The residency requirement denotes the number of years an immigrant has to wait before becoming eligible for citizenship in Germany; it varies between 8 and 16 years (see Table 3.1). Low-skilled individuals are those without a highschool degree or vocational degree; medium-skilled are those with a highschool degree or vocational degree; high-skilled are those with a college degree. Sources: Microcensus (1999-2004) for age at first marriage; Microcensus (2005-2010) for all other variables.

Table 3.A.2: Fertility and Marriage Choices of Naturalized Immigrants

Panel A: Fertility Choices	Having Children (1)	No. of Kids (incl. 0) (2)	No. of Kids (if >0) (3)	Age at First Birth (4)	Single Mother (5)
			Immigrant Women		
Naturalized	-0.024***	-0.104***	-0.092***	0.689***	-0.028***
	(0.006)	(0.016)	(0.018)	(0.074)	(0.007)
Observations	29,319	29,319	18,273	18,273	18,273
R-Squared	0.414	0.387	0.175	0.229	0.035

Panel B: Marriage Choices	Currently Married (6)	Ever Married (7)	Divorced (8)	Cohabitation (if partner) (9)	Single Household (10)
			Immigrant Women		
Naturalized	-0.003	-0.007	-0.004	-0.001	-0.001
	(0.006)	(0.005)	(0.005)	(0.005)	(0.008)
Observations	29,362	29,362	20,639	18,997	8,723
R-Squared	0.370	0.528	0.033	0.127	0.127
			Immigrant Men		
Naturalized	0.020***	0.007	-0.021***	-0.015***	-0.006
	(0.005)	(0.005)	(0.005)	(0.005)	(0.007)
Observations	27,298	27,298	16,108	15,897	11,190
R-Squared	0.447	0.540	0.035	0.139	0.134
Linear and Quadratic in Age	Yes	Yes	Yes	Yes	Yes
Linear and Quadratic in YSM	Yes	Yes	Yes	Yes	Yes
Year of Arrival Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year of Birth Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Region of Origin Fixed Effects	Yes	Yes	Yes	Yes	Yes
State Fixed Effects and Linear Trends	Yes	Yes	Yes	Yes	Yes

Notes: The table reports OLS estimates of fertility (Panel A) and marriage choices (Panel B) and whether an immigrant has naturalized. The dependent variables in Panel A are whether a female immigrant has any child (column (1)); the number of children born to the female immigrant including 0 children (column (2)); the number of children conditional on having at least one child (column (3)); the age of the mother at the birth of her first child (column (4)); and whether she is a single mother (column (5)). The dependent variables in Panel B are whether an immigrant is currently married (column (1)), has ever been married (column (2)), is divorced (column (3)), is cohabitating (column (4)) or a single household (column (5)). The main independent variable is an indicator equal to one if the immigrant has been naturalized and zero otherwise. The sample includes all immigrant women who arrived in Germany between 1975 and 2002 and were between 0 and 22 years old when they arrived. We exclude ethnic Germans, i.e., immigrants with German ancestry who had faster access to German citizenship than regular immigrants. Naturalized is an indicator equal to one if the immigrant is naturalized in certain year and zero otherwise. All specifications include in addition year of arrival and year of birth fixed effects, current year and state fixed effects, state-specific linear trends, second-order polynomials in current age and years since migration as well as ten region of origin fixed effects. Standard errors in parentheses are clustered by age ∗ arrival year. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1. Source: Microcensus (2005-2010).

Table 3.A.3: The Correlation between Naturalization and Partner Choice

	Native Partner (1)	Partner from Same Origin (2)	Partner Same Origin, 2nd Generation (3)	Partner's YSM (4)	Gap in Education (in years) (5)	Age Gap between Partners (6)	Personal Income of Partner (7)
Panel A: Immigrant Women							
Naturalized	0.043***	-0.003	-0.016***	-1.359***	-0.044	-0.502***	141.910***
	(0.006)	(0.005)	(0.005)	(0.170)	(0.049)	(0.091)	(20.369)
Observations	18,493	14,683	13,688	13,931	18,188	18,493	18,493
R-Squared	0.237	0.118	0.103	0.455	0.032	0.101	0.064
Panel B: Immigrant Men							
Naturalized	0.032***	-0.016***	-0.010	-0.184	-0.094*	-0.215**	23.297*
	(0.007)	(0.006)	(0.006)	(0.179)	(0.049)	(0.093)	(11.964)
Observations	15,367	11,963	10,932	10,921	15,124	15,367	15,367
R-Squared	0.187	0.101	0.123	0.337	0.038	0.085	0.097
Year of Arrival Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year of Birth Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region of Origin Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effects and Linear Trends	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The table reports OLS estimates of the relationship between being naturalized and the characteristics of partners or spouses. Results in Panel A are for the partners of immigrant women, those in Panel B for the partners of immigrant men. The sample includes both married and cohabitating couples where one partner is eligible for citizenship. The dependent variables are whether an immigrant has a native partner or spouse (column (1)); whether the partner or spouse comes from the same region of origin (column (2)); whether the partner or spouse is a second generation immigrant from the same region of origin (column (3)); the number of years an immigrant partner or spouse has lived in the host country (column (4)); the gap in years of education between partners or spouses (column (5)); the age gap between partners or spouses (column (6)); and the personal income (including non-workers) of the partner or spouse (column (7)). The sample includes all immigrant women who arrived in Germany between 1975 and 2002 and were between 0 and 22 years old when they arrived. We exclude ethnic Germans, i.e., immigrants with German ancestry who had faster access to German citizenship than regular immigrants. Naturalized is a binary indicator equal to one if a migrant is naturalized in the current year and zero otherwise. All specifications include in addition year of arrival and year of birth fixed effects, current year and state fixed effects, state-specific linear trends and ten region of origin fixed effects. Standard errors in parentheses are clustered by age ∗ arrival year. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1. Source: Microcensus (2005-2010).

Table 3.A.4: Functional Form Assumptions

	Different Polynomials of Years in Germany				Different Polynomials of Current Age			
	Linear (1)	Quadratic (2)	Cubic (3)	Quartic (4)	Linear (5)	Quadratic (6)	Cubic (7)	Quartic (8)
	Having Kids							
Residency Requirement (in years)	0.005***	0.005***	0.005***	0.005***	0.005***	0.005***	0.006***	0.006***
(N=29,319)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
R-Squared	0.414	0.414	0.414	0.414	0.412	0.414	0.416	0.417
AIC	25279	25280	25280	25278	25387	25280	25186	25146
	Number of Kids (incl. 0)							
Residency Requirement (in years)	0.011**	0.011**	0.011**	0.011**	0.011**	0.011**	0.011**	0.011**
(N=29,319)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
R-Squared	0.386	0.386	0.386	0.387	0.385	0.386	0.389	0.391
AIC	84801	84777	84776	84775	84823	84779	84633	84585
	Age at First Birth							
Residency Requirement (in years)	-0.181***	-0.184***	-0.183***	-0.183***	-0.182***	-0.184***	-0.186***	-0.185***
(N=18,273)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)
R-Squared	0.226	0.227	0.227	0.228	0.227	0.227	0.228	0.229
AIC	101112	101090	101095	101071	101099	101092	101061	101053
	Currently Married							
Residency Requirement (in years)	0.010***	0.010***	0.010***	0.010***	0.010***	0.010***	0.010***	0.010***
(N=29,362)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
R-Squared	0.370	0.371	0.371	0.371	0.369	0.371	0.371	0.372
AIC	27305	27298	27300	27303	27386	27300	27302	27227
	Ever Married							
Residency Requirement (in years)	0.010***	0.010***	0.010***	0.010***	0.010***	0.010***	0.010***	0.010***
(N=29,362)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
R-Squared	0.528	0.528	0.528	0.528	0.527	0.528	0.529	0.530
AIC	15496	15495	15499	15501	15585	15497	15492	15381
	Age at First Marriage							
Residency Requirement (in years)	-0.130***	-0.132***	-0.131***	-0.131***	-0.129***	-0.132***	-0.132***	-0.132***
(N=14,312)	(0.032)	(0.032)	(0.032)	(0.032)	(0.032)	(0.032)	(0.032)	(0.032)
R-Squared	0.191	0.191	0.192	0.192	0.190	0.191	0.191	0.191
AIC	75734	75731	75723	75727	75751	75733	75729	75732

Notes: The table reports alternative specifications of the reduced-form estimates for immigrant women. The dependent variables are fertility choices (having kids, number of children and age at first birth) and family formation (whether an immigrant is currently married, has ever been married and the age at first marriage). The first four specifications (columns (1)-(4)) include different polynomials in years since migration. Columns (5)-(8) include different polynomials for current age. The sample includes all immigrant women who arrived in Germany between 1975 and 2002 and were between 0 and 22 years old when they arrived. We exclude ethnic Germans, i.e., immigrants with German ancestry who had faster access to German citizenship than regular immigrants. The residency requirement denotes the number of years an immigrant has to wait before becoming eligible for citizenship in Germany; it varies between 8 and 16 years (see Table 3.1). All specifications include in addition year of arrival and year of birth fixed effects, current year and state fixed effects, state-specific linear trends, second-order polynomials in current age and years since migration as well as ten region of origin fixed effects. Standard errors in parentheses are clustered by age * arrival year. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1. Sources: Microcensus (2005-2010); Microcensus (1999-2004) for age at first marriage.

Table 3.A.5: Identifying Assumption and Alternative Interpretations

Sample: Immigrant Women	Arrival ∗ Birth Cohort FE		Age of Arrival Effects		Impressionable Years
	Arrival ∗ 10-Year Birth Cohort FE (1)	Arrival ∗ 5-Year Birth Cohort FE (2)	Before Age 11 (3)	Drop Arrival Age < 8 (4)	Drop Arrival Age > 14 (5)
			Having Kids		
Residency Requirement (in years)	0.005***	0.008***	0.002	0.007**	0.024***
	(0.002)	(0.002)	(0.002)	(0.003)	(0.004)
Observations	29,319	26,386	29,319	23,018	12,730
R-Squared	0.414	0.424	0.415	0.302	0.482
			Number of Children (including 0)		
Residency Requirement (in years)	0.011**	0.019***	0.003	0.040***	0.041***
	(0.005)	(0.006)	(0.005)	(0.011)	(0.008)
Observations	29,319	26,386	29,319	23,018	12,730
R-Squared	0.386	0.384	0.388	0.316	0.455
			Age at First Birth		
Residency Requirement (in years)	-0.184***	-0.301***	-0.170***	-0.408***	-0.031
	(0.029)	(0.033)	(0.028)	(0.042)	(0.058)
Observations	18,273	16,838	18,273	16,416	5,330
R-Squared	0.227	0.223	0.230	0.235	0.178
			Currently Married		
Residency Requirement (in years)	0.010***	0.008***	0.009***	0.001	0.017***
	(0.002)	(0.002)	(0.002)	(0.003)	(0.004)
Observations	29,362	26,419	29,362	23,056	12,745
R-Squared	0.371	0.373	0.371	0.252	0.415
			Ever Married		
Residency Requirement (in years)	0.010***	0.009***	0.009***	-0.002	0.020***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.004)
Observations	29,362	26,419	29,362	23,056	12,745
R-Squared	0.528	0.536	0.529	0.407	0.519
			Age at First Marriage		
Residency Requirement (in years)	-0.132***	-0.289***	-0.114***	-0.361***	-0.104
	(0.032)	(0.035)	(0.032)	(0.040)	(0.064)
Observations	14,312	13,921	14,312	13,539	3,087
R squared	0.191	0.196	0.199	0.200	0.189

Notes: The table reports alternative specifications of the reduced-form estimates for immigrant women: columns (1) and (2) include separate 10- or 5-year birth cohort fixed effects for each arrival cohort respectively. Column (3) adds an indicator for immigrants who migrated before age 11; column (4) drops all immigrants arriving before age 8. Column (5) drops all immigrants who arrived at age 15 or later. The dependent variables are fertility choices and family formation (see Table 3.3 and 3.4 for details). The sample includes all immigrants who arrived between 1976 and 2002 and who were between 0 and 22 years-old when they arrived. All specifications include in addition year of arrival and year of birth fixed effects, current year and state fixed effects, state-specific linear trends, second-order polynomials in current age and years since migration as well as ten region of origin fixed effects. Standard errors in parentheses are clustered by age ∗ arrival year. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1. Sources: Microcensus (2005-2010); Microcensus (1999-2004) for age at first marriage.

Table 3.A.6: Evolution of Pre-Determined Characteristics and Lee Bounds on Average Treatment Effect

Panel A: Evolution of Pre-Determined Characteristica

Arrival Cohort	Mean Age 2005 (1)	2010 (2)	T-Statistic (3)	Turkey 2005 (4)	2010 (5)	T-Statistic (6)	Ex-Yugoslavia 2005 (7)	2010 (8)	T-Statistic (9)	EU-15 Member States 2005 (10)	2010 (11)	T-Statistic (12)
Immigrant Women												
1975-1979	39.87	44.60	0.72	0.59	0.56	1.14	0.07	0.10	-2.01	0.18	0.18	0.13
1980-1984	36.25	41.71	-1.13	0.47	0.45	0.53	0.05	0.08	-1.48	0.19	0.17	0.88
1985-1989	30.35	35.25	0.30	0.40	0.37	1.08	0.05	0.10	-3.44	0.17	0.13	2.29
1990-1994	26.39	31.17	0.73	0.31	0.26	2.59	0.14	0.25	-6.52	0.12	0.08	3.52
1995-1999	23.29	27.91	1.30	0.26	0.25	0.38	0.05	0.12	-5.12	0.10	0.09	1.14
Immigrant Men												
1975-1979	39.43	43.76	2.00	0.60	0.56	1.46	0.03	0.05	-2.49	0.23	0.21	0.90
1980-1984	36.83	41.38	1.22	0.49	0.52	-1.04	0.03	0.05	-1.77	0.19	0.17	0.97
1985-1989	29.66	34.20	1.20	0.33	0.28	1.92	0.07	0.10	-2.65	0.17	0.17	-0.02
1990-1994	25.70	30.19	1.59	0.27	0.20	3.98	0.15	0.29	-7.18	0.13	0.11	1.76
1995-1999	22.16	26.43	2.10	0.21	0.20	0.75	0.05	0.16	-6.71	0.14	0.10	2.27

Panel B: Lee Bounds on Average Treatment Effect

	Baseline Binary Treatment Coefficient	Std. Error	3% Trimming Margin Lower bound	Upper bound	Lower bound	Upper bound	5% Trimming Margin Lower bound	Upper bound	Lower bound	Upper bound
Age at First Marriage	1.209***	(0.164)	0.081	0.459***	0.197**	0.550***	-0.034	0.547***	0.398***	0.966***
			(0.073)	(0.073)	(0.086)	(0.082)	(0.073)	(0.074)	(0.136)	(0.141)
Age at First Birth	0.925***	(0.152)	-0.069	0.393***	0.213**	0.684***	-0.137*	0.612***	0.068	0.800***
			(0.069)	(0.069)	(0.111)	(0.116)	(0.071)	(0.076)	(0.115)	(0.115)

Notes: Panel A compares several characteristics of 5-year arrival cohorts in 2005 and 2010: mean age (columns (1)-(2)); the share of immigrants from Turkey (columns (4)-(5)); the share from successor states of Yugoslavia (columns (7)-(8)); and the share from the traditional 15 EU member states (column (10)-(11)). The T-statistic in column (3) is for the hypothesis that the mean age in 2005 plus 5 is equal to the mean age in 2010. The T-statistic in columns (6), (9) and (12) are for the hypotheses that the share of immigrants from the source countries shown in the top row are equal in 2005 and 2010. The first set of results are for immigrant women, the second set of results for immigrant men. Panel B shows bounds on the treatment effect following Lee (2009). The binary treatment variable is equal to one if an immigrant faces an 8-year residency requirement; and zero if an immigrant faces a longer residency requirement. Columns (1)-(2) re-estimates equation (3.1) using the binary treatment variable. Columns (4)-(7) estimate the lower and upper bound on the average treatment effect under the assumption that immigrants in the treatment group are 3% less likely to return. Trimming the outcome variable for the treatment group from above, we obtain the lower bound; trimming the outcome variable at the bottom, we obtain the upper bound. Columns (4)-(5) calculates the raw bounds, columns (6)-(7) uses an indicator for a long residence in Germany (more than 15 years) and region of origin dummies to tighten the bounds. In columns (9)-(12), we use the same bounds approach under the alternative assumption that the treated group is 5% less likely to return. All estimates in Panel B include the same control variables as in the main tables. Standard errors are bootstrappend with 50 replications. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1. Sources: Microcensus (2005-2010); Microcensus (1999-2004) for age at first marriage in Panel B.

