

Access to Citizenship and the Social Integration of Immigrants

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Abstract

We study whether the option to naturalize improves the social integration of immigrants in the destination country. The empirical analysis relies on two immigration reforms in Germany, a country with a traditionally weak record of immigrant assimilation. For identification, we exploit the introduction of citizenship eligibility rules that varied across year of arrival and birth cohorts. Our results suggest that access to citizenship has significant effects on fertility choices, family formation and the characteristics of partners. The option to naturalize delays marriage to later ages and reduces the likelihood of marrying someone from the country of origin. Female immigrants also have lower fertility overall and tend to postpone their first birth, especially when they are high-skilled. An analysis of the potential mechanisms suggests that higher earnings are important for fertility and marriage choices. And while immigrants from a more traditional cultural background have overall higher fertility and marriage rates, they also assimilate faster than immigrants from EU member countries.

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1 Introduction

Many developed countries have accumulated sizable immigrant populations over the past decades. In Europe, for example, the share of foreign-born in 2013 is over 12% in France, 17% in Sweden and almost 28% in Switzerland. These numbers are comparable to the share of foreign-born in traditional immigrant countries such as Australia, Canada or the United States (OECD, 2015). At the same time, immigrants often seem to perform poorly in terms of economic assimilation with higher unemployment rates and lower earnings than natives (e.g. Algan et al., 2010; OECD, 2006). In Europe, they often seem to fall short along social, cultural and political integration as well (Algan et al., 2012).

The lack of economic and social integration poses substantial challenges to destination countries. Social exclusion might threaten the social cohesion of societies, for instance, by fostering unrest and hostility among the native population. Anti-immigrant attitudes seem to be only in part explained by economic well-being and the perceived effects of economic competition from immigrants (e.g. Scheve and Slaughter, 2001; Mayda, 2006; Dustmann and Preston, 2004). Instead, natives appear to be just as much concerned about the cultural and social impact of immigration on the host country. Dustmann and Preston (2004), for example, find that opposition to immigration in the UK is more closely related to racial intolerance than to fears about fiscal costs or labor market competition. Based on data for several countries, Mayda (2006) finds that concerns about crime and identity are important determinants for attitudes toward migration. As such, negative attitudes and discrimination against immigrants seem to be a combination of the perceived economic impact, be it in the labor market or on the welfare state, and the social and cultural influence on the host society - where the latter appears more important among the low-skilled population in the host country (e.g. Card et al., 2012).¹

The importance of both socio-cultural and economic concerns in the native population suggests that we need to understand assimilation not only in terms of wages, employment or formal education; but also shed light on the process of or barriers to social and cultural assimilation. Understanding these factors facilitating (or hindering) integration along economic but also social dimensions seems crucial for the economic and social well-being of immigrants and destination countries alike. In this article, we ask whether access to citizenship could be a policy instrument to advance immigrants' position in the destination country. In particular, does a more liberal access to citizenship speed up the social integration of immigrants in terms of family formation, fertility choices or the type of partner chosen?

¹Experimental evidence from a public opinion survey in the Netherlands suggest that concerns about national identity are an important driver for the opposition against immigrants - and even more important than economic factors (see Sniderman et al., 2004; Hainmüller and Hopkins, 2014 provide a recent survey of the political science literature).

To investigate the effect of citizenship empirically, we cannot simply compare naturalized and non-naturalized immigrants. Because naturalized migrants are not selected randomly from the immigrant population, it is challenging to separate the causal return to citizenship from the selection into naturalization. Migrants applying for citizenship might well be those with the highest motivation and the best prerequisites to integrate into the host society. Previous studies from Canada and the United States, for instance, suggest indeed that selection into citizenship is positive with respect to observable skills (see e.g. Chiswick and Miller, 2008 for the United States; and De Voretz and Pivnenko, 2006 for Canada). A second difficulty facing the researcher is that eligibility to citizenship is often closely tied to the number of years an immigrant has resided in the host country. Time in the host country in turn is often positively correlated with measures of integration like language skills or intermarriage, for example. As a consequence, it is difficult to disentangle the returns to citizenship from social assimilation in the host country more broadly.

To overcome these empirical challenges, we exploit the unique setting in Germany. Today, almost 10 millions foreign-born live in Germany, about 13% of its population. Yet, Germany is an exemplary case for the assimilation and integration problems of immigrants. Immigrants have lower general trust and are more risk averse than natives even in the second generation; they often do not identify as Germans as well (e.g. Algan et al., 2012 for recent evidence). Most important for our purpose, Germany has substantially liberalized its access to citizenship over the past decades. Traditionally, Germany had a very restrictive citizenship law which was closely tied to ancestry and ethnic origin. Starting in the early 1990s, there have been important changes in Germany's immigration policy. In 1991, the government introduced for the first time explicit criteria how immigrants can obtain German citizenship. Since 2000, immigrants can naturalize after 8 years of residency in Germany, and children of foreign parents in Germany now obtain citizenship at birth.

To identify the effects of citizenship, we make use of two institutional peculiarities of Germany's reforms. The 1991 reform defined age-dependent resident requirements for naturalization. Specifically, adult immigrants (aged 23 and above) faced a 15-year resident requirement before they could apply for citizenship. Adolescent immigrants (ages 16-22) in turn could apply for German citizenship after only 8-year of residence. Hence, young immigrants (born between 1969 and 1975) who arrived in Germany in 1983, for example, became eligible for citizenship in 1991, right after the reform was passed. Adult immigrants (born before 1969) who came to Germany in the same year had to wait until 1997 in order to be eligible, or 7 years after the younger cohort. The second immigration reform in 2000 reduced resident requirements for all immigrants to 8 years. As a consequence, all adult immigrants who arrived in Germany between 1985 and 1992 become eligible immediately in 2000 but had lived in Germany between

8 and 15 years. We can therefore compare outcomes of immigrants who are somewhat younger or arrived in Germany somewhat earlier and, for this reason, are eligible for naturalization several years earlier than other immigrants. Our analysis thus identifies the returns to eligibility (option to naturalize) while being able to control for the effects of cohort quality, age and general assimilation effects.

The focus of our main analysis is on the reduced-form relationship between eligibility for citizenship and measures of social assimilation controlling for other influencing factors. Knowing whether a more liberal access to citizenship affects immigrants' integration is important in its own right. Furthermore, the 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 the immigrants themselves, it represents the option value of naturalization.

We have four main results. First, we find that eligibility reduces the demand for children. Because not all immigrant women in our sample have completed their fertility, the declining number of children reflects in part a postponement of births. Both the decline in fertility and the rising age at first birth indicate that immigrants converge to the fertility choices of natives. After the mean years of eligibility in our sample, the immigrant-native gap in fertility of closes by 20-25 percent. Second, eligibility for citizenship reduces the likelihood of marriage for men and women - both the probability of being currently married and the probability of ever being married. As eligibility has no effect on marital stability or cohabitation, this finding suggests that eligible immigrants postpone marriage to search for a suitable match. Third, eligible women but not men choose different partners (whether married or cohabitating). Eligible women are less likely to have a German native or a second generation immigrant from the same origin as a partner. Their partners have been in Germany for a shorter period and are therefore less likely to qualify for citizenship on their own. Finally, we investigate the potential channels why access to citizenship speeds up social integration. We find that income explains about 25 percent of the speed of assimilation. In addition, we find that the cultural heritage of immigrants matters. Immigrants who come from more traditional cultures with higher fertility, for instance, have higher fertility themselves; but they also reduce their fertility much more with access to citizenship. Overall, the speed of assimilation in fertility is about double at the 75th percentile than at the 25th percentile of the source country's fertility distribution. These findings show that immigrants adapt much faster into the host society if they have the option to naturalize.