Table 3.A.7: Alternative Samples

	Fertility Choices			Family Formation	
	Having Kids (1)	No. of Kids (incl. 0) (2)	Age at 1st Birth (3)	Currently Married (4)	Ever Married (5)
Drop Arrival Cohorts 1996-2002	0.003 (0.002)	0.011 (0.007)	-0.202*** (0.030)	0.004* (0.002)	0.005** (0.002)
Drop Former Yugoslavia and Middle East	0.003 (0.002)	0.001 (0.006)	-0.227*** (0.031)	0.008*** (0.002)	0.009*** (0.002)
Drop All Ethnic Germans	0.006*** (0.002)	0.011* (0.006)	-0.178*** (0.034)	0.009*** (0.002)	0.011*** (0.002)
Drop Immigrants with German Partner	0.010*** (0.002)	0.021*** (0.006)	-0.165*** (0.038)	0.020*** (0.002)	0.019*** (0.002)
Control for Children in Household (2000 Reform)	0.007*** (0.001)	0.005 (0.004)	-0.187*** (0.026)	0.010*** (0.002)	0.011*** (0.002)
Households with Children 15+ (2000 Reform)	0.006*** (0.002)	0.008 (0.008)	-0.102*** (0.034)	0.007*** (0.003)	0.008*** (0.002)
Year of Arrival Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year of Birth Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Region of Origin Fixed Effects	Yes	Yes	Yes	Yes	Yes
State Fixed Effects	Yes	Yes	Yes	Yes	Yes
State-specific Linear Trends	Yes	Yes	Yes	Yes	Yes

Notes: The table reports reduced-form estimates where the dependent variables are fertility choices (columns (1)-(3)) and family formation (columns (4)-(5)). The key independent variable is the residency requirement for naturalization. The first row drops all immigrants arriving in the country after 1995; the second row drops all immigrants from former Yugoslavia and the Middle East which formed the largest group of refugees over the period; and the third row uses the 2007-2010 Microcensus where we can directly identify (and drop) ethnic Germans who are not affected by the citizenship reforms. The fourth row drops immigrants with a native spouse in 2005-10; the fifth row includes controls for the number and age structure of children in the household; and the sixth row drops immigrants with children under 15 who might have been affected by birthright citizenship for all children born on or after January 1, 2000. See notes to previous tables for the definition of the sample. All specifications include the same individual characteristics as before (year of arrival, year of birth and calender time fixed effects, second-order polynomials of current age and years since migration), state fixed effects, state-specific linear time trends and ten region of origin fixed effects. Standard errors in parentheses are clustered by age * arrival year. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1. Source: Microcensus (2005-2010).

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Table 3.A.8: The Effect of Source Country Culture on Naturalization, Income and Education

Sample: Immigrant Women	Naturalized (1)	Employed (2)	Log Personal Income (3)	Low-Skilled (4)	Medium-Skilled (5)	High-Skilled (6)
Residency Requirement	-0.019***	-0.006**	-0.014***	0.008**	-0.009***	0.004***
	(0.002)	(0.003)	(0.005)	(0.004)	(0.003)	(0.001)
Observations	18,551	18,551	11,881	18,495	18,495	18,495
R-Squared	0.244	0.102	0.141	0.208	0.192	0.063
Residency Requirement	-0.019***	-0.009**	-0.015**	0.023***	-0.020***	-0.000
	(0.003)	(0.004)	(0.007)	(0.004)	(0.004)	(0.001)
Res. Requirement*High Fertility Country	-0.000	0.004	0.001	-0.020***	0.015***	0.005***
	(0.003)	(0.003)	(0.006)	(0.003)	(0.003)	(0.001)
High Fertility Country of Origin	0.142***	-0.052	-0.118*	0.313***	-0.189***	-0.110***
	(0.028)	(0.036)	(0.062)	(0.036)	(0.034)	(0.016)
Observations	18,551	18,551	11,881	18,495	18,495	18,495
R-Squared	0.249	0.102	0.142	0.214	0.194	0.069
Year of Arrival Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year of Birth Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Region of Origin Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effects and Linear Trends	Yes	Yes	Yes	Yes	Yes	Yes
Mean of Dependent Variable	0.359	0.415	6.341	0.587	0.313	0.0373

Notes: The sample is restricted to immigrant women who originate from outside the European Union. The dependent variables are: whether the immigrant has naturalized (column (1)); the personal income (in logs) (column (2)); whether an immigrant is low-skilled with no vocational or high school degree (column (3)); whether she is medium-skilled with a high school or vocational degree (column (4)); or whether she is high-skilled with a tertiary degree (column (5)). The top panel shows the baseline estimates for the subsample for which we have valid information on the fertility rates in the country of origin prior to immigration. The bottom panel augments the basic model using fertility rates in the country of origin as a proxy for culture. The variable "High Fertility Country of Origin" is an indicator equal to one if the respective country of origin has fertility rates above the median in the sample for that year; the indicator is zero otherwise. The interaction effect between this indicator and the residency requirement tells us whether longer waiting periods have a differential effect on outcomes for immigrants from high fertility countries of origin. All specifications include the same controls as in previous tables. See notes to Tables 3.3 or 3.4 for details. Standard errors are clustered at the age $*$ arrival year level. Statistical significance: *** $p<0.01$, ** $p<0.05$, * $p<0.1$. Sources: Microcensus (2005-2010); The World Bank (2016).

Chapter 4

The Labor Market Assimilation of Immigrants in Germany

4.1   Introduction

Immigration is one of the most important and most contentious policy issues in Europe today. From the perceived lack of economic, political and cultural assimilation to the fear of generous European welfare states being magnets for unemployed or non-employed immigrants to the recent refugee crisis of 2015, the question of how immigrants fare in the host countries has been at the limelight of the public debate.

In Europe, Germany is an especially interesting case to study the labor market integration of immigrants. Until recently, Germany did not define or consider itself an immigration country. While Germany invited large numbers of guest workers in the 1960s and early 1970s to supply its booming manufacturing sector with low-skilled labor, these immigrants were considered temporary. As such, there was little interest in learning about their labor market performance or other dimensions of assimilation at the time. And while some returned in the 1970s, many guest workers stayed and settled in Germany with their families. New waves of immigrants arrived in Germany when the Iron Curtain started to get lifted in the late 1980s. Figure 4.A.1 shows the sizable immigration flows into Germany from the late 1980s to around 1995. After a period of small net migration between 1996 and 2008, net migration has been rising since 2010.

As a result of the sizable immigration flows, in 2017, 15% of the German population is foreign-born, a number comparable to the share of foreign-born in traditional immigrant countries such as Australia, Canada or the United States (United Nations Population Division, 2018). The composition of immigrants arriving in Germany has also been changing substantially over time. The early waves of guest workers mostly

came from Turkey, Italy, Greece and some North African states. Figure 4.A.2 shows the share of immigrants arriving in Germany from different regions of origin between 1992 and 2014. In the 1990s, a sizable share of immigrant inflows originated from the former Soviet Union and former Yugoslavia and Albania. Since the early 2000s, the largest group of immigrants coming to Germany have been from the recent accession countries in Central and Eastern Europe.

Given the observed changes in the countries of origin, one might expect that this translated into shifts in the level of skill immigrants bring to the German labor market. Table 4.1 indeed suggests that arrival cohorts have become much more skilled over time: among immigrants arriving in Germany between 1985 and 1990, one-third of men and almost half of the women were low-skilled; less than 20% of men and 15% of women had a college or university degree. The picture looks completely different for the 2005-2010 arrival cohort: here, only one-fifth of men and one-fourth of women have low education, while more than one-third have a tertiary education. Hence, Germany has been able to attract many more high-skilled immigrants over time, doubling the share of immigrants with a tertiary education.

Yet, we know surprisingly little about the labor market assimilation of immigrants in Germany.[1] Most of the public scrutiny has focused on asylum seekers who arrived in large numbers in 2015 and 2016. How the broader group of immigrants who arrived to Germany under a variety of circumstances and programs fare in the labor market has received much less public attention. This lack of knowledge translates into disagreements about the type of immigration policy that should be pursued: should Germany impose a point system as in Canada favoring high-skilled immigration or should it also welcome low-skilled workers to ease the pressure of demographic aging?

This paper revisits the economic assimilation of immigrants in Germany over the past three decades, from 1975 to 2010. Most of the existing evidence uses the Socio-Economic Panel (SOEP) and concludes that earnings of immigrants do not assimilate to those of German natives over time despite large earnings differentials upon arrival (e.g., Dustmann, 1993; Pischke, 1992; Licht and Steiner, 1993; Schmidt, 1997; Bauer et al., 2005). Constant and Massey (2005) and Fertig and Schurer (2007) in contrast, report some assimilation in wages based on the same dataset.

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[1]There is, in contrast, a large literature that analyzes the assimilation of immigrants in traditional immigration countries. Using cross-sectional data, the early literature on assimilation generally draws a rather positive picture of the wage growth of immigrants in the United States, since immigrants are found to catch up to and ultimately to outperform natives on (Chiswick, 1978; LaLonde and Topel, 1992). More recent analyses based on repeated cross-sectional and longitudinal data have shown that the existing evidence paints an overly optimistic picture of the assimilation process. Changes in cohort quality or selective return or transitory migration may have lead to an overestimation of the convergence process (e.g., Borjas, 1985, 1995; LaLonde and Topel, 1992; Duleep and Regets, 1999; Hu, 2000; Lubotsky, 2007; Abramitzky et al., 2012; Dustmann and Görlach, 2015). While most studies agree that there is some convergence in wages in the US labor market, the degree and speed of convergence to natives remains a topic of intense scholarly debate (e.g., Card, 2005).

Table 4.1: Education of Arrival Cohorts after Immigration

Year of Arrival Cohort	Men			Women		
	Low Education	Medium Education	High Education	Low Education	Medium Education	High Education
1985-1989 (in 1991)	34.15	47.60	18.25	46.00	39.24	14.75
1990-1994 (in 1995)	33.26	49.86	16.88	44.26	39.28	16.47
1994-1999 (in 2000)	32.30	47.29	20.22	36.84	43.37	19.79
2000-2004 (in 2005)	29.49	45.20	25.30	33.28	45.00	21.71
2005-2010 (in 2010)	21.40	42.55	36.05	26.02	39.31	34.67

Notes: The table illustrates the change in cohort quality over time. It shows the level of education of different immigrant cohorts directly after migration. The education variables are binary indicators equal to one if an immigrant is low skilled (has no high school or vocational degree), medium-skilled (has a high school degree or vocational degree), or high-skilled (has a university or college degree). The percentage shares are calculated separately for the arrival cohorts 1985-1989, 1990-1994, 1995-1999, 2000-2004, and 2005-2009, with data from the Microcensus in 1991, 1995, 2000, 2005, and 2010, respectively. The different samples are restricted to immigrants who migrated in a particular arrival cohort at age 20 or older, who are between 20 and 60 years-old at the time of the survey.

We instead employ a new dataset of longitudinal earnings histories from social security records merged with household survey data. The household data PASS has surveyed individuals annually since 2006. We use the first five waves from 2006 to 2011, which have been linked to the social security records of participating individuals. The survey oversamples individuals in benefit units (where at least one household member receives welfare transfers) and households living in low-status areas. The survey interviews all members of a household, irrespective of whether they receive benefits, and follows individuals even if they move out of the original household or out of a low-status area. While the household sample earns lower wages than the average worker in a social security job, immigrants in the household sample are actually quite similar to the average immigrants in Germany. We devote some effort to show that the characteristics of immigrants and earnings in our sample and a large representative data, the Microcensus, are comparable. These patterns suggest that our data are a valuable alternative data source to study the progress of immigrants in the German labor market.

From the household survey, we obtain two pieces of information that are key for the study of immigrant assimilation: the year of immigration and the country of birth. Both variables are typically not measured reliably in social security data. Instead, social security records contain the date of the first job subject to social security contributions and current citizenship. The year of entering the social security system might be different from the year of immigration reported in survey data for two reasons: many immigrants initially work in jobs outside the social security system, such as helping in a family business or as self-employed. In that case, the actual immigration year will be earlier than the first entry in the social security records. Yet, the opposite scenario is also possible: an immigrant might have entered the country as a temporary migrant, for example as a seasonal worker, and worked in a social security job before immigration.

In that case, the actual year when an immigrant came to Germany to stay might occur after the first job recorded in the social security records (see Lubotsky, 2007, for a related discussion).[2]

There are also reasons to believe that current citizenship is likely to misclassify many immigrants as natives. If there is positive selection into naturalizing (see Gathmann and Keller, 2017, for empirical evidence for Germany), foreigners identified by current citizenship become an increasingly negatively selected sample over time. As a consequence, we would underestimate the progress of first-generation immigrants, whether naturalized or not, in the German labor market.[3]

Using the actual year of immigration and place of birth to identify first-generation immigrants, we show that the common perception that there is little assimilation is not an accurate picture of the current labor market performance of immigrants in Germany. We find that both immigrant men and women catch up with natives in terms of employment rates; mirroring the relative employment growth of immigrants, we also observe a substantial decline in unemployment rates of immigrants with time spent in the country. Because of the sizable changes along the employment margin, we compare the characteristics of immigrants entering the labor market to the average working immigrant. For men, entrants have lower observable and unobservable skills, which suggests that the estimation of wage assimilation is likely to be biased downward. For women, we observe few selection effects as entrants into the labor market look quite similar to the average female immigrant worker.

We consider alternative methods to account for the selection into employment: our first approach uses the bounds approach proposed by Lee (2009); a second approach imputes missing wages exploiting the panel structure of the data; a third approach uses observable characteristics to predict missing wages; a final method assumes that all non-workers would have earned wages below the median wage of workers (Johnson et al., 2000; Neal, 2004; Olivetti and Petrongolo, 2008). Our imputation methods show that negative selection into employment results in a downward bias in wage assimilation, especially among men. After correcting for the type of selection, we observe sizable wage assimilation for both immigrant men and women.

The sizable assimilation in employment and wages we observe is robust to alternative specifications, such as controlling for educational attainment, allowing for separate experience profiles for immigrants and natives, or controlling for local unemployment rates (Bratsberg et al., 2006). In addition, assimilation is faster for immigrants from outside the European Union who also face much higher barriers to transfer their skills

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[2]Almost one in two immigrants (46%) entered social security records after the reported year of migration. On the contrary, about 7% of worked in a social security job before the reported year of migration.

[3]Based on the information on citizenship in the social security records, we misclassify almost one in three immigrants (30%).

like educational credentials, for instance. The only exception are male immigrants from Turkey, since they are not found to assimilate with respect to employment or wages. Furthermore, we observe employment and wage assimilation for immigrants arriving prior as well as those arriving after 1990 suggesting that our results cannot be explained by changes in the sample of immigrants residing in Germany alone.

In a final step, we use the depth of our linked dataset to explore several potential channels for the observed wage assimilation in Germany. First, we assess whether immigrants use job changes to improve their relative position in the labor market. Upon arrival, immigrants who typically lack the necessary networks and information to find jobs that fit their skills and experience, often downgrade in the labor market initially. We report evidence that immigrants initially are much more likely to switch occupations and industries than natives; immigrants also switch jobs more frequently compared to natives. Over time, all types of job mobility declines with the decline being most pronounced for occupational and industry mobility. These patterns are consistent with a job search strategy where immigrants first search over occupations and industries, and only then for the best firm match within an occupation or industry – suggesting that occupation- and industry-specific human capital are more valuable than firm-specific human capital (Neal, 1999; Pavan, 2011).

A second channel for relative improvements in wages is that immigrants find jobs in better-paying firms over time. A recent literature has stressed the role of firms in the determination of wages and their contribution to wage differentials across workers (e.g., Card et al., 2013, 2018). A few studies establish that immigrants are more likely to be employed in low-paying firms and low-paying positions within firms (Pendakur and Woodcock, 2010; Barth et al., 2012; Bossler, 2014). We show that immigrants initially work in smaller firms, which tend to pay lower wages. Over time, they sort into larger firms, especially immigrant men. In addition, immigrants are initially much more likely to be employed in firms with a low share of Germans and a high share of their own region of origin pointing to the importance of job referrals through ethnic networks for recent arrivals (Dustmann et al., 2016). Our results indicate that immigrants rely less on these ethnic networks over time.

The paper proceeds as follows. The next section introduces our data sources and compares our sample of immigrants to a 1% random sample of the total population. Section 4.3 provides evidence on the assimilation of immigrant men and women in the German labor market. We further document that selection along the employment margin is important for understanding the observed assimilation patterns. In Section 4.4, we then analyze occupational upgrading and the role of the firm as possible explanations for wage assimilation. We conclude with a discussion of our findings in Section 4.5.