This article contributes to three strands of the literature. First, we contribute to the literature on citizenship. The vast majority focuses on citizenship's impact in the labor market (e.g. Chiswick, 1978; and Bratsberg et al., 2002 for the US; De Voretz and Pivnenko, 2006 for Canada; Gathmann and Keller, 2016 for Germany). However, citizenship may not only affect the labor market performance of immigrants

but might have an impact on social and cultural integration into the host country as well (see also OCED, 2011). A few recent studies have analyzed the link between birthright citizenship for second-generation immigrants and fertility choices of their parents (Avitabile et al., 2014), educational attainment of second-generation immigrant children (Felfe and Sauer, 2015) or parents' interactions with host country culture (Avitabile et al., 2013; Sajons, 2015).² All of these studies analyze how birthright citizenship for newborn children affect the social and cultural integration of their parents. Our paper in turn investigates how fertility, family formation and matching behavior change when the immigrant herself can naturalize in the host country.

Our study is also related to the sizable literature on immigrant assimilation. Most of the literature in economics has focused on labor market assimilation and its determinants (e.g. Borjas, 1985, 1995; Card, 2005; Hu, 2000; Lalonde and Topel, 1997; Lubotsky, 2007; Dustmann and Glitz, 2011 survey the literature).³ Yet, as noted by Algan et al. (2012), assimilation seems to vary a lot depending on the dimension considered. Economic assimilation, for instance, might be faster than integration along social and cultural dimensions; and some immigrant groups might integrate much faster along some dimensions than others. A small literature analyzes cultural assimilation among immigrants measured, for instance, by national identity (e.g. Dustmann, 1996) or values and beliefs (Algan et al., 2012; Bisin et al., 2008). A much larger literature in economics but also sociology compares natives and immigrants with respect to family formation and fertility behavior (e.g. Ben-Porath, 1973; Bleakley and Chin, 2010; Adsera and Ferrer, 2014; and Furtado and Trejo, 2013 survey the literature). The evidence typically shows that there are substantial differences between natives and immigrants in fertility, marriage behavior and the type of partner chosen. With time in the host country, most studies report a decline in the immigrant-native gap though full convergence may span several generations. Rather than comparing immigrants to natives, we analyze the assimilation process for immigrants who get eligible for citizenship at different points in time.⁴ Our main contribution to this literature is however, that we evaluate the effects of a particular policy, liberalization of citizenship, for the speed of social assimilation and its determinants. Our results thus have direct implications for policy-makers wishing to promote immigrant integration in the host countries.

Finally, this paper also contributes to a broader literature examining the impact of culture on economic and social behavior. Several recent studies employ immigrants from different source countries to separate

²A related literature studies the relationship between naturalization and political involvement link between naturalization and political involvement (Bevelander, 2011; Hainmüller et al., 2014). Our study focuses on the impact of citizenship on fertility and family formation instead.

³For Germany, most studies do not find much evidence for economic assimilation (see e.g. Pischke, 1993; or Schmidt, 1997).

⁴Similarly, Lalonde and Topel (1997) and Blau et al. (2011) also use different immigrant cohorts to study the link between years in the U.S. and economic integration.

the influence of culture and norms from other institutional factors in a host country. The basic idea is that immigrants have been exposed to different traditions and values, either in the country of origin or, for second-generation immigrants, through parents and ethnic neighborhoods, but face the same institutional and economic incentives in the host country (see Fernandez, 2011 for a detailed exposition of the epidemiological approach). Most related are studies that have analyzed female labor supply (Alesina and Giuliano, 2010; Blau, 1992; Blau et al., 2011; Fernández and Fogli, 2009), fertility (Fernández and Fogli, 2009), divorce (Furtado et al., 2011) or living arrangements (Giuliano, 2007).⁵ The paper closest to ours is by Blau et al. (2011) who analyze how cultural origin affects the speed of labor market assimilation of female immigrants in the US. The research question we address here: how citizenship affects social assimilation, has not been studied so far. What influence does the cultural heritage of immigrants have on the integration through citizenship compared to say, human capital or income?