4.2 Data Sources and Empirical Strategy

4.2.1 Social Security Records Linked to Household Survey Data

Our analysis builds on new longitudinal earnings data from social security records matched to information on year of arrival and place of birth from a large household survey. Respondents in the first five waves of the "Labour Market and Social Security" (PASS) survey have been matched to their social security records spanning more than three decades, from 1975 to 2010.

The first wave of the PASS survey was conducted in 2006 and then repeated annually until 2011. The PASS survey consists of two subsamples: the first one is a random sample of benefit units in which at least one person has received welfare benefits (Arbeitslosengeld II) on the reference date. All members of the household are interviewed irrespective of whether they receive any benefits or not. The second random sample is drawn from the universe of zip codes but oversamples households from zip codes with low socio-economic status.[4] For both samples, all household members are interviewed and followed if they move out of a PASS household. Later waves include refreshment samples of about 1,000 households to keep up the sample size (Trappmann et al., 2013).

The fact that PASS survey oversamples individuals who have been unemployed or living in a low-income area in one of the survey years might cast doubt whether our results are representative of the immigrant population. We investigate this question more systematically in the next subsection demonstrating that the immigrants interviewed in the survey are broadly representative of the immigrant population in Germany.

The household survey reports the country of birth for each individual, which we use to identify first-generation immigrants. These immigrants might have come to Germany as guest workers, ethnic Germans, non-EU immigrants or EU immigrants making use of the freedom of movement.[5] The sample includes all first-generation immigrants who arrived in Germany between 1975 and 2010 and were at least 20 years of age upon arrival. We thus exclude immigrants who arrived in the country as children, as they are likely to assimilate faster, especially if they obtain some or all of their education and training in Germany. The first-generation immigrants in our sample may or may not be German citizens at the time they participate in the household survey.

Furthermore, the household survey asks about the year of arrival in the country. As in most surveys, the immigrant is asked: "When did you move to Germany to live here? Please provide the exact month and year." For immigrants who did not work initially

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[4]Socio-economic status uses information on unemployment, income, the types of cars, educational attainment and prevalence of high-status occupations to construct a measure of low, medium and high status areas, from which the sample is drawn at a ratio of 4:2:1.

[5]Ethnic Germans arrived from Eastern Europe and the former Soviet Union since the late 1980s. If they could demonstrate some German ancestry, they had access to German citizenship within three years of arrival.

or whose first job is to help in the family business or being self-employed (or other jobs outside the social security system), the year of arrival in Germany will precede the year of entry into a social security job.

The opposite is true for back-and-forth migrants. Immigrants who made multiple trips to Germany, such as seasonal workers in agriculture or the tourism industry, are likely to answer with the date of their most recent arrival rather than their initial arrival. For them, their actual year of entry in the social security system might therefore precede their year of immigration reported in the household survey. A comparison of the year of immigration (from the household survey) and the year of entry into a social security job (from the administrative records) in Table 4.B.1 reveals that 46.3% of the sample has immigrated to Germany before entering the social security records. In contrast, back-and-forth migrants with date of entry in the social security system prior to reported date of arrival make up only 6.7% of our sample.[6] The two pieces of information coincide for less than half of our sample (47% of our sample). In the empirical analysis below, we use the minimum of the year of immigration from the PASS and the year of first entry in the social security records. As comparison, we also report results for a variable based only on the information of immigration year from the household survey.[7]

The respondents in the household survey are matched to their social security records using record linkage techniques. Over the first five waves, 79% of respondents agreed to having their records matched (Antoni and Bethmann, 2014). Among those, 92% of records could be matched resulting in an overall record linkage rate of 73.4%.[8] An analysis of the determinants of record linkage reveals that first-generation immigrants and individuals with missing socio-demographic information are more likely to refuse the linkage of their information to the administrative data. Yet, when we regress log wages on the survey information for the full sample of respondents and the sample of

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[6]These numbers are quite similar for men and women. Men are about 2 percentage points more likely to be a back-and-forth immigrant than women. Women in turn are 1.2 percentage points more likely than men to have worked in a job outside the social security system prior to showing up in the social security records.

[7]Table 4.B.2 reports the results for all three measures of years since migration to estimate wage assimilation. Using the year of immigration from the household survey ("YSM: PASS"), using the year of entry into the social security records ('YSM: IEB") or using the minimum of the two ("YSM: Both"), we find very different results if we use the year of entry into a social security job only. The reason is that the entry into the administrative data typically occurs later than the year of immigration. As a result, we underestimate the initial earnings gap and overestimate the speed of assimilation (as shown in columns (2) and (5) of Table 4.B.2).

[8]For part of the sample, households could be matched using a unique administrative id. Individuals within the household were then matched based on names and dates of birth. For the remaining individuals, a probabilistic record linkage approach based on name, date of birth, gender and the full address was employed. The overall matching rate is slightly lower than the matching rate of 84-91% reported in Lubotsky (2007) based on similar data, for two reasons: first, record linkage in the U.S. data could employ a unique social security number available in both data sources. Second, the social security records in the U.S. cover around 95% of employees including a sizable share of self-employed.

respondents with valid record linkage, this yields no significant differences (see Beste, 2011, for details).

The administrative data comprise the complete employment and earnings histories of all workers covered by the social security system; the administrative records do not include the self-employed, civil servants and military personnel.[9] We observe for each individual whether she is employed within the social security system or whether she collects unemployment benefits as of June 30th each year. Our employment variable is equal to one if a respondent is employed within the social security system or not; the variable is zero if a person is unemployed, non-employed or working outside the social security system. The unemployment variable is equal to one if a person collects unemployment benefits as of June 30th in a given year; the variable is zero if the person is employed or not covered by social security records.

The wage variable records the average daily wage (in logs) for the employment spell that contains the reference date of June 30.[10] Like most social security data, our wage variable is right-censored at the social security limit. We impute censored wages under the assumption that the error term in the wage regression is normally distributed, allowing for separate variances by district, year and gender (see also Dustmann et al., 2009, for a similar approach). We deflate wages to 1995 prices using the consumer price index.

Unlike the social security data used in Lubotsky (2007), our administrative records also include detailed information on each worker's education or occupation. In the analysis, we distinguish three skill groups. Low-skilled workers enter the labor market without post-secondary education; medium-skilled workers completed an apprenticeship or graduated from high school ("Abitur"). Workers are high-skilled if they graduated from a university or college. Furthermore, we also observe characteristics of the employer like firm size, location, industry and ethnic composition. We use this additional information below to explore some potential channels for immigrant assimilation.

For the empirical analysis, we restrict our sample to individuals aged between 20 and 60 who are not working in irregular, marginal, seasonal or part-time employment. Our final sample contains information for 18,973 individuals and has about 303,500 observations. For the analysis of wages, we further restrict the sample to full-time workers. This last restriction reduces the sample to around 132,000 observations. Summary statistics are reported in Table 4.B.3. Our matched dataset is an example of a stock sampled data where we observe an immigrant (or native) conditional on having survived and remained in the host country until the sampling years of the household

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[9]In 1995, 79.4 percent of all workers in West Germany were covered by social security and are hence recorded in the data (Bundesagentur für Arbeit, 1996).

[10]Because employers are required to update records only at the end of each year, this variable may capture wage changes that occurred from January to December of the same year.

survey (2006-2011 in our case). Figure 4.A.3 illustrates the data structure (Lubotsky, 2007, uses very similar data). The main advantage of the stock-based sample is that, in contrast to repeated cross-sectional data or small panels, we can follow a large number of immigrants who still reside in the country.

4.2.2 How representative is the PASS-ADIAB data?

Given the sample structure of the PASS data, one might ask to what extent the data and hence our results are representative of the experience of the average immigrant living in Germany. We first show that a comparison of immigrants and natives in the PASS-ADIAB and a random sample of the social records reveals that our sample earns lower wages than the average worker. We then demonstrate that the average immigrant in the PASS-ADIAB data does not differ much from the average immigrants in the Microcensus, which covers a 1% random sample of the German population.[11]

We start out with comparing the wages of both immigrants and natives in the PASS-ADIAB sample with immigrants and natives in the 2% random sample of social security records. Figure 4.A.4 shows the distribution of daily wages adjusted to 1995 prices for natives and immigrants between 1975 and 2010. The distribution of wages has a similar shape but is shifted to the left relative to the average worker in the social security system.

Hence, the average worker in our data earns less than the average worker in the social security records. Yet, immigrants in the PASS-ADIAB data might still be representative of the German immigrant population. Table 4.2 reports descriptive statistics of characteristics of male and female immigrants in the Microcensus and the PASS-ADIAB between 2007 and 2010. For better comparability, both datasets impose the same sample restrictions. They include only foreign-born respondents aged between 20 and 60, and exclude those who came to Germany before 1975 or at an age below 20. Immigrants in the PASS data and immigrants in the Microcensus are of similar age. Even more importantly, immigrants in the PASS-ADIAB do not differ in their educational distribution from immigrants in the Microcensus. 30% of all immigrant men are low-skilled, i.e., do not have a high school or vocational degree. Around 50% have a high school or vocational degree and close to 20% have a college or university degree. The distribution among immigrant women is roughly similar as well.

We then compare labor income between the PASS-ADIAB and Microcensus. Figure 4.1 displays the distributions of immigrants' net monthly income (adjusted to 1995 prices) in the Microcensus (2007-2010) and the PASS-ADIAB (2007-2010). The vertical lines in the graph indicate the 25th, 50th, and 75th percentile for each data source.

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[11]As we cannot identify immigrants in the social security records without the PASS survey, we cannot compare the characteristics of the immigrant population in the PASS-ADIAB data with the immigrants in the social security records.

Personal income per month in the Microcensus combines labor earnings, income from self-employment, rental income, public and private pensions as well as public transfers (like welfare or unemployment benefits, child benefits or housing subsidies) but is net of taxes and other contributions. To use a comparable measure in the PASS-ADIAB, we use a similar measure of net income from the household survey.[12]

Table 4.2: Comparison of Microcensus and PASS-ADIAB

	Men		Women	
	Mean	Std.Dev.	Mean	Std.Dev.
Panel A: Microcensus (2007-2010)				
Age	42.1154	9.9812	41.6177	10.1858
Low Education	0.3029	0.4595	0.3485	0.4765
Medium Education	0.5196	0.4996	0.4661	0.4989
High Education	0.1769	0.3816	0.1847	0.3881
Panel B: PASS-ADIAB (2007-2010)				
Age	44.0195	9.3798	43.3808	9.7322
Low Education	0.3073	0.4615	0.2982	0.4576
Medium Education	0.4766	0.4996	0.4741	0.4994
High Education	0.2241	0.4171	0.2321	0.4223

Notes: The table reports summary statistics for male and female immigrants in the Microcensus and the PASS-ADIAB between 2007 and 2010. The education variables are binary indicators equal to one if an immigrant is low skilled (has no high school or vocational degree), medium-skilled (has a high school degree or vocational degree), or high-skilled (has a university or college degree). The sample is restricted to foreign-borns who immigrated to Germany after 1975 at age 20 or older, and who are between 20 and 60 years-old during the surveys. These restrictions result in a sample of 49,111 male and 55,995 female immigrants in the Microcensus, and 1,741 male and 2,235 female immigrants in the PASS-ADIAB data.

The figure illustrates that the distribution of incomes of immigrants from the PASS does not differ from the large cross-sectional Microcensus up to the 75th percentile: the 25th and 50th percentiles of both income distributions are the same. There are some differences in the upper part of the income distribution, as the Microcensus includes more high-income individuals than the PASS-ADIAB data. Hence, the 75th percentile in the Microcensus is about 10% higher than in the PASS-ADIAB data.

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[12]We do not use the wage measure from the administrative data for three reasons: first, the wage measure in the social security records is based on a definition that differs considerably from that of the net personal income measure in the Microcensus. Second, the wage measure in the social security records is censored above, which is not the case in the Microcensus. Third, the PASS-ADIAB data range from 1975-2010, while the Microcensus data cover the years 2007-2010. In order not to confuse differences in wages from time effects, we compare the household information on net income to demonstrate that the immigrant population are comparable in terms of realized earnings.

Figure 4.1: Earnings Distributions of Immigrants in the MZ and PASS-ADIAB
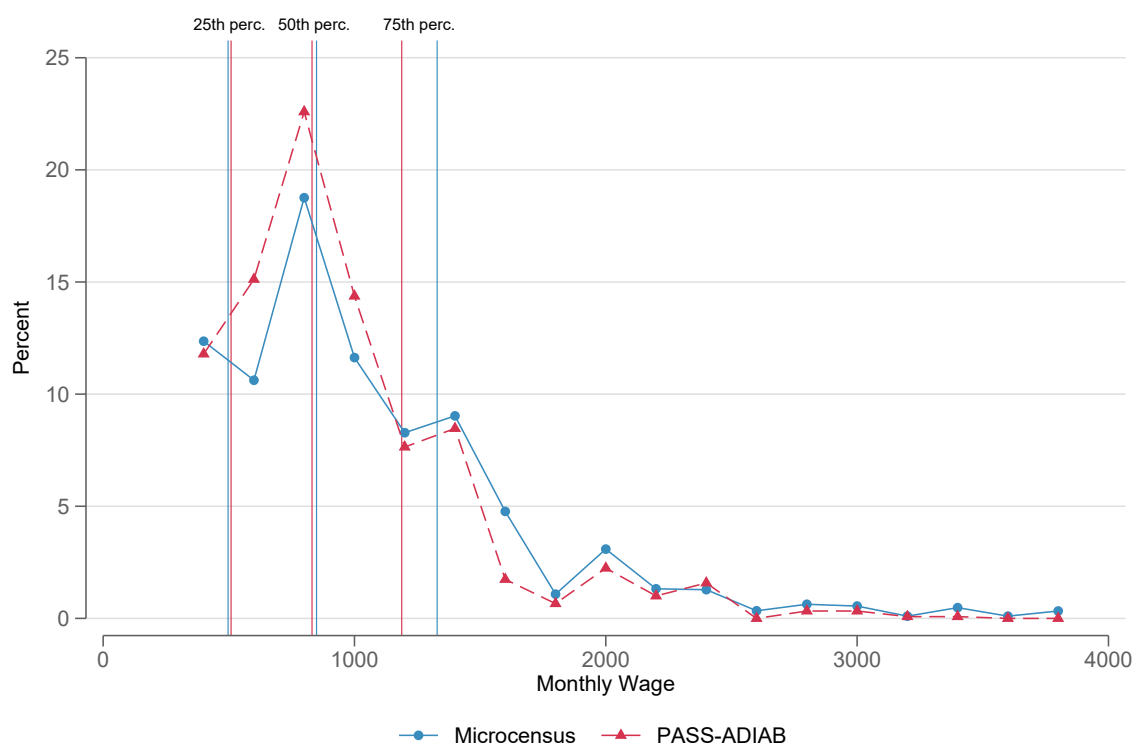
Notes: The figure displays the distributions of immigrants' net monthly income (adjusted to 1995 prices) in the Micro-census (2007-2010) and the PASS-ADIAB (2007-2010). Furthermore, the vertical lines indicate the 25th, 50th, and 75th percentile for each data source. Personal income per month in the Microcensus combines labour earnings, income from self-employment, rental income, public and private pensions as well as public transfers (like welfare or unemployment benefits, child benefits or housing subsidies) but is net of taxes and other contributions. For comparison, the PASS variable on income is not the earnings from social security record, but a similar variable on net income taken from the PASS survey. The sample is restricted to foreign-borns aged between 20 and 60 with positive net income. Furthermore, it includes only immigrants that immigrated after 1975 at age 20 or older.