The article proceeds as follows. The next section discusses the recent immigration reforms in Germany. Section 3 introduces our data sources and the empirical strategy to identify the returns to citizenship. Section 4 discusses the empirical results on social integration, while Section 5 studies potential mechanisms. Section 6 concludes.

2 Theoretical Considerations

2.1 Fertility Decisions

Economic theory suggests a number of reasons why access to citizenship might affect fertility behavior of immigrants. One important channel is that citizenship improves the economic position of immigrants in the host country (see e.g. Bratsberg et al., 2002 for the US; or Gathmann and Keller, 2015 for Germany). For Germany, Gathmann and Keller (2015) show that eligible immigrants have higher wages and more stable jobs than immigrants who are not yet eligible. Higher wages would generate both an income and substitution effect on fertility (Becker, 1960; see Hotz, Klerman and Willis, 1997 for a survey). More income should increase the demand for children while higher female wages increase the opportunity cost of children. Since Gathmann and Keller (2015) also find that immigrant women in Germany benefit much more than immigrant men, citizenship is likely to reduce total fertility among immigrant women.⁶

⁵The epidemiological approach has fruitfully been used to study outcomes as diverse as economic growth (Algan and Cahuc, 2008), political participation (Alesina and Giuliano, 2011), preferences for redistribution (Luttmer and Singhal, 2011) or national identity (Manning and Roy, 2010).

⁶Note that women may adjust not only the number of children, but also the quality dimension 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, Klerman and Willis, 1997). Avitabile et al. (2013), for instance, provide evidence that fewer children are born if the children obtain citizenship by birth; at the same time, parents also seem to invest more into these children. If immigrants who get themselves

Better career opportunities in the formal labor market could affect the timing of birth as well. In economic models of fertility, couples time fertility to maximize lifetime income. Two factors then affect the timing of birth: whether skills depreciate during absence from the labor market and whether credit markets are perfect or imperfect. With perfect credit markets and no skill depreciation, fertility will be high at the beginning of the labor market career when female wages are low. If capital markets are imperfect and skills do not depreciate, fertility will be high when the husband's income is high as financial resources cannot be shifted intertemporally. If skills deteriorate, it is not longer clear that these predictions hold because there is an additional cost from human capital loss. Since skill depreciation is likely to be less important among low-skilled women, they will have more children when capital markets are imperfect and postpone children when they are not credit constrained. For high-skilled women, skill depreciation is more important and credit constraints potentially less. As such, we would expect that high-skilled immigrant women are most likely to postpone their first birth after becoming eligible for citizenship.

2.2 Family Formation

Immigrants often come from more conservative societies where the family plays a very important role and women have more traditional roles in society. These attitudes do not only affect women's labor market performance, but also family formation. Immigrants often marry younger and are less likely to cohabitate. Immigrants are also less likely to divorce which might be explained by their more conservative values or lack of information about the legal situation in the host country. How would access to citizenship affect immigrants' marriage and divorce decisions in the host country?

Access to citizenship could improve an immigrant's marriage market position for different reasons: First, the better labor market position of eligible immigrants will also make them more desirable spouses if one assumes that income and job stability are attractive traits in the marriage market. Second, a German passport is likely to be a valued characteristic in the marriage market, especially among recently arrived immigrants, because foreign spouses of natives may naturalize after only three years of residence. Finally, citizenship and the implied incentives to invest in country-specific human capital could lead to less reservations on behalf of natives. In a marriage market with search frictions, the reservation value for accepting a partner might then increase for immigrants with access to citizenship. We would therefore expect that immigrants search for a spouse longer and that the quality of the match increases (Becker, 1973, 1974; Mortensen, 1988; Burdett and Coles, 1999; Browning, Chiappori and Weiss, 2014 for a survey).

For immigrants already married at the time of eligibility, the effects of citizenship are more subtle. In

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principle, both the immigrant and the spouse can get naturalized when one spouse becomes eligible for citizenship. However, our previous research (Gathmann and Keller, 2015) shows that immigrant women have higher monetary benefits from citizenship than immigrant men. Hence, higher relative earnings of women should affect the relative bargaining power in a couple (as long as the weights depend on relative earnings of spouses). Apart from this power-shift within couples, the risk of divorce can be influenced in different ways by citizenship. In a dynamic search or matching framework, divorce is explained by uncertainty in terms of learning about the quality of a spouse, variations in match productivity, or variations in outside options (Burdett and Coles, 1999; Becker et al., 1977). Access to citizenship and its positive monetary effects for women come into play in all these dimensions: The unexpected change in the earning capacity of women has an impact on the match productivity of marriages. For the US, Weiss and Willis (1997) find that an unexpected increase in the wife's earning capacity increases the divorce risk. On the other hand, a higher total income of a couple can lead to higher gains of a marriage and therefore stabilize a marriage. Finally, by improving the position on the remarriage market, citizenship improves outside options and could therefore increase the risk of divorce (Becker et al., 1977; Browning, Chiappori and Weiss, 2014 for a survey). Overall then, the expected effects of citizenship on the probability of divorce are ambiguous.

2.3 Characteristics of Partner

In principle, there are several reasons why immigrants are more likely to have a partner from the same ethnic origin: the first one is that a common ethnic background (including a common religion, for example) is a complement in the production of ethnic household goods like food or a child's education, for instance. A second reason is that immigrants are more likely to meet members of their own group if they live in an ethnic enclave or are clustered in certain areas. Finally, there might also be constraints imposed by the ethnic group or the family on which partner an immigrant can choose.

With time in the host country however, the influence of the source country's culture is weakened, and immigrants might have more contact with natives. Furthermore, marrying a native gives immigrants a fast track to citizenship (after three years of residency rather than after eight or fifteen years in the host country). These factors should encourage intermarriage or (except for the last one) cohabitation with a native partner. A high rate of intermarriage signals reduced social distance between the groups involved and the fact that individuals of different ethnic backgrounds no longer perceive social and cultural differences significant enough to prevent mixing, the choice of a partner and marriage (see e.g. Meng and Gregory, 2005; Chiswick and Houseworth, 2011; Furtado and Trejo, 2013; and Adsera and Ferrer, 2014 provide surveys). Marriage is an important mechanism for the transmission of ethnically specific cultural

values and practices to the next generation as well. Hence intermarriage, by changing the scope for socialization, may fundamentally affect the boundaries and distinctiveness of ethnic minority groups.

The citizenship reforms now allow immigrants to obtain a German passport independently of marrying someone with a German passport. Therefore, we might expect that the citizenship reforms actually reduces incentives to marry a native. At the same time, intermarriage with natives is often viewed as an indicator of social assimilation. Access to citizenship could then raise intermarriage rates because their improved position in the labor market brings eligible immigrants in closer contact with natives; or, because naturalization reduces reservations against immigrants in the native population.⁷ At the same time, an eligible immigrant also becomes a more desirable spouse, especially among recent immigrants who themselves do not yet satisfy the resident requirement. That would reduce the likelihood of marrying a native and increase the likelihood of marrying another immigrant. Overall then, it is not obvious a-priori whether access to citizenship increases or actually decreases intermarriage rates with German natives.

Citizenship might affect the assortative matching along other observable characteristics such as age or education as well. Researchers have typically observed positive assortative matching with respect to education which might arise if there are important consumption and leisure complementarities among the partners (Stevenson and Wolfers, 2007). Immigrants in turn often downgrade in the marriage market by marrying a less skilled partner; or immigrant women accepting a larger age difference. When immigrants gain access to citizenship, they become more equal to natives and more desirable for recent immigrants. As a consequence, we might expect that eligible immigrants now downgrade less by choosing more educated partners and, for eligible women, a lower age gap.