Overall, immigrants in the PASS-ADIAB have similar educational qualifications and a roughly similar earnings distribution compared to immigrants in the representative Microcensus. While we have a below-average share of high-earnings immigrants in our sample, most of the public debate and concerns about immigration and the perceived lack of labor market progress centers around low-skilled and low-wage immigrants. Therefore, the PASS-ADIAB seems a valuable data source to study the labor market assimilation of immigrants in Germany. Our data has a number of advantages over the Socio-Economic Panel (SOEP), which has for many years been the only large survey with reliable information to identify and track immigrants in Germany. First, the administrative data start in 1975 and hence, almost a decade earlier than the SOEP survey, which started in 1984. Second, the wage and job spell information is likely to be more accurate as it is based on employer notifications to the social security system instead of self-reported wages and employment status by the individual. Third, the number of first-generation immigrants in the SOEP is limited and does not trace the

composition of the immigrant population in Germany.[13]

4.2.3 Empirical Strategy

To investigate assimilation patterns of immigrants in Germany, we estimate variants of the following model:

$$Y_{iabt} = \beta_1 YSM_{at} + \beta_2 YSM_{at}^2 + \sum_{a=1}^{7} \mu_a \pi_a + \delta_1 Exp_{ibt} + \delta_2 Exp_{ibt}^2 + \theta_t + \kappa_i + \varepsilon_{iabt} \quad (4.1)$$

where Y_{iabt} is a labor market outcome like employment or wages of individual i belonging to arrival cohort a (where natives form the reference category) and birth cohort b observed in year t. The key independent variables are the linear and squared term of years since migration (YSM_{at} and YSM_{at}^2), which are set to zero for natives. We use two alternative definitions of years since migration. The first definition uses information on year of arrival from the survey data ("YSM: PASS"). The second definition uses the information on entry into the social security records if the year of entry is earlier than the year of arrival reported in the survey ("YSM: Both"). The latter definition is our preferred measure, as it utilizes all available information on the migration history.

We also control in equation (4.1) for potential experience (Exp_{ibt} and Exp_{ibt}^2) to capture any learning and accumulation of skills in the labor market that is common for immigrants and natives. To control for observable and unobservable differences between immigrants, we further include cohort of arrival fixed effects (π_a) as 5-year groups (1975-1979, 1980-1984, 1985-1989, etc). We further add fixed effects for nine broad regions of origin (κ_i) to account for shifts in the immigration flows over time.[14]

Finally, year fixed effects (θ_t) are included to account for aggregate economic shocks. In the baseline model, we assume that aggregate shocks affect the labor market performance of immigrants and natives in the same way; in specification checks, we relax this assumption by allowing local economic conditions to affect immigrants and natives differentially (see Bratsberg et al., 2006; Dustmann et al., 2010)). All models are estimated separately for men and women.

To illustrate the assimilation patterns graphically, we also estimate a variant of the model in equation (4.1) where we replace the linear and quadratic term in years since migration with separate 5-year dummies (5-9, 10-14, 15-19, 20-24, and 25-29 years

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[13]The sampling of immigrants in 1984 focused on the largest groups of guest workers (e.g., from Turkey, Italy or Greece), which have then been followed over time. It took until 1994 to draw a new immigrant sample, which contained immigrants from Central and Eastern Europe that began to arrive in Germany since the late 1980s.

[14]The regions of origins are traditional EU countries (EU-15); EU accession countries, mostly from Central and Eastern Europe (EU-12); ex-Yugoslavia; Turkey; Asia; Africa; North and South America; Russia and other former Soviet Union republics; the last group are immigrants with other or no information on country of origin.

since migration). The reference group in this specification are recent arrivals (0-4 years since migration). As the specification further includes separate dummy variables for arrival cohorts with natives as the reference group, we allow for different employment or wage levels between immigrants and natives as well as between immigrants belonging to different arrival cohorts. The coefficients on the 5-year dummies for years since migration then represent the extent to which employment or wages of immigrants have caught up relative to recent arrivals (0-4 years since arrival).

4.3 Labor Market Assimilation in Germany

4.3.1 Baseline Results

4.3.1.1 Employment Assimilation

Table 4.3 reports assimilation patterns in employment and unemployment relative to natives based on equation (4.1). Employment assimilation is shown on the left-hand side (columns (1)-(4)), while assimilation in unemployment is shown on the right-hand side of the table (columns (5)-(8)).

As a point of reference, we report the initial gap in employment between immigrants and natives in the last row. The initial gap is obtained by estimating equation (4.1) with a quadratic in years since migration but replacing country of origin and cohort fixed effects with a simple immigrant dummy. The number reported is the coefficient on the immigrant dummy, which reflects the difference in the outcome variable by an immigrant with zero years since migration relative to a native. The last row of column (2) shows that the initial immigrant-native gap in employment rates among men is 10.67 percentage points suggesting that immigrants have difficulties to find their first job in Germany.

Starting from this initial disadvantage, we find a significant positive, but concave effect of years since migration on the probability of being employed for both male and female immigrants. Using our preferred specification in even columns, assimilation in employment rates occurs quite fast in Germany: after 10 years in the country, immigrant men have closed 7.3 $(0.0103 * 10 - 0.0003 * 100)$ percentage points or almost 70% $(0.073/0.1067)$ of the initial immigrant-native gap in employment.

Immigrant women, in turn, start out with a much higher immigrant-native gap in employment rates of 23.4 percentage points. As for men, the assimilation profile suggests a substantial catch-up in employment rates with time spent in Germany. After 10 years in the labor market, women have closed the employment gap by 17.7 $(0.0247 * 10 - 0.0007 * 100)$ percentage points – or by 76% $(0.176/0.2376)$ of the initial employment gap.

Table 4.3: Assimilation in Employment and Unemployment

	Employed				Unemployed			
	Men		Women		Men		Women	
	YSM: PASS	YSM: Both	YSM: PASS	YSM: Both	YSM: PASS	YSM: Both	YSM: PASS	YSM: Both
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Years in Germany	0.0126***	0.0103***	0.0256***	0.0247***	-0.0224***	-0.0209***	-0.0389***	-0.0377***
	(0.0021)	(0.0021)	(0.0019)	(0.0019)	(0.0021)	(0.0020)	(0.0021)	(0.0021)
Years in Germany Squared	-0.0004***	-0.0003***	-0.0008***	-0.0007***	0.0007***	0.0006***	0.0011***	0.0010***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Experience, Experience Squared	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Arrival Cohort Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region of Origin Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	158850	159043	144409	144554	158850	159043	144409	144554
R-Squared	0.1331	0.1328	0.0892	0.0890	0.1139	0.1138	0.1578	0.1576
Immigrant-Native Gap	-0.1147	-0.1067	-0.2376	-0.2340	0.2152	0.2123	0.3781	0.3748

Notes: The table reports estimates of the effect of immigrants' years since migration on the immigrant-native gap in employment and unemployment, separately for men (columns (1)-(2), (5)-(6)) and women (columns (3)-(4), (7)-(8)). The dependent variables are indicator variables for being employed (columns (1)-(4)) and unemployed (columns (5)-(8)). The employment variable is equal to one if a respondent is employed within the social security system or not; the variable is zero if a person is unemployed, non-employed or working outside the social security system. The unemployment variable is equal to one if a person collects unemployment benefits; the variable is zero if the person is employed or not covered by social security records. In odd columns, information from the PASS survey on immigrants' year of migration and origin country is used, in order to construct the main explanatory variable years since migration, as well as to define immigrants and their origin countries. In even columns, survey information is replaced by information from the IEB, if the first social security records entry is found to be earlier than the reported year of immigration. All regressions control for a quadratic of potential labor market experience, year fixed effects, cohort of arrival fixed effects (1975-1979, 1980-1984, 1985-1989, 1990-1994, 1995-1999, 2000-2004, 2005-2009), as well as region of origin fixed effects (traditional EU countries, new EU entrants (EU-12), ex-Yugoslavia, Turkey, Asia, Africa, North and South America, Russia and other former Soviet Union republics, and other or no citizenship). The sample includes native and foreign-born respondents aged 20 to 60, who are unemployed, non-employed, or full-time employed (not in part-time employment, non-regular employment, or in vocational training). Furthermore, foreign-borns in the sample immigrated after 1975 at age 20 or older. Standard errors in parantheses are robust. The initial immigrant-native gaps are computed in identical regressions that include an immigrant dummy instead of origin and cohort fixed effects. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1.

A comparison of odd and even columns reveals that assimilation patterns are very similar independently of whether we use the year of immigration reported in the household survey ("YSM: PASS") or the minimum year of immigration and the year of entry into a social security job ("YSM: Both"). These results highlight that the problem of back-and-forth migration is not only quantitatively small, but also does not affect our estimates of assimilation.

To relax the functional form assumption on years since migration, we next use a variant of equation (4.1) where we replace the quadratic specification with separate dummies for 5-year periods. Figure 4.2a, which plots the coefficients on the 5-year dummies, illustrates the sizable catch-up in employment of immigrant men and women relative to natives. Like the estimates in Table 4.3, the assimilation profiles are increasing and concave for both men and women. Furthermore, the profile of female immigrants is steeper than that of male immigrants suggesting that women converge faster: Women who have stayed in the country by more than two decades have closed most (85% = 20/23.5) of the initial employment gap.
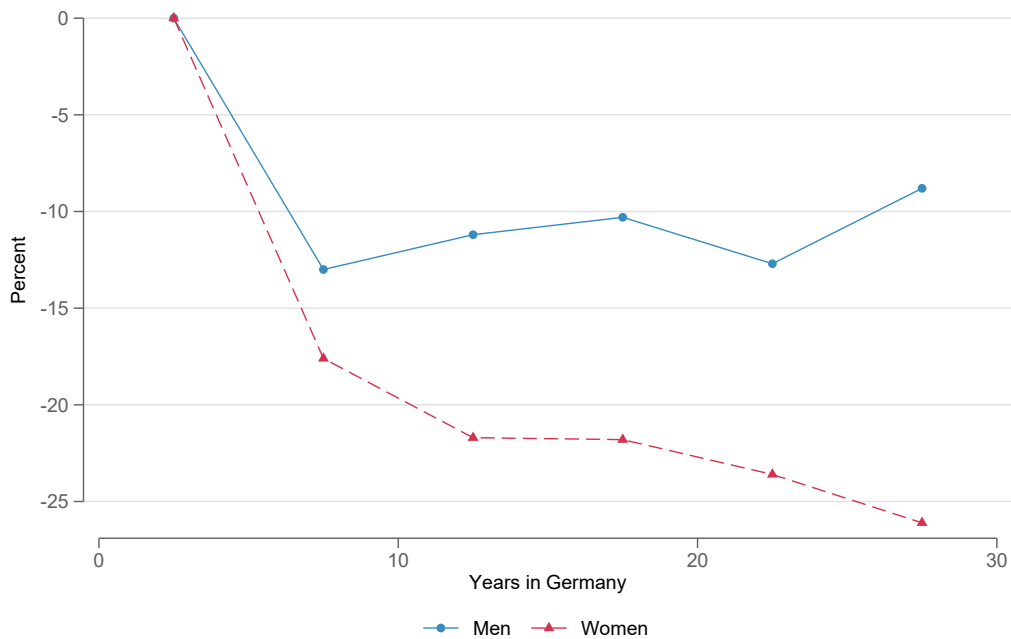
4.3.1.2 Assimilation in Unemployment

We next turn to the question whether we observe a similar assimilation in unemployment rates. An important concern in many European countries is that immigrants, because they often have much lower education than natives, enter the country only to collect government transfers. One indication of such behavior would be if immigrants received unemployment benefits at much higher rates than natives. We would expect higher unemployment rates initially as immigrants often lack language skills, the social network or other valuable information channels for job finding, compared to natives. Over time, this initial disadvantage should diminish after immigrants have spent some time in Germany.

The results for estimating equation (4.1) with unemployment as the dependent variable, are shown in columns (5)-(8) of Table 4.3. Immigrant men face an initial immigrant-native gap in unemployment of about 21 percentage points (see the last row in column (6)). With time in the country, however, immigrant men are able to reduce their unemployment rates relative to natives, but again at a decreasing rate. The estimates in column (8) suggest that after 10 years in Germany, immigrant men have closed 14.9 percentage points or about two-thirds of the average unemployment gap with natives. Like for employment rates, immigrant women exhibit a much larger initial gap to natives: on average, they are 37.5 percentage points more likely to be unemployed than native women. Yet, mirroring the rising share of women employed in a social security job, we find a convex assimilation profile: unemployment rates decline even more sharply for women than for men, closing about 74% (0.277/0.375) of the average immigrant-native unemployment gap after ten years.

Figure 4.2: Assimilation Profiles in Employment and Unemployment
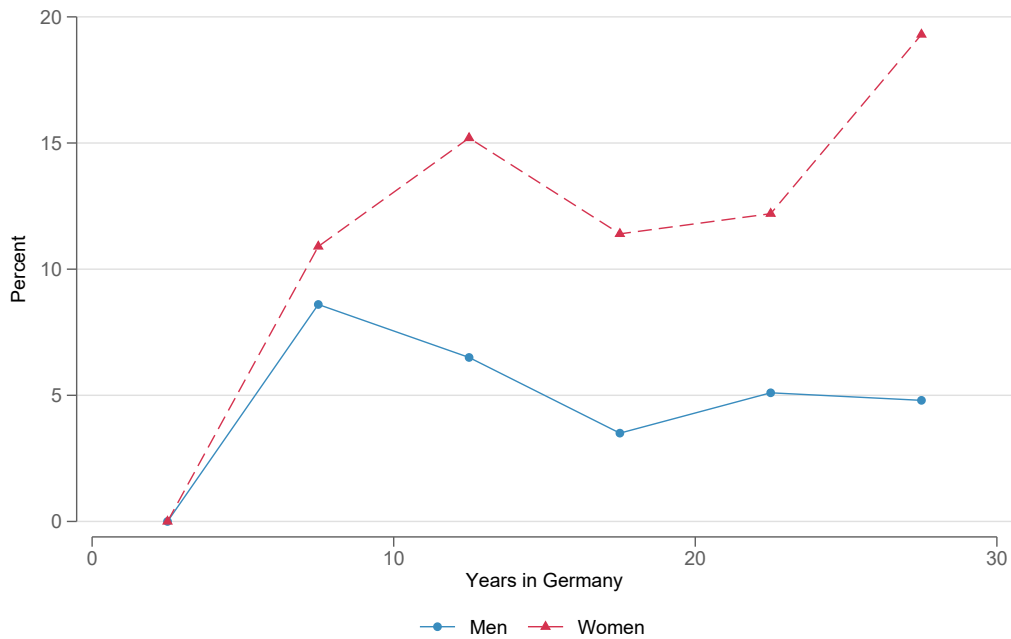
(a) Assimilation in Employment

(b) Assimilation in Unemployment

Notes: The figure plots the effect of immigrants' time in Germany on the male and female immigrant-native gap in employment and unemployment using the PASS-ADIAB (1975-2010). The coefficients for years since migration (in five-year groups) are estimated in OLS regressions. The dependent variable in the upper graph is an indicator for being employed within the social security system; the variable is zero if a person is unemployed, non-employed or working outside the social security system. In the bottom graph, the dependent variable is indicating whether if a respondent collects unemployment benefits; the variable is zero if the person is employed or not covered by social security records. Sample restrictions and other control variables are the same as in the main specification in Table 4.3.

Figure 4.2b illustrates the assimilation profiles based on estimating equation (4.1) with separate dummies for 5-year groups in YSM_{at}. Three patterns are noteworthy: first, we see sizable progress for both immigrant men and women over time relative to natives. Hence, both men and women are able to overcome their initial disadvantages and find jobs. Second, women reduce their unemployment rates at a faster rate than men compared to natives. This result is to be expected, given that women also are on average much more likely to be unemployed than native women. Finally, Figure 4.2b also shows that most of the convergence happens within the first decade of arrival; after that, there seems to be little further progress. Note that these results cannot be explained by changes in the quality of cohorts arriving in Germany as we control in all specifications for arrival cohort fixed effects. They can also not be easily explained by changes in the composition of immigrants with respect to their countries of origin as we control for region of origin fixed effects.

Overall then, we document sizable assimilation in employment and unemployment rates relative to natives, especially in the first decade after arrival. Immigrant women, while facing much larger gaps initially, also assimilate at a faster pace along both dimensions; as a result, women are able to close an even larger share of the immigrant-native gap in employment and unemployment rates than men.

4.3.1.3 Wage Assimilation

We next turn to the question whether we observe similar progress in terms of wages. Table 4.4 reports estimates of equation (4.1) where the outcome is now log daily wages. Following the literature, we estimate wage assimilation on the sample of full-time workers in a given year. On average, immigrant men and women earn about 29% lower wages compared to natives. For male immigrants, we do not see any evidence for assimilation in wages as the coefficients in columns (1) and (2) of Table 4.4 are not significantly different from zero. These results are similar to those of earlier studies on assimilation in Germany using the Socio-Economic Panel, which also find no wage assimilation among male guest workers (e.g., Pischke, 1992; Schmidt, 1997).