Becker (1973) develops a model of household formation whereby the marriage market generates couples that match on traits which are complements in the production of household goods. Conceptualizing these household goods as companionship, healthy and happy children, and quality of meals, for example, he cites education, religion, and race as examples of traits which are likely to be complements in production. In Lam's (1988) model of marriage, the gains from marriage result from the joint consumption, as opposed to production, of household public goods. Since many of the commodities produced within families are also jointly consumed within families, it is optimal for marriages to form between people with similar demands for these goods. Because ethnic backgrounds of spouses are likely to be complements in the production of ethnicity-related household public goods (such as vacations to the homeland and ethnic meals), both Becker and Lam's models predict marriage market matching based on ethnic background.

⁷Evidence from the European Social Survey however suggests that naturalized immigrants indeed feel much less discriminated against in Germany than non-naturalized immigrants (OECD, 2011, Figure 8.1).

For similar reasons, spouse-searchers may also find it optimal to match on education, age, language, and religion, for example. In Becker’s model, couples are formed in a manner which maximizes aggregate surplus in the marriage market. However, in a world with search costs, optimal matches do not always occur, forcing marriage market participants to make decisions about the characteristics of spouses they value most. Moreover, given the spatial distribution of these traits and the fact that marriage markets tend to be local, matching will also depend on the characteristics of the local marriage markets.

3 Institutional Background

3.1 Immigration Law Prior to 1991

More than 10 million - or about 13% of the population - in Germany is foreign-born. After World War II, most immigrants, especially from Turkey, Yugoslavia or Italy came to Germany as guest workers. From the late 1950s until the program was abolished in 1973, the guest worker program actively recruited foreign, mostly low-skilled labor, to meet the growing demand of Germany’s booming manufacturing sector. Originally, the guest worker program was intended as a short- to medium-run measure. In practice, however, many guest workers stayed, brought their spouses and families and settled down in Germany.⁸ 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, around one million foreigners (about 1% of its population) arrived in Germany each year.⁹ These immigration rates are comparable to those in the United States during the era of mass migration.

Despite substantial immigrant flows, Germany had no explicit naturalization policy at the time. Prior to 1991, German 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 ancestry would qualify for naturalization did not exist. The official doctrine was that foreigners were only temporary residents in Germany - even though many foreigners had already lived in the country for several decades.

⁸Their legal status was based on a residence and work permit which became permanent after five years and fully unrestricted after eight years if a person had worked for at least five years in a job subject to social security contributions. Close family members could also obtain a residence permit in order to move to Germany. At the same time, the German government used financial incentives to encourage return migration, especially after the guest worker program ended in 1973.

⁹Many of these were ethnic Germans (i.e. immigrants with some German ancestry), mostly from Eastern Europe and the former Soviet Union, who had access to citizenship within three years of arrival in Germany. Since 1992, the inflow of ethnic Germans is restricted to 220,000 per year. Stricter application requirements (esp. German language requirements) and a reduction in financial assistance further reduced the number of applicants in the late 1990s. 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 (Bundesministerium des Innern, 2008). Below, we drop ethnic Germans from our sample as they are not affected by the immigration reforms we study.

3.2 Germany's Citizenship Reforms in 1991 and 2000

The passage of the Alien Act (“Ausländergesetz” (*AuslG*)) 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 immigration and citizenship. The reform which came into effect on January 1, 1991 defined, for the first time, explicit rules and criteria for naturalization.¹⁰ Most importantly for our purpose, the new law imposed an age-dependent resident requirement. Adolescent immigrants (aged 16-22 in 1991 or later) became eligible after eight years in Germany. In contrast, adults (aged 23 and older in or after 1991 who have not yet been eligible under the reduced resident requirement) became eligible for citizenship only after fifteen years of residence in Germany.¹¹ These resident requirements are still quite restrictive in comparison to other countries. Immigrants in Canada, for example, may naturalize after three years of permanent residence, while resident requirements in the United States and many European countries (like the UK, or Sweden) are five years - and hence substantially shorter than the rules imposed by the German reform.

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 explicitly 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 origin allowed dual citizenship as well.¹² A second requirement was that the applicant must not be convicted of a criminal offense.¹³ Adult immigrants (23 years or 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. Adolescent immigrants (aged 16-22) had to have completed a minimum of six years of schooling in Germany, of which at least four years had to be general education. Finally, an applicant had to declare her loyalty to the democratic principles

¹⁰The reform was preceded by more than a decade of intense political discussion that oscillated between the desire to restrict immigration, to encourage return migration and the recognition for social integration of the foreign population already living in Germany. Several reform attempts were made during the 1980s, mostly from left-wing parties, but defeated by the political opposition or influential social groups. The reform in 1991 was pushed on the political agenda by a ruling of the Federal Constitutional Court whether immigrants should be entitled to vote in local elections for foreigners in 1989. The Court ruled those local voting rights unconstitutional but advocated a liberalization of Germany's naturalization policy (see Howard (2008) for a more detailed discussion).

¹¹See § 85 *AuslG* (Alien Act) for adolescent immigrants and § 86 *AuslG* (Alien Act) for adult immigrants. If the applicant stayed abroad for no more than 6 months, the period of absence still counted toward the resident requirement. Temporary stays abroad (between 6 months and 1 year) may still count for the resident requirement. For permanent stays abroad (longer than 6 months), the applicant could count up to five years of residency in Germany toward the resident requirement.

¹²Children 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.

¹³Applicants 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.

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.¹⁴

The different resident requirements for adult and adolescent immigrants remained in place until the second important reform came into effect on January 1, 2000. The Citizenship Act (“Staatsangehörigkeitsgesetz” (StAG)) reduced the resident requirement to eight years irrespective of the immigrant’s age.¹⁵ The other requirements of the 1991 reform remained in place: applicants could not have a criminal record, had to demonstrate loyalty to democratic principles as well as economic self-sufficiency. In addition, the new law also required applicants to demonstrate adequate German language skills prior to naturalization. As before, the law of 2000 did not recognize dual citizenship in general though exemptions became more numerous in practice.¹⁶ 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.¹⁷

The liberalization of citizenship law after 1991 and again after 2000 is reflected in the number of naturalizations in Germany. Prior to the first reform, less than 20,000 persons became naturalized on average each year. After the immigration reform in 1991, naturalizations increase during the 1990s to 60-70,000 per year. After the second reform in 2000, the number of naturalizations jumps to over 180,000 and then gradually declines, but remains above 100,000 per year. Scaled by the immigrant population, the propensity to naturalize is still low in Germany: by 2007, about 35-40% of first-generation immigrant

¹⁴Similar criteria are found in other countries. Overall, they seem to play a subordinate role for the naturalization process. A survey of eligible immigrants by the Federal Office of Migration and Refugees showed that the majority of migrants had good knowledge about the naturalization criteria. Of those, 72% reported that they fulfilled all requirements completely while 23% reported to meet most, though not all of the criteria (BAMF, 2012). As such, rejection of applications for citizenship based on criteria other than resident requirements should not be a major concern. If anything, this would bias our estimates downward as we would define an immigrant as eligible (based on the resident requirement) even though she is not (based on one of the other eligibility criteria).

¹⁵The law was adopted with a large majority in the lower house on May 7, 1999 and the upper house on May 21, 1999. The provisions are laid down in § 10 Abs. 1 StAG (Abs. 2 for spouses and dependent children of eligible immigrants), which form the basis for over 80% of all naturalizations in Germany (BAMF, 2008). Additional ways to naturalize are laid down in § 8 (naturalizations based on a discretionary decision of the authorities because of “public interest”) and § 9 (naturalization for spouses of German citizens who face a reduced resident requirement of 3 years).

¹⁶In addition to citizens of the EU member states, it became easier for older applicants and refugees to keep their previous citizenship. Applicants could also keep their nationality if it was legally impossible to renounce it or if it imposed a special hardship like excessive costs or serious economic disadvantages (e.g. problems with inheritances or property in their country of origin).