For women, in contrast, we find evidence of positive and sizable wage assimilation as their wages converge to natives with time spent in Germany. Given that both the linear and squared coefficient on years since migration are positive, wage assimilation has a convex shape for women. After ten years in Germany, women have closed between 4 and 7.8 percentage points of the gap depending on whether one includes the linear coefficient, which is not statistically significant, in the calculation.[15]

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[15]Ignoring the linear coefficient, a woman who has lived in Germany for ten years has closed $0.004 * 100 = 0.04$ or 4 percentage points of the immigrant-native gap. Taking the linear coefficient into account, an immigrant woman has closed $0.0038 * 10 + 0.0004 * 100 = 0.078$ or 7.8 percentage points of the gap − corresponding to 11.5% and 27% of the average gap of 28.8 percentage points (see last row of Table 4.4 respectively).

Table 4.4: Assimilation in Wages

	Log Wage			
	Men		Women	
	YSM: PASS	YSM: Both	YSM: PASS	YSM: Both
	(1)	(2)	(3)	(4)
Years in Germany	-0.0022	-0.0009	0.0037	0.0038
	(0.0034)	(0.0033)	(0.0057)	(0.0054)
Years in Germany Squared	0.0001	0.0000	0.0004**	0.0004**
	(0.0001)	(0.0001)	(0.0002)	(0.0002)
Experience, Experience Squared	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Arrival Cohort Fixed Effects	Yes	Yes	Yes	Yes
Region of Origin Fixed Effects	Yes	Yes	Yes	Yes
Observations	82153	82258	49746	49789
R-Squared	0.0669	0.0670	0.0234	0.0233
Immigrant-Native Gap	-0.2949	-0.2955	-0.2826	-0.2883

Notes: The table reports estimates of the effect of immigrants' years since migration on the immigrant-native earnings gap, separately for men (columns (1)-(2)) and women (columns (3)-(4)). The dependent variable is the log of daily wages (adjusted to 1995 prices). In odd columns, information from the PASS survey on immigrants' year of migration and origin country is used, in order to construct the main explanatory variable years since migration, as well as to define immigrants and their origin countries. In even columns, survey information is replaced by information from the IEB, if the first social security records entry is found to be earlier than the reported year of immigration. All regressions control for a quadratic of potential labor market experience, year fixed effects, cohort of arrival fixed effects (1975-1979, 1980-1984, 1985-1989, 1990-1994, 1995-1999, 2000-2004, 2005-2009), as well as region of origin fixed effects (traditional EU countries, new EU entrants (EU-12), ex-Yugoslavia, Turkey, Asia, Africa, North and South America, Russia and other former Soviet Union republics, and other or no citizenship). The sample includes native and foreign-born respondents aged 20 to 60, who are full-time employed (not in part-time employment, non-regular employment, or in vocational training). Furthermore, foreign-borns in the sample immigrated after 1975 at age 20 or older. Standard errors in parantheses are robust. The initial immigrant-native gaps are computed in identical regressions that include an immigrant dummy instead of origin and cohort fixed effects. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1.

Figure 4.3 confirms the absence of wage assimilation among working men as the profile is essentially flat with years since migration. The assimilation for women in turn is positive and steep, suggesting sizable catch-up of working women relative to their native counterparts. Over the first 25 years, immigrant women are able to close almost the entire initial immigrant-native wage gap, as immigrant wages increase by about 25 percentage points more than wages of native women.

One potential concern of our estimation strategy is that immigrants who have arrived earlier in the country might differ systematically from later arrivals. The model we estimate in equation (4.1) controls for arrival cohort fixed effects, which accounts for any observable or unobservable difference in employment or wage levels across the arrival groups. Yet, immigrants might still differ along some dimensions within the 5-year arrival cohorts, which would bias our estimates if those characteristics were correlated with their labor market performance. In addition, immigrants from earlier cohorts might not only differ in employment or wage levels, which are picked up by the fixed effects; but they may possibly differ from later arrivals in their speed of convergence to natives over time. If earlier arriving cohorts have worse unobservable characteristics

Figure 4.3: Assimilation Profiles in Log Wages
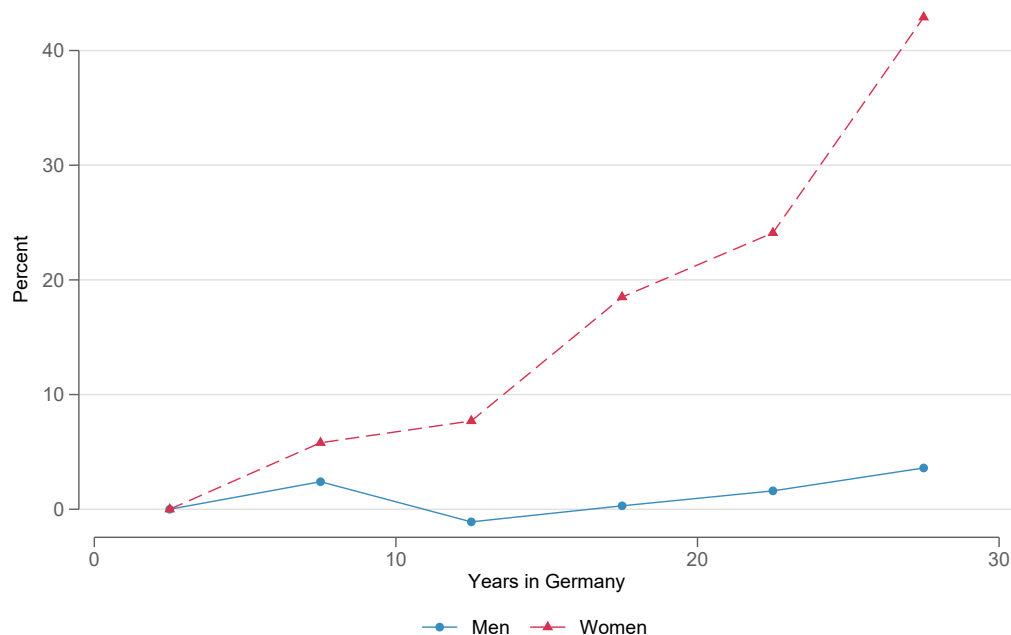
than later arrivals and these unobservables reduce the speed of convergence in terms of employment and wages, we would underestimate the true profile of wage assimilation, for instance.

To rule out this concern, we estimate a variant of the model in equation (4.1) where we include individual fixed effects (γ_i). The coefficients on years since migration, YSM_{at} and YSM_{at}^2, are then identified from the within-individual changes in the employment probability or wages among the group of immigrants. Interestingly, results for the fixed effects models in Table 4.B.4 are very similar to the baseline results, which use variation both within and across immigrants. The estimates of assimilation in employment in columns (1) and (2) are very similar to the main results in terms of both significance and magnitude. Including fixed effects into the wage regressions yields non-significant effects of YSM_{at} and YSM_{at}^2 for men in column (3). Among women, the linear term of years in Germany is positive and significant, indicating that an additional year in Germany increases female immigrants' wages by 1.3 percent. This magnitude is slightly larger than in the main specification. Overall, the employment probability and the wage gains of immigrants within the individual are similar to their gains relative to comparable natives.

4.3.2 Accounting for Selection along the Employment Margin

As we document sizable increases in employment rates for immigrant men and women in the last section, our estimates of wage assimilation could be biased. When immigrants enter the labor market after they have spent some time in Germany, the composition of the immigrant population in the workforce changes – overall and relative to native workers. If there is positive selection into the workforce along observable and unobservable skills, for instance, immigrants who (re-)enter the labor market have lower earnings capacity than the average immigrant worker. And given that changes in employment are much more pronounced among immigrants than natives, positive selection into work will systematically underestimate the assimilation of immigrant wages in equation (4.1).

Table 4.5: Lee Bounds on Average Effect of YSM

	Baseline (1)	Lower Bound (2)	Upper Bound (3)
	Panel A: Men (7%)		
$D[YSM \geq 5]$	0.0106	-0.0366***	0.0925***
	(0.0130)	(0.0127)	(0.0120)
Observations	82258	81974	81974
R-Squared	0.0670	0.0692	0.0607
	Panel B: Women (12%)		
$D[YSM \geq 5]$	0.0950***	0.0035	0.2418***
	(0.0254)	(0.0243)	(0.0233)
Observations	49789	49563	49563
R-Squared	0.0223	0.0239	0.0193
Experience, Experience Squared	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Arrival Cohort Fixed Effects	Yes	Yes	Yes
Region of Origin Fixed Effects	Yes	Yes	Yes

Notes: The table reports upper and lower bounds of estimates of the effect of immigrants' years since migration on the immigrant-native gap in log daily wages. The dependent variable is the log of daily wages (adjusted to 1995 prices). Following Lee (2009), we estimate upper and lower bounds for the effect of the binary treatment variable $D[YSM \geq 5]$, taking the value 1 if an immigrant is 5 or more years in Germany. The trimming margin refers to the effect of $D[YSM \geq 5]$ on the employment probability of treated respondents. In columns (2) and (3), the lower (upper) bound is calculated by trimming the upper (lower) 7% and 12% of the wage distribution of the treated individuals for men and women, respectively. Sample restrictions and other control variables are the same than in the main specification. Standard errors in parantheses are robust. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1.

To assess the potential importance of selection into employment, we first employ a bounding approach, which makes no assumptions on the type of selection (following Lee, 2009). As the bounds approach was developed for the binary case, we split our sample into a treatment and a control group: the new treatment variable is equal to one if an immigrant has spent 5 or more years in Germany; the variable is equal to zero if an immigrant has been in Germany less than 5 years (and for natives).[16] To assess the impact of selection into employment, we estimate in a first step the difference in employment for the treatment (5 or more years since migration) and control group (less than 5 years since migration). Estimates indicate a significant employment difference of 7 percentage points for men, and 12 percentage points for women, mirroring the results in Section 4.3.1.1. The basic idea of the Lee bounds is to trim the outcome (log personal income) of the treated group assuming that the 'excess' employment all occurs either at the top or at the bottom of the earnings distribution. After trimming, we re-estimate the model to obtain a lower and upper bound on the effect of years since migration in the binary setting. The results for men and women are shown in Table 4.5. We first rerun the baseline model for the binary variable for YSM, which again shows no significant effect for men, but positive earnings effects for women (column (1)). We then report the lower and upper bounds for men and women in columns (2) and (3) of Table 4.5. The bounds indicate that selection can change the estimates of wage assimilation dramatically in both directions. For men, the effect of being 5 or more years in Germany lies between -3.66% and $+9.25\%$, if those entering the labor force through employment assimilation are selected from the top or the bottom of the earnings distribution, respectively. The lower bound for women is zero, while the upper bound shows a very large effect of $+24.18\%$.

Given the importance of the type of selection into employment, we compare in a next step observable and unobservable labor market skills of the average immigrant worker to those of immigrants entering the labor market. Entrants comprise all individuals who have experienced an un- or non-employment spell, a job outside the social security system or start their labor market career. We use two definitions of entry into the labor market: the first definition contains all individuals who are employed in period t but were not employed in $t-1$. The second definition includes those employed in t but not employed in both $t-1$ and $t-2$, which focuses on individuals who have been unemployed or out of the labor force for at least two years in a row.

Table 4.6 shows means (odd columns) and standard deviations (even columns) for male immigrants in the top panel and for female immigrants in the bottom panel. While

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[16]Given the result that the largest relative growth in employment among immigrants occurs during the first ten years in Germany (see Figure 4.2a), we split the sample at 5 years in Germany into treatment and control group, and not at the mean of years since migration (around 10 years). Note that this dummy formulation is similar to the the more flexible model estimated above with 5-year intervals in years since migration.

labor market immigrants entering the labor market are not less educated, the results confirm that they are negatively selected in terms of earnings potential. Those (re-)entering the labor market after at least one or two years without a social security job (see columns (3) and (5)) earn significantly lower wages than the average worker (shown in column (1)). Furthermore, their unobservable worker productivity as measured by worker fixed effects is lower than for the average worker.[17] Table 4.6 further suggests that the lower wages are largely because of individuals who re-enter the labor market have lost their good firm matches. Entering individuals work in smaller firms that pay lower wages and have lower firm fixed effects.

Comparing the results for men (in Panel A) and women (in Panel B), we find that the negative selection is much more severe for immigrant men than for women. Hence, entering women are more similar to the average female worker, while entering men are much worse off than the average male worker. Furthermore, a comparison of the results in Table 4.6 for immigrants with those of Table 4.B.5 for natives shows that the negative selection along the employment margin is similar for immigrants and native workers. Therefore, the fact that proportionally more negatively selected immigrants than natives enter the labor market suggests that estimates of wage assimilation are likely to be downward biased, especially among men.

One approach to correct for selection along the employment margin would be to use a control function. Unfortunately, a quasi-experimental setting being absent, it is difficult to identify an exclusion restriction that would affect job finding or employment but have no effect on a person's earnings. An alternative strategy is to impute the missing wages of individuals outside the social security system using alternative assumptions (see, e.g., Johnson et al., 2000, Chandra, 2003, and Neal, 2004, who study the Black-White wage gap; or Hunt, 2001, and Olivetti and Petrongolo, 2008, who analyze gender wage gaps). We thus define a new wage variable, which is equal to the observed wage w_{it} for employed workers and equal to an imputed wage $\tilde{w}_{it}$ for observations with missing wages. We then estimate equation (4.1) with an Least Absolute Deviations (LAD) estimator to analyze wage assimilation after accounting for selection along the employment margin. Median regressions like LAD have the advantage that they only require an assumption whether the missing wage is above or below the median wage among workers; we do not require any assumption where exactly a person with missing wage is located in the wage distribution (Johnson et al., 2000; Neal, 2004; Olivetti and Petrongolo, 2008).

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[17]Card et al. (2013) study the role of establishment-specific wage premiums in generating increases in West German wage inequality. For four subintervals covering the period from 1985 to 2009, they estimate models with additive fixed effects for workers and establishments. The individual worker fixed effect represents a combination of individual skills and other unobservables that are rewarded equally across employers. The establishment fixed-effect represents the proportional pay premium that a specific establishment pays to employees. The worker fixed effects range between values of about 1 and 5.5 in our sample (s.d. 0.4), and firm fixed effects range from −1.6 to 3.5 (s.d. 0.7).

Table 4.6: Characteristics of Labor Market Entrants

	Employed in Previous Year		Not Working in Previous Year		Not Working in two Previous Years	
	Mean (1)	Std.Dev. (2)	Mean (3)	Std.Dev. (4)	Mean (5)	Std.Dev. (6)
Panel A: Male Immigrants						
High Education	0.1824	0.3862	0.1689	0.3748	0.1891	0.3918
Medium Education	0.5275	0.4993	0.5450	0.4982	0.5266	0.4996
Low Education	0.3025	0.4594	0.2940	0.4558	0.2919	0.4549
Real Wage	56.1407	35.0520	38.0085	24.5583	36.6352	24.8192
Worker FE	3.6738	0.4360	3.4429	0.4272	3.4107	0.4373
Firm FE	0.6845	0.4286	0.5332	0.4301	0.5278	0.4238
Firm Size	943.88	4155.59	240.06	1049.01	201.39	528.42
Firm: Median Wage	67.2584	25.9815	55.9575	23.2393	55.1391	23.1685
Observations	4,970		1,175		737	
Panel B: Female Immigrants						
High Education	0.2251	0.4177	0.2249	0.4177	0.2254	0.4181
Medium Education	0.4795	0.4996	0.4996	0.5002	0.5141	0.5001
Low Education	0.3083	0.4618	0.2881	0.4531	0.2770	0.4478
Real Wage	33.3402	32.1357	25.3201	59.2597	25.4000	68.9494
Worker FE	3.9221	0.3962	3.8140	0.3741	3.7949	0.3842
Firm FE	0.6253	0.3797	0.6066	0.4147	0.6266	0.4052
Firm Size	351.78	847.46	271.70	735.19	263.46	649.24
Firm: Median Wage	64.9487	26.0550	59.6711	25.2776	60.1502	25.2253
Observations	4,272		1,092		777	

Notes: The table reports summary statistics for different subsamples of male and female immigrants the PASS-ADIAB between 1975 and 2010. In columns (1) and (2), the sample includes only those individuals that were employed in the previous year. Columns (3) and (4) is restricted to individuals that are employed in a given year, and were non-employed in the previous year. Columns (5) and (6) include employed individuals that were non-employed in the two previous years. The sample is further restricted to foreign-borns who immigrated to Germany after 1975 at age 20 or older, and who are between 20 and 60 years-old. Summary statistics are reported for the following variables: indicators for high, medium, and low skilled; daily wage (adjusted to 1995 prices); worker and firm fixed effects, which have been estimated based on the universe of social security records (Card et al., 2013); the size of the firm (in employees); and the median wage of a firm.

The first imputation method uses the earnings history of each individual in our panel data. Specifically, we impute the missing wage with the non-missing wage of that same individual in the closest available year (either before or after the year with missing information). Using the LAD estimator, this approach is valid as long as an individual's wage relative to the median in a given year is correctly identified by the closest available wage of that same individual.[18] Note that we can only impute a missing observation if the person has some earnings history; we will not be able to impute wages for individuals who have never worked in a social security job over our sample period.

A second imputation method uses information on an individual's observable characteristics to infer their wage relative to the median. Specifically, we run a regression of the log daily wages on an individual's education, age, age squared, an indicator for being an immigrant, and year fixed effects for those employed. Based on the coefficients from this regression, we then impute wages for individuals with missing wages. The underlying assumption is that the returns to observable characteristics estimated from a sample of employed workers is a good proxy for the returns to those characteristics for non-employed individuals in a given year. A potential advantage of this approach is that we can impute wages for more individuals, even for those who have no valid wage recorded in the social security records. As a result, the imputed sample is much larger than the sample from our first imputation method.

Our final imputation method assumes that all individuals with missing wages would earn below the median wage of those employed. Hence, we impute a wage of zero to all missing wage observations, which is in a median regression equivalent to assuming that all individuals with missing wages would be positioned in the bottom half of the wage distribution. Given the low employment rates of women (25 and 39 percent among female immigrants and natives, respectively), we are not able to implement this imputation method for women as the imputed median wage would be zero.

Note that all of the imputation methods discussed make non-trivial assumptions on the relative position of those with missing wages. Each of these identifying assumptions and approaches, which allow for observable as well as unobservable heterogeneity between workers and non-workers, might be questioned individually. Yet, if all imputation approaches yield similar results on wage assimilation, this collage of evidence would suggest that the results are robust to the particular imputation method (and hence, identifying assumption) used.

Table 4.7 reports assimilation patterns in wages using LAD regressions and the imputed wages as dependent variables. As a point of reference, columns (1) and (5) report the baseline results without imputation for men and women. The baseline

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[18]For comparison, if we used OLS instead, we would require the stronger assumption that an individual's wage level in the nearest available year is a valid proxy for the missing wage.

Table 4.7: Wage Assimilation with Adjustments for Selection along Employment Margin

	Men				Women		
	Baseline (1)	*Closest Wage* (2)	*Observables* (3)	*Zero* (4)	*Baseline* (5)	*Closest Wage* (6)	*Observables* (7)
Years in Germany	0.0032	0.0150***	0.0024***	0.0186***	0.0075	0.0121***	0.0005***
	(0.0024)	(0.0019)	(0.0003)	(0.0038)	(0.0046)	(0.0020)	(0.0000)
Years in Germany Squared	0.0001	-0.0004***	-0.0002***	-0.0004***	-0.0003	-0.0002*	-0.0000***
	(0.0001)	(0.0000)	(0.0000)	(0.0001)	(0.0002)	(0.0001)	(0.0000)
Experience, Experience Squared	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Arrival Cohort Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region of Origin Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	82258	145932	155827	155827	49789	116781	141355

Notes: The table reports LAD-estimates of immigrants' earnings growth with different adjustments for selection along the employment margin. The dependent variable is the log of real daily wages. The main independent variable is the preferred version of years since migration (combined from PASS and IEB data). In columns (1) and (5), results from the main specification are presented. In columns (2) and (6), wages of non-employed individuals are approximated with the closest available wage (before or after). In columns (3) and (7), wages of non-employed individuals are imputed with a regression using education, age, age squared, an immigrant dummy, and year fixed effects. In column (4), non-employed individuals are assigned a wage of zero. Due to the high share of non-employed women, the Median Regression for this latter imputation method is only feasible in the male sample. Sample restrictions and other control variables are the same than in the main specification. Standard errors in parantheses are robust. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1.

estimates for LAD regressions are quite similar to the OLS regressions in Table 4.4: there is no wage assimilation for men and positive assimilation for women, though the LAD estimates of assimilation for women are statistically significant just below the 10% level.

Across all three imputation methods, we see positive wage assimilation for both men and women relative to their native counterparts. We observe a concave assimilation profile as wages increase with each year in Germany, but at a decreasing rate. Taking the estimates in column (2), wages of immigrant men increase by 11% after 10 years in the country relative to natives. For immigrant women, column (6) suggests wage increases of 10% relative to native women over the first decade in Germany. These assimilation effects are sizable. To put them into perspective, note that the return to an additional year in Germany is about half the return of a year of experience (e.g., for men the coefficient of the linear term of experience is 2.16%, and the quadratic term is -0.03%). Also note that the estimates using the first and third imputation method, i.e., using nearby wages and assuming wages below the median, are very similar for men indicating that most of the imputed wages of non-employed men based on previous or following wages (column (2)) indeed lie below the median.

Figure 4.4: Assimilation Profiles in Imputed Wages
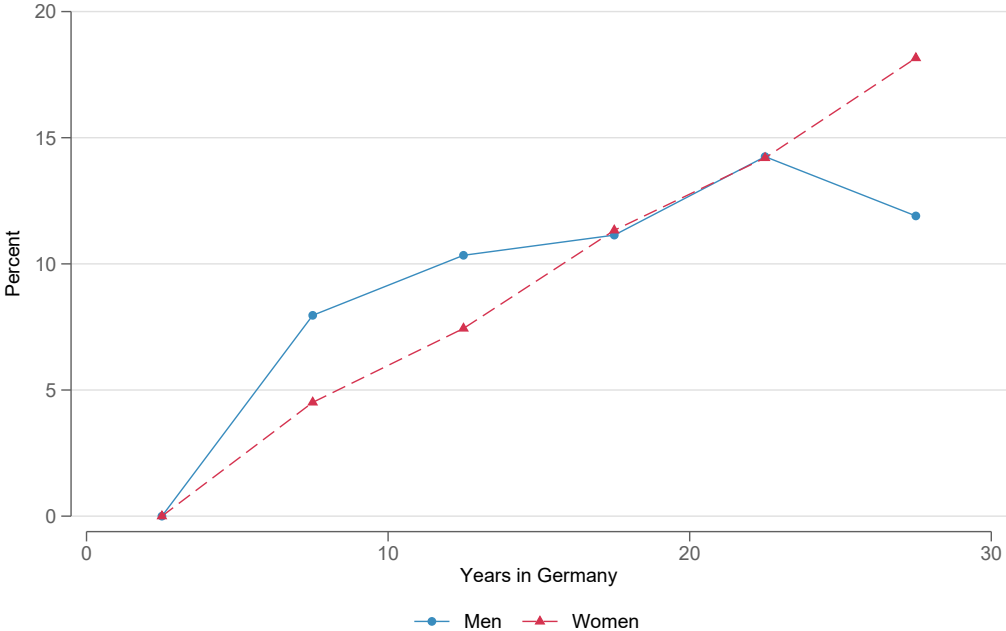
Notes: The figure plots the effect of immigrants' time in Germany on the male and female immigrant-native earnings gap using the PASS-ADIAB (1975-2010). The coefficients for years since migration (in five-year groups) are estimated in median regressions. The dependent variable is the log of imputed daily wages. Wages of non-employed individuals are approximated with the closest available wage (before or after). Sample restrictions and other control variables are the same as in the main specification in Table 4.7.

Figure 4.4 illustrates these assimilation profiles. The figure plots LAD-estimates of equation (4.1) with separate dummies for 5-year groups of years since migration. Similar to the estimates in Table 4.7, one can see that the wages of both male and female immigrants increase relative to natives over time. Given that female (male) immigrants in these specifications are estimated to earn initially about 22 (23) percent less than comparable native-born individuals, the figure illustrates that men and women are able to close a considerable share of their initial immigrant-native wage gaps over the first decades in Germany. Comparing these assimilation patterns with the previous results in Figure 4.3 illustrates that the wage assimilation for men is underestimated due to selection along the employment margin.

Overall, the different imputation methods used in this section indicate that selection along the employment margin biases our estimates of wage assimilation downward. This effect is much more pronounced for men as the earnings potential of those entering social security jobs is worse than the earnings of the average worker (see Table 4.6). In contrast, working and non-working women are quite similar in terms of observable and unobservable determinants of earnings potential. Hence, imputed wages for non-employed women are distributed more equally across the earnings distribution.

4.3.3   Specification Checks

Our main results indicate that immigrants in Germany assimilate with respect to their employment and unemployment probabilities. Furthermore, they exhibit positive wage growth relative to natives, especially after accounting for selection along the employment margin. In Table 4.8, we investigate the robustness of these results to alternative specifications by estimating variants of equation (4.1). Panel A displays the OLS-estimates for the outcome of being employed, and Panel B refers to LAD-estimates on the log of imputed daily wages. All specifications use the years since migration measure that combines information from the administrative and survey data. Imputed wages are based on earnings history of each individual, our first imputation method used to account for selection into employment. The corresponding baseline estimates are columns (2) and (4) in Table 4.3, and columns (2) and (6) in Table 4.7.

First, our main specification does not control for education, as investments in human capital are a potential channel of assimilation, which we wanted to capture in our years since migration measure. We add indicators for being medium-skilled (high school or vocational degree) and high-skilled (university or college degree) to the regressions where being low-skilled is the reference category in columns (1) and (5) of Table 4.8. The coefficients of the education controls have the expected positive effect on both the probability of being employed and wages (not reported). More importantly, the inclusion of education controls does neither change the magnitude nor the significance

Table 4.8: Assimilation Results with different Specifications

	Men				Women			
	Education Controls (1)	Different Experience Profiles (2)	State Unemp. * Immigrant (3)	District Unemp. * Immigrant (4)	Education Controls (5)	Different Experience Profiles (6)	State Unemp. * Immigrant (7)	District Unemp. * Immigrant (8)
Panel A: Employed								
Years in Germany	0.0101***	0.0174***	0.0141***	0.0138***	0.0232***	0.0224***	0.0342***	0.0411***
	(0.0021)	(0.0022)	(0.0023)	(0.0036)	(0.0019)	(0.0020)	(0.0026)	(0.0051)
Years in Germany Squared	-0.0003***	-0.0004***	-0.0005***	-0.0007***	-0.0007***	-0.0006***	-0.0010***	-0.0015***
	(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0002)
Observations	159043	159043	115254	57272	144554	144554	83951	36484
R-Squared	0.1414	0.1334	0.2506	0.2162	0.1060	0.0892	0.3126	0.2596
Panel B: Log Wage (Imputed with closest available Wage)								
Years in Germany	0.0093***	0.0331***	0.0114***	0.0130***	0.0107***	0.0149***	0.0212***	0.0303***
	(0.0018)	(0.0021)	(0.0017)	(0.0021)	(0.0019)	(0.0020)	(0.0019)	(0.0049)
Years in Germany Squared	-0.0002***	-0.0005***	-0.0002***	-0.0003***	-0.0002***	-0.0002***	-0.0003***	-0.0007***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0003)
Observations	145932	145932	106613	56357	116781	116781	68728	34235
Experience, Experience Squared	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Arrival Cohort Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region of Origin Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The table reports estimates of the effect of immigrants' years since migration on the immigrant-native gap in employment and log daily wages for different specifications. The dependent variable in Panel A is an indicator for being employed within the social security system; the variable is zero if a person is unemployed, non-employed or working outside the social security system. The coefficients in Panel A refer to OLS-estimates. In Panel B, the log of imputed daily wages (adjusted to 1995 prices) is the dependent variable; wages of non-employed individuals are imputed with the closest available wage (before or after). Estimates in Panel B refer to LAD-regressions. The main independent variable is the preferred version of years since migration (combined from PASS and IEB data). In columns (1) and (5), indicators for medium-skilled (has a high school degree or vocational degree) and high-skilled (has a university or college degree) are added to the main specification. In columns (2) and (6), regressions allow for immigrant-specific experience profiles. Columns (3), (4), (7), and (8) include the local unemployment rates as well as an interaction term of the local unemployment rate with an immigrant dummy (on the state and district level, respectively). Sample restrictions and other control variables are the same as in the main specification. Standard errors in parantheses are robust. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1.

of the estimated coefficients of YSM_{at} and YSM_{at}^2 on the employment probability. When including them in the wage regressions, coefficients point in the same direction and are still highly significant. However, their size becomes smaller for both men and women relative to the baseline.

Our model further imposes a common experience profile for natives and immigrants (Exp_{ibt} and Exp_{ibt}^2). To allow for separate experience profiles, we add interaction effects of experience and experience squared with an indicator for being an immigrant. The assimilation profile for the probability to be employed does not change much as shown in columns (2) and (6) of Table 4.8. Estimates of the effects of time spent in Germany on wages, however, are considerably larger when including immigrant-specific experience profiles. Accordingly, the estimated experience profile of immigrants is substantially flatter than that of natives (not reported). This pattern suggests that immigrants have few returns to labor market experience per se (including years worked in the country of origin); instead, immigrants experience large wage gains from working in Germany after arrival.

A third simplifying assumption of our baseline specification in equation (4.1) is that we impose common time effects for immigrants and natives. Yet, previous evidence suggests that the employment opportunities and wages of immigrants are more negatively affected by economic downturns than those of natives. As a result, the immigrant-native wage gap contracts during booms and widens during recessions. To relax the assumption on common time effects, we add measures of local unemployment rates and their interaction terms with an indicator for immigrants to equation (4.1). Columns (3) and (7) of Table 4.8 report estimates using state-level unemployment rates, while columns (4) and (8) use district-level unemployment rates.

As expected, the local unemployment rates are negatively associated with both the probability of being employed and wages. More interestingly, employment prospects are indeed worse for immigrants when local unemployment is high, as the interaction term between local unemployment and being an immigrant is also negative (both not reported). However, the estimates of assimilation remain unchanged when allowing differential time effects for immigrants and natives. There is still a significant positive effect on employment and wages for both immigrant men and women. The only notable difference between the estimates reported in columns (3), (4), (7), and (8), and the baseline results is that the magnitude of the effects for women is larger. The different magnitude could indicate that local economic shocks lead to an underestimation of female immigrants' employment assimilation. However, the magnitude of the wage assimilation profiles in Panel B is not affected by allowing for differential time effects for immigrants and natives.

The results in this subsection indicate that our main results are robust to different specifications and extensions of equation (4.1). Both immigrant men and women

assimilate in terms of employment and wages once we account for selection along the employment margin. These results are good news for immigrants and the destination alike: they suggest that the relative performance of immigrants, despite being less educated and lacking skills and networks initially, improves substantially with time in the country.

4.3.4 Heterogeneity of Assimilation

The results of the previous subsections show that immigrant men and women assimilate in terms of employment and wages once we account for selection along the employment margin. In a next step, we investigate in Table 4.9 whether these assimilation profiles differ among immigrant groups. In order to asses heterogeneity, we include interaction terms of our years in Germany variables with indicator variables for different groups of immigrants ($YSM_{at} * D[Group_i]$ and $YSM_{at}^2 * D[Group_i]$) to our baseline model.

In columns (1) and (5), we investigate whether immigrants arriving after 1990 exhibit faster assimilation than immigrants who arrived in Germany prior to 1990. As the composition of immigrants changed dramatically after the fall of the iron curtain in 1990, one might expect that cohorts arriving after 1990 assimilate at different pace than those before. Results in Panel A indicate that this group indeed assimilates much more in employment than those immigrants who arrived before 1990. However, estimates of the interaction terms in Panel B suggest that the speed of wage assimilation does not differ significantly between immigrants arriving in Germany before or after 1990.

Next, we test whether assimilation is faster for immigrants from the European Union than for non-EU immigrants. Hence, we add interactions for a binary variable for being an EU immigrant with our years since migration variables. The dummy variable 'EU-country' takes the value one if immigrants come from EU-15 countries, the new Eastern European EU-member states, Norway or Switzerland. Given freedom of movement, EU immigrants have the same access to the German labor market as natives in principle.[19] The results in Panel A of Table 4.9 indicate that non-EU immigrants, both men and women, start from a lower employment level initially, but also assimilate faster in terms of employment relative to natives. However, we find no significant difference in the wage assimilation profiles of EU and non-EU immigrants (Panel B).

Columns (3), (4), (7), and (8) investigate whether Turks and immigrants from the Former Soviet Union, two of the most important immigrant groups in Germany, assimilate faster or slower than the average immigrant. Many Turkish immigrants arrived in Germany as guest workers and later under the family reunification category. Immigrants from the former Soviet republics, in turn, are often ethnic Germans who

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[19]Some exceptions apply: in particular, immigrants from Eastern European countries that joined the European Union in 2004 did not have full access to the German labor market during our sample period.

Table 4.9: Heterogeneity of Wage Assimilation

	Men				Women			
	Year of Migration $\geq$ 1990 (1)	EU-Country (2)	Turkey (3)	Former Soviet Union (4)	Year of Migration $\geq$ 1990 (5)	EU-Country (6)	Turkey (7)	Former Soviet Union (8)
Panel A: Employed								
Years in Germany (YSM_{at})	-0.0050	0.0158***	0.0146***	-0.0112***	0.0154***	0.0313***	0.0252***	0.0088***
	(0.0034)	(0.0024)	(0.0022)	(0.0026)	(0.0041)	(0.0020)	(0.0020)	(0.0028)
Years in Germany Squared (YSM_{at}^2)	0.0002*	-0.0005***	-0.0005***	0.0004*	-0.0004***	-0.0010***	-0.0007***	-0.0002***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
$YSM_{at} * D[Group_i]$	0.0432***	-0.0200***	-0.0354***	0.0589***	0.0223***	-0.0189***	-0.0230***	0.0348***
	(0.0049)	(0.0047)	(0.0057)	(0.0044)	(0.0049)	(0.0041)	(0.0061)	(0.0040)
$YSM_{at}^2 * D[Group_i]$	-0.0020***	0.0008***	0.0011***	-0.0020***	-0.0010***	0.0008***	0.0005***	-0.0012***
	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0001)	(0.0002)	(0.0002)
Observations	159043	159043	159043	159043	144554	144554	144554	144554
R-Squared	0.1333	0.1330	0.1330	0.1339	0.0892	0.0891	0.0891	0.0894
Panel B: Log Wage (Imputed with closest available Wage)								
Years in Germany (YSM_{at})	0.0122***	0.0151***	0.0178***	0.0078***	0.0140***	0.0110***	0.0131***	0.0110***
	(0.0022)	(0.0022)	(0.0019)	(0.0030)	(0.0030)	(0.0021)	(0.0020)	(0.0024)
Years in Germany Squared (YSM_{at}^2)	-0.0003***	-0.0004***	-0.0005***	-0.0001	-0.0003***	-0.0001	-0.0003***	-0.0001
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
$YSM_{at} * D[Group_i]$	0.0057	-0.0005	-0.0281***	0.0159***	0.0007	0.0023	-0.0079	0.0013
	(0.0038)	(0.0049)	(0.0068)	(0.0044)	(0.0042)	(0.0038)	(0.0059)	(0.0037)
$YSM_{at}^2 * D[Group_i]$	-0.0002	0.0001	0.0010***	-0.0004*	-0.0002	-0.0002	0.0005***	-0.0001
	(0.0002)	(0.0002)	(0.0003)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0001)
Observations	145932	145932	145932	145932	116781	116781	116781	116781

Notes: The table reports estimates of the effect of immigrants' years since migration on the immigrant-native gap in employment and log daily wages for different specifications. The dependent variable in Panel A is an indicator for being employed within the social security system; the variable is zero if a person is unemployed, non-employed or working outside the social security system. The coefficients in Panel A refer to OLS-estimates. In Panel B, the log of imputed daily wages (adjusted to 1995 prices) is the dependent variable; wages of non-employed individuals are imputed with the closest available wage (before or after). Estimates in Panel B refer to LAD-regressions. The main independent variable is the preferred version of years since migration (combined from PASS and IEB data). In columns (1) and (5), the linear and quadratic YSM-variables are interacted with indicators for immigrants that came in 1990 or later. In columns (2)-(4) and (6)-(8), the independent variables of interest are interacted with indicators for different origin regions or countries: EU-countries (EU-15, East European EU, Norway, and Switzerland) in columns (2) and (6), Turkey in columns (3) and (7), and Russia and other former Soviet Union republics in columns (4) and (8). Sample restrictions and other control variables are the same than in the main specification. Standard errors in parantheses are robust. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1.

had fast access to German citizenship. The results indicate that Turkish men do not experience any assimilation in neither employment nor wages with time in Germany. For Turkish men, the interaction terms cancel out the positive main effect of YSM_{at}. We still see wage assimilation for Turkish women, however. We observe the opposite pattern for immigrants from the former Soviet Union: they assimilate substantially faster than the average immigrant both in terms of employment and wages.

4.4 Channels of Assimilation

Our results so far indicate that immigrants in Germany have initially much lower employment rates and wages than natives. Sizable immigrant-native gaps are to be expected if immigrants have less formal education or cannot transfer some of their skills to the destination country. Further, they often lack certain skills (like command of the language) as well as information or social networks to find suitable jobs. Yet, the findings in the last section have shown that the labor market outcomes of immigrants improve relative to natives with time in the country: both immigrant men and women are more likely to be employed and there is sizable wage assimilation once we account for selection along the employment margin. How can we explain this catch-up process of immigrants relative to natives? In this section, we provide some exploratory evidence about the channels of wage assimilation in Germany.

The literature has stressed three main mechanisms how immigrants improve their labor market position over time: the first one is through job search and occupational upgrading. Given that they might lack information or other credentials such as the official recognition of certificates or other barriers, immigrants tend to downgrade their initial occupations after immigration (Eckstein and Weiss, 2004; Lessem and Sanders, 2014; Weiss et al., 2003). Hence, we would expect that they are more likely to change jobs and possibly occupations to improve their job or occupational match. In addition, immigrants might switch to higher-paying industries over time as well.

Some first evidence for the importance of job mobility and upgrading is shown in Table 4.10. Estimates are based on equation (4.1) and our measure of years in Germany uses the minimum year of entry into Germany or the social security system ("YSM: Both"). The dependent variables are whether a person changed the employer (columns (1) and (4)), the occupation (columns (2) and (5)), or the industry (columns (3) and (6)) in a given year. A change of employer is coded as one if an individual who has worked in the current and last year is now observed in a different plant; the variable is zero if the individual is still employed in the same plant. A change in occupation (industry) is coded as one if a person works in a different occupation (industry) than in the last job.[20] The variable is not conditioned on the person being

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[20]Occupations and industries in the PASS-ADIAB are measured at the 3-digit level. The variables

Table 4.10: Mechanisms: Changing Jobs, Occupations, and Industries

	Men			**Women**		
	Change Job	*Change Occupation*	*Change Industry*	*Change Job*	*Change Occupation*	*Change Industry*
	(1)	(2)	(3)	(4)	(5)	(6)
Years in Germany	-0.0101***	-0.0228***	-0.0222***	-0.0118***	-0.0137***	-0.0107***
	(0.0023)	(0.0017)	(0.0016)	(0.0026)	(0.0016)	(0.0015)
Years in Germany Squared	0.0003***	0.0006***	0.0006***	0.0003***	0.0003***	0.0002***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0000)
Experience, Experience Squared	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Arrival Cohort Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Region of Origin Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	80106	172078	172078	75027	186581	186581
R-Squared	0.0172	0.0558	0.0666	0.0140	0.0423	0.0530
Immigrant-Native Gap	0.0923	0.1727	0.1681	0.0883	0.0974	0.0790

Notes: The table reports estimates of the relationship between years since migration of immigrants and labor market mobility. Dependent variables are indicating whether a respondent changed the employer/establishment (columns (1) and (4)), the occupation (columns (2) and (5)), and the industry (columns (3) and (6)) in a given year. The main independent variable is the preferred version of years since migration (combined from PASS and IEB data). All regressions control for a quadratic of potential labor market experience, year fixed effects, cohort of arrival fixed effects (1975-1979, 1980-1984, 1985-1989, 1990-1994, 1995-1999, 2000-2004, 2005-2009), as well as region of origin fixed effects (traditional EU countries, new EU entrants (EU-12), ex-Yugoslavia, Turkey, Asia, Africa, North and South America, Russia and other former Soviet Union republics, and other or no citizenship). The sample includes natives and immigrants aged 20 to 60, who are unemployed, non-employed, or employed (including part-time employment, non-regular employment, or in vocational training). Furthermore, immigrants in the sample immigrated after 1975 at age 20 or older. Standard errors in parantheses are robust. The initial immigrant-native gaps are computed in identical regressions that include an immigrant dummy instead of origin and cohort fixed effects. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1.

employed continuously; hence, the individual could have worked in the same job or experienced an un- or non-employment spell within the past year.

Table 4.10 indicates in the last row that, within the first years in the country, immigrant men and women are much more likely to change occupations and industries, and somewhat more likely to change jobs than natives. The estimates for years since migration and its squared term show that immigrants of both genders are much less likely to switch occupations and industries with time spent in the country. The job changing rate also declines, but less than the rate of changing occupations and industries, especially for men. This evidence is consistent with the idea that individuals first search over occupations and industries, and then for a good firm match. Such search behavior arises when occupation- or industry-specific human capital earns higher returns than firm tenure; hence, it becomes increasingly costly to switch occupations or industries later in one's career (see Neal, 1999; Pavan, 2011, for models and empirical evidence). Immigrant adults, as they start out in the host country with fewer specific skills, information and networks than their native counterparts of the same age, are likely to start the process of searching for the right occupation and industry later than natives. While the patterns are overall similar between immigrant men and women, men are initially much more likely to change occupations and industries than women. Not surprisingly then, immigrant men also experience over time a sharper decline in the probability of occupational and industry changes.

Given that immigrants search for better job matches, we should also observe that they work in different firms than natives upon arrival. A recent literature has stressed the role of the firm and sorting of workers into firms as an important determinant of wages (see Card et al., 2013, 2018). If immigrants initially lack the necessary information or networks, they might start out with jobs in less productive and possibly lower-paying firms than the average native. Recent evidence indeed suggests that ethnic networks, i.e., networks of immigrants from the same origin, facilitate fast employment, but often in low-paying jobs (see, e.g., Battisti et al., 2016; Dustmann et al., 2016; Munshi, 2003).

Table 4.11 provides some evidence whether the firm indeed plays an important role for the progress of immigrants. As before, the left-hand side shows results for men, the right-hand side for women. The table reports estimates of equation (4.1) where the outcomes are now firm characteristics. The dependent variables are the size of the firm in columns (1) and (5), the composition of the firm's workforce in columns (2)-(3) and (6)-(7) and the firm fixed effect proxying for the firm match in columns (4) and (8). Note that the number of observations in columns (4) and (8) is smaller than in the rest of the table because the firm fixed effects are only available for West Germany and for firms that existed during the period from 1985 to 2009.

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differentiate between about 330 occupations and 200 industries.

Table 4.11: Mechanisms: Firm Characteristics

	Men				Women			
	Firm Size (1)	*Share of Germans* (2)	*Share same Origin* (3)	*Firm FE* (4)	*Firm Size* (5)	*Share of Germans* (6)	*Share same Origin* (7)	*Firm FE* (8)
Years in Germany	62.4907**	0.0039**	-0.0052***	-0.0020	23.1063***	0.0079***	-0.0040	0.0037
	(26.3736)	(0.0016)	(0.0017)	(0.0018)	(7.3502)	(0.0022)	(0.0027)	(0.0029)
Years in Germany Squared	-1.0692	-0.0000	0.0001*	0.0001	-0.4262*	-0.0001	0.0000	-0.0000
	(1.2013)	(0.0001)	(0.0001)	(0.0001)	(0.2493)	(0.0001)	(0.0001)	(0.0001)
Experience, Experience Squared	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Arrival Cohort Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region of Origin Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	83065	83065	80986	53336	51324	51324	50190	24777
R-Squared	0.0082	0.1446	0.7344	0.7283	0.0080	0.0972	0.6869	0.7237
Immigrant-Native Gap	-600.9295	-0.1749	-0.8011	-0.1350	-191.8029	-0.1910	-0.0043	-0.1414

Notes: The table reports estimates of the effects of years since migration on immigrant-native gaps in firm characteristics. Dependent variables are the firm size (columns (1) and (5)), the share of German employees in the firm (columns (2) and (6)), the share of compatriots in the firm (columns (3) and (7)), and firm fixed effects (columns (4) and (8)). The main independent variable is the preferred version of years since migration (combined from PASS and IEB data). All regressions control for a quadratic of potential labor market experience, year fixed effects, cohort of arrival fixed effects (1975-1979, 1980-1984, 1985-1989, 1990-1994, 1995-1999, 2000-2004, 2005-2009), as well as region of origin fixed effects (traditional EU countries, new EU entrants (EU-12), ex-Yugoslavia, Turkey, Asia, Africa, North and South America, Russia and other former Soviet Union republics, and other or no citizenship). The sample includes natives and immigrants aged 20 to 60, who are full-time employed (not in part-time employment, non-regular employment, or in vocational training). Furthermore, immigrants in the sample immigrated after 1975 at age 20 or older. Standard errors in parantheses are robust. The initial immigrant-native gaps are computed in identical regressions that include an immigrant dummy instead of origin and cohort fixed effects. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1.

The last row shows that immigrants, even when they hold a social security job, work initially in much smaller firms than natives. Immigrant men, for instance, work in firms with on average 600 fewer employees compared to native men. For immigrant women, the initial gap (as shown in the last row) is with just about 200 fewer employees much smaller than for men.[21] This initial gap closes after about 10 years in Germany. As larger firms pay higher wages, the change in the size of employers is one source of wage assimilation.

Furthermore, the composition of the workforce with respect to nationality also changes for immigrants relative to natives with time in the country. Immigrants are initially more likely to work in firms where a larger share of the workforce comes from the same country of origin (see columns (2)-(3) and (6)-(7) of Table 4.11). Over time, they are less likely to be employed in those firms, while immigrants are more likely to work in firms with a larger share of native employees. This result supports earlier evidence that ethnic networks seem to become less important for immigrants as a source of job information and referrals over time (Dustmann et al., 2016).

Finally, immigrants might also assimilate because they are better able to identify and sort into more productive and possibly better-paying firms over time. The last row of columns (4) and (8) shows that immigrants are initially much more likely to work in lower-quality firms. The coefficients on years since migration in turn indicate no progress along this dimension over time. Hence, immigrants are not able to close the gap in firm quality relative to natives.

4.5 Conclusion

Most previous studies on immigrant assimilation in Germany find little evidence of assimilation using data from the Socio-Economic Panel (Basilio et al., 2017; Fertig and Schurer, 2007; Pischke, 1992; Schmidt, 1997). We use a novel dataset, which combines administrative social security records with a household survey providing information on year of arrival and place of birth. Based on this stock-based sample, we reconsider the question of immigrant assimilation in Germany. Our results provide a much more optimistic picture of the progress of immigrants in Germany. For both immigrant men and women, we document substantial progress in terms of employment relative to natives. Furthermore, once we account for the sizable changes along the employment margin, we also find substantial wage assimilation for immigrant men and women.

Most of the convergence occurs within the first decade after arrival; yet, the fast growth within the first ten years in Germany is not due to changes in the composition

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[21]The main reason for this difference is that immigrant men are much more likely to be employed in manufacturing and construction, while immigrant women are much more likely to work in the service industry.

of immigrants. We further document that assimilation occurs for immigrants arriving prior to 1990 and for those arriving after the fall of the Iron curtain though the speed of convergence is somewhat larger for the later arrival cohorts. In addition, assimilation is faster for immigrants from outside the European Union who also face much higher barriers to transfer their skills like educational credentials, for instance. The only exception are Turkish men, for which we do not observe any assimilation neither in terms of employment nor wages. Yet, Turkish women still experience wage assimilation – even at a faster rate than the average immigrant.

Finally, we explore potential mechanisms for the observed assimilation in employment and wages. The relative position of immigrants improves over time, as immigrants search over occupations and industries. Our evidence also suggests that the firm plays an important role in this convergence process, as immigrants are able to secure jobs in more productive firms and to rely less on ethnic networks over time.
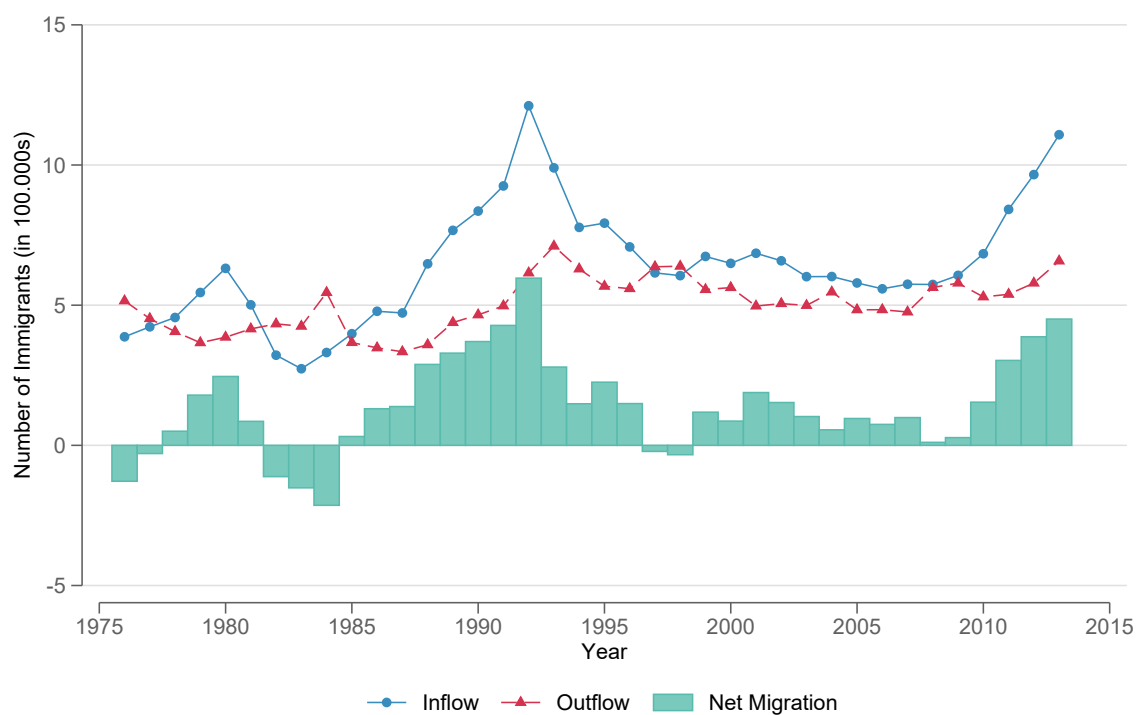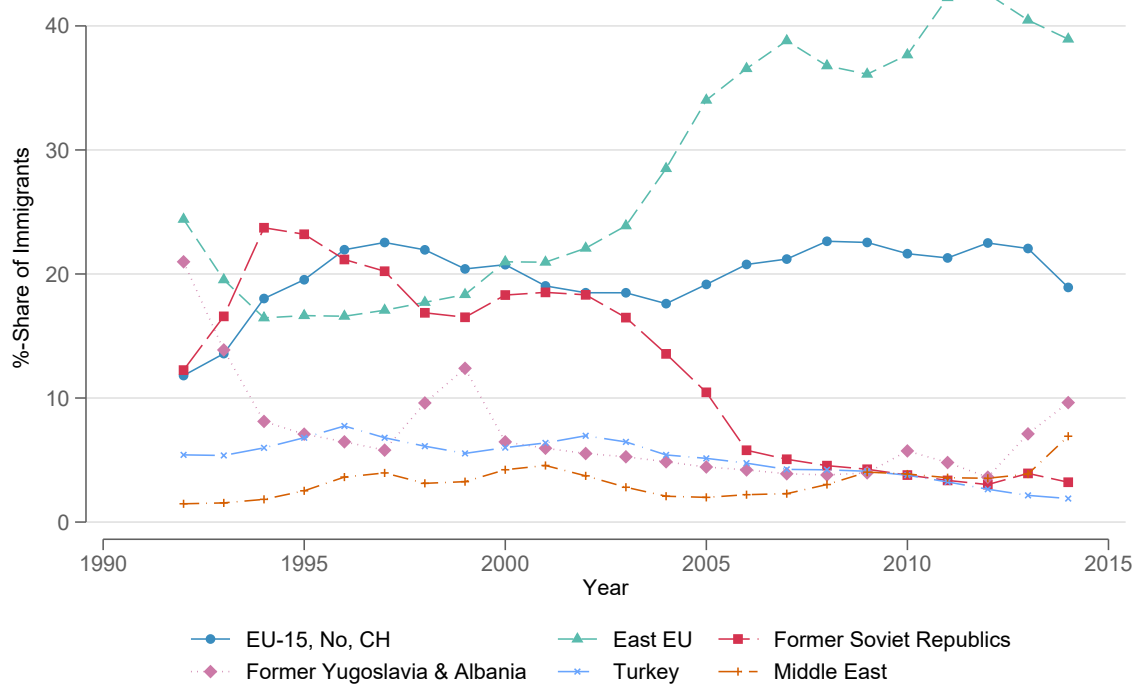
Appendix

4.A   Additional Figures

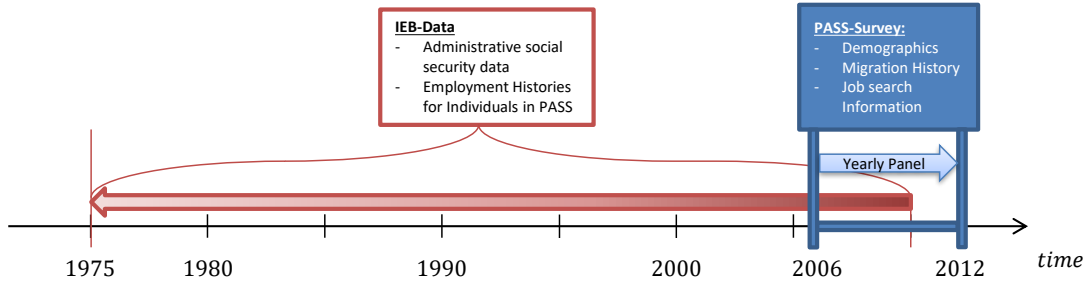Figure 4.A.1: Inflows and Outflows of Immigrants to Germany (1975-2013)

Figure 4.A.2: Main Source Countries of Immigrants in Germany (1992-2014)

Figure 4.A.3: Structure of the PASS-ADIAB

Notes: The figure illustrates the structure of the PASS-ADIAB data set.

Figure 4.A.4: Wage Distributions in IEB and PASS-ADIAB
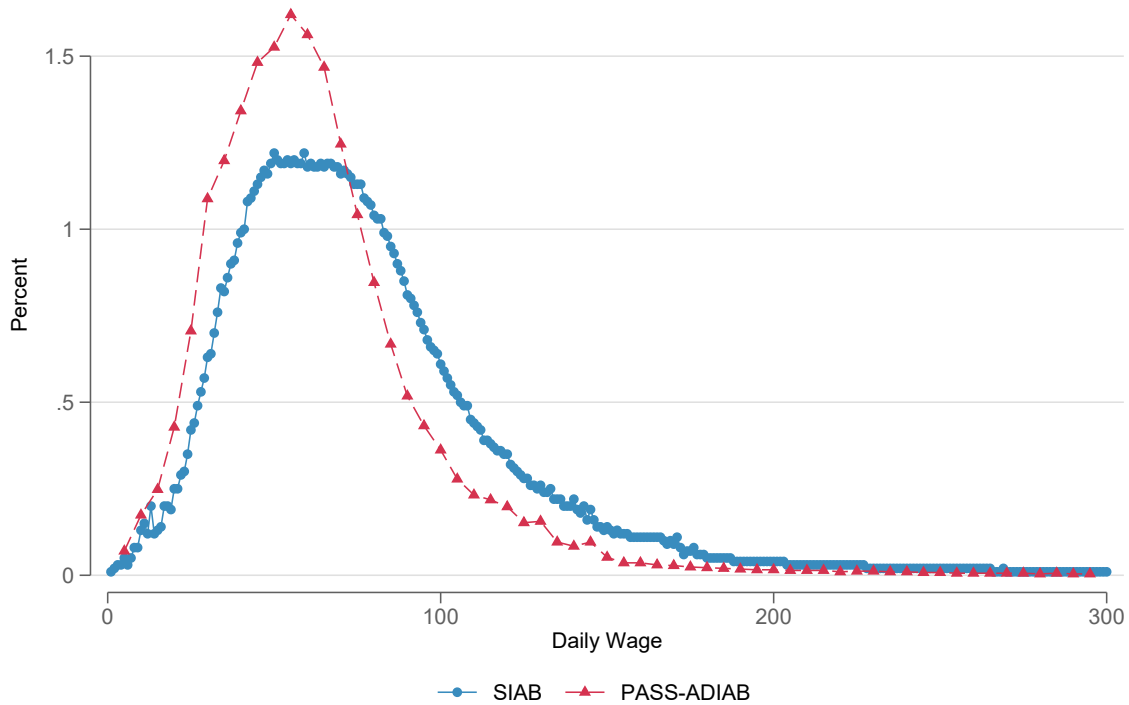
Notes: The figure displays the distributions real wages (adjusted to 1995 prices) in the IEB (1975-2010) and the PASS-ADIAB (1975-2010). The sample includes natives and immigrants aged 20 to 60, who are employed.

4.B Additional Tables

Table 4.B.1: Difference between Year of Arrival in IEB and PASS

	Men	Women
First Entry < PASS	7.73%	5.70%
First Entry = PASS	46.56%	47.37%
First Entry > PASS	45.72%	46.93%
Observations	13,229	14,020

Notes: The table reports the differences between the first entry in the social security records and the year of immigration according to the PASS survey.

Table 4.B.2: Wage Assimilation with Different YSM-Definitions

	Men			Women		
	YSM: PASS (1)	YSM: IEB (2)	YSM: Both (3)	YSM: PASS (4)	YSM: IEB (5)	YSM: Both (6)
Years in Germany	-0.0022	0.0062*	-0.0009	0.0037	0.0179**	0.0038
	(0.0034)	(0.0038)	(0.0033)	(0.0057)	(0.0076)	(0.0054)
Years in Germany Squared	0.0001	-0.0003*	0.0000	0.0004**	-0.0002	0.0004**
	(0.0001)	(0.0002)	(0.0001)	(0.0002)	(0.0004)	(0.0002)
Experience, Experience Squared	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Arrival Cohort Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Region of Origin Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	82153	81743	82258	49746	49502	49789
R-Squared	0.0669	0.0596	0.0670	0.0234	0.0217	0.0233
Immigrant-Native Gap	-0.2949	-0.2089	-0.2955	-0.2826	-0.1109	-0.2883

Notes: The table reports estimates of the relationship between years since migration and log real wages for different definitions of years since migration and origin countries. Definitions differ in the source of information: In columns (1) and (4), information from the PASS survey on the year of migration and origin country of immigrants is used to construct the main explanatory variable years since migration and the definitions of immigrants/origin countries. In columns (2) and (5), information from social security records (IEB) on the first social security record and the nationality of an observation is used to generate the same variables. In columns (6) and (7), survey information is the preferred source of information, only if the first social security records entry is found to be earlier than the reported year of immigration, information from the IEB is preferred. Sample restrictions and other control variables are the same as in the main specification. Standard errors in parantheses are robust. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1.

Table 4.B.3: Summary: PASS-ADIAB

| | Immigrants | | | | Natives | | | |
| | Men | | Women | | Men | | Women | |
	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.
Real Wage	59.9630	31.0761	49.9339	51.4242	77.1507	64.9366	53.1478	33.3458
Employed	0.4687	0.4990	0.2539	0.4353	0.5530	0.4972	0.3898	0.4877
Unemployed	0.3649	0.4814	0.4592	0.4984	0.2376	0.4256	0.2571	0.4370
Change Employer	0.0622	0.2415	0.0496	0.2171	0.0449	0.2070	0.0438	0.2046
Occupation Change	0.1565	0.3634	0.0884	0.2839	0.1298	0.3361	0.0893	0.2852
Industry Change	0.1356	0.3423	0.0708	0.2566	0.1152	0.3193	0.0838	0.2771
Firm FE	0.6882	0.4187	0.6411	0.4128	0.7331	0.3829	0.6670	0.3836
Firm Size	818.33	3794.78	366.59	853.91	1166.91	5001.21	533.20	2374.92
Firm: Median Wage	66.1541	25.3469	61.1417	26.5764	68.8052	28.5702	58.8379	27.1118
Firm: German Share	0.7903	0.2286	0.8264	0.2126	0.9388	0.0961	0.9502	0.0914
Firm: Same Origin Share	0.0930	0.2007	0.0675	0.1797	0.9388	0.0961	0.9502	0.0914
Age	40.9967	9.2226	41.0876	9.4601	36.8783	10.3321	35.7882	10.3066
High Education	0.1796	0.3839	0.2396	0.4269	0.1099	0.3127	0.0821	0.2745
Medium Education	0.5302	0.4991	0.4671	0.4989	0.7212	0.4484	0.7112	0.4532
Low Education	0.3019	0.4591	0.3065	0.4611	0.1822	0.3860	0.2156	0.4112
Experience	22.9894	9.5456	22.7155	9.7718	19.2801	10.3860	18.3461	10.4850
Years Since Migration (Combined)	10.5041	6.8915	9.9660	6.7410				
Year Arrived (Combined)	1992.51	7.25	1994.26	7.26				
Age at Migration (Combined)	30.4926	8.3723	31.1216	8.7195				
Observations	11,588		10,346		145,670		132,916	

Notes: The table reports summary statistics immigrants and natives in PASS-ADIAB sample. The sample includes natives and immigrants aged 20 to 60, who are unemployed, non-employed, or full-time employed (not in part-time employment, non-regular employment, or in vocational training). Furthermore, immigrants in the sample immigrated after 1975 at age 20 or older. The sample comprises multiple observations of individuals between 1975 and 2010.

Table 4.B.4: Within Individual Assimilation in Employment and Wages

	Employed		Log Wage	
	Men	*Women*	*Men*	*Women*
	(1)	(2)	(3)	(4)
Years in Germany	0.0111***	0.0219***	-0.0014	0.0133**
	(0.0032)	(0.0032)	(0.0033)	(0.0059)
Years in Germany Squared	-0.0003***	-0.0006***	-0.0002	-0.0003
	(0.0001)	(0.0001)	(0.0001)	(0.0002)
Experience, Experience Squared	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Arrival Cohort Fixed Effects	No	No	No	No
Region of Origin Fixed Effects	No	No	No	No
Observations	159106	144571	82273	49789
R-Squared	0.1442	0.1029	0.1668	0.0595

Notes: The table reports estimates of individual fixed effects regressions. The dependent variable in columns (1) and (2) is an indicator for being employed within the social security system; the variable is zero if a person is unemployed, non-employed or working outside the social security system. In columns (3) and (4), the dependent variable is the log of real daily wages. The main independent variable is the preferred version of years since migration (combined from PASS and IEB data). Sample restrictions and other control variables are the same as in the main specification. Standard errors in parantheses are robust. Statistical significance: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table 4.B.5: Characteristics of Native Labor Market Entrants

	Employed in Previous Year		Non-Employed in Previous Year		Non-Employed in two Previous Years	
	Mean (1)	Std.Dev. (2)	Mean (3)	Std.Dev. (4)	Mean (5)	Std.Dev. (6)
Panel A: Native Men						
High Education	0.1134	0.3171	0.0879	0.2831	0.0987	0.2983
Medium Education	0.7193	0.4493	0.6991	0.4587	0.6739	0.4688
Low Education	0.1804	0.3845	0.2297	0.4206	0.2436	0.4293
Real Wage	74.2857	67.0198	42.4795	27.8407	39.0990	27.6056
Worker FE	3.6738	0.4360	3.4429	0.4272	3.4107	0.4373
Firm FE	0.7378	0.3796	0.6139	0.4038	0.6045	0.4053
Firm Size	1188.41	4985.49	511.31	3155.32	400.93	2244.67
Firm: Median Wage	70.3301	28.9294	57.7912	23.5544	57.4037	23.4796
Observations	67,183		9,355		5,309	
Panel B: Native Women						
High Education	0.0808	0.2725	0.0794	0.2704	0.0797	0.2709
Medium Education	0.7172	0.4503	0.7170	0.4505	0.7035	0.4567
Low Education	0.2101	0.4074	0.2116	0.4085	0.2249	0.4176
Real Wage	43.9595	32.4677	26.7846	22.7178	24.8703	20.9503
Worker FE	3.9221	0.3962	3.8140	0.3741	3.7949	0.3842
Firm FE	0.6755	0.3732	0.6436	0.4036	0.6594	0.4137
Firm Size	496.24	2209.33	303.16	1274.39	279.17	1041.53
Firm: Median Wage	63.5873	27.7833	56.9706	25.1377	57.3049	25.3504
Observations	53,007		8,885		5,391	

Notes: The table reports summary statistics for different subsamples of male and female natives the PASS-ADIAB between 1975 and 2010. In columns (1) and (2), the sample includes only those individuals that were employed in the previous year. Columns (3) and (4) is restricted to individuals that are employed in a given year, and were non-employed in the previous year. Columns (5) and (6) include employed individuals that were non-employed in the two previous years. The sample is further restricted to foreign-borns who immigrated to Germany after 1975 at age 20 or older, and who are between 20 and 60 years-old. Summary statistics are reported for the following variables: indicators for high, medium, and low skilled; daily wage (adjusted to 1995 prices); worker and firm fixed effects, which have been estimated based on the universe of social security records (Card et al., 2013); the size of the firm (in employees); and the median wage of a firm.

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