¹⁷See Avitabile et al. (2013; 2014) for an analysis of the *jus soli* provisions of the 2000 reform. There might be an indirect effect on first-generation immigrants, however. Before the 2000 reform, second- or third-generation immigrants could only become naturalized if their parents applied for citizenship. After the 2000 reform, young children had access to German citizenship independently of their parents’ decision (subject to the resident requirements outlined above). Hence, the reform of 2000 might have actually decreased the inter-generational benefits of citizenship for foreign parents with young children.

population with more than ten years of residency became German citizens; for comparison, the share is about 60% in the United Kingdom and over 80% in Canada (OECD, 2011).

4 Data and Empirical Strategy

4.1 Microcensus

Our main data source to study the effects of citizenship on social integration is the German Microcensus, an annual survey of 1% of the population in Germany. The main advantages of the Microcensus are the large samples of foreigners (about 50,000 per year) and detailed information about household composition, socio-demographic characteristics and year of arrival in Germany. Since 2005, the Microcensus elicits whether an immigrant has obtained German citizenship and the year in which naturalization took place.¹⁸ Most of our analysis will therefore rely on data for the 2005-2010 period. The main advantage is that we can study both the decision to naturalize as well as the returns to naturalization using an instrumental variable approach. The drawback of using this later time period is that many immigrants will have become eligible for German citizenship prior to 2005. We return to this issue in the next section when we introduce our empirical approach.

The sample is restricted to first-generation immigrants, i.e. immigrants born outside of Germany. We drop ethnic Germans who can claim some German ancestry and therefore have access to German citizenship within three years of arrival. In our sample, we define ethnic Germans as individuals born outside Germany with a German passport who naturalized within three years of arrival in Germany (which is legally impossible for regular immigrants even after the 1991 and 2000 reforms) and whose previous nationality was Czech, Hungarian, Kazakh, Polish, Romanian, Russian, Slovakian or Ukrainian as ethnic Germans (see Birkner, 2007; Algan et al., 2010 follow the same approach). To make our sample even more homogeneous, we further restrict the analysis to immigrants arriving between 1976 and 2000 who were 16-30 years-old when they first become eligible for citizenship. As a result, individuals are between 16 and 48 years-old when we observe them in our sample, which is the relevant period for making marriage and fertility choices.

Our main outcome variables of interest are fertility choices (whether an immigrant woman has any children, the number of children born and the age when she gave birth to her first child; whether she is a single mother); family formation (whether an immigrant is currently married; has ever been married; is divorced; is cohabitating without being married); and the characteristics of partners (whether the partner

¹⁸In contrast, no such detailed information is available in the German Socio-Economic Panel (SOEP) or the social security data from the IAB, two other popular data sources.

is a native; an immigrant from the same origin; or a second-generation immigrant from the same origin; we also study the partner’s duration of residence in Germany as well as their age and education). The main control variables are year of birth, year of arrival, the number of years in Germany, gender and education. We distinguish between low-skilled (no high school or vocational degree), medium-skilled (a higher school degree or a vocational degree) and high-skilled immigrants (with a college degree). To study whether some immigrant groups assimilate faster than others, we generate ten broad 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, ex-Yugoslavia (except Slovenia) and the Former Soviet Union (except the Baltic states). We lump together other immigrants into broad regions of origin (Asia, Africa, the Middle East and North or South America).

To investigate the mechanisms underlying social integration, we investigate economic and cultural forces: we first analyze whether citizenship affects social integration through improvements in economic resources which is measured by monthly personal income.¹⁹ The second mechanism we study is the role of the source country’s culture on the social integration of immigrants. To do so, we merge information on fertility rates and female labor force participation rates in the source country prior to an immigrant’s departure to our main data. Table A1 shows summary statistics of our sample of first-generation immigrants in the Microcensus and the aggregate source country characteristics. Further details on the variables and the aggregate source country characteristics is contained in the data appendix.

4.2 Socio-Economic Panel

For supplementary analyses we rely on the Socio-Economic Panel from 1984-2009, an annual panel interviewing more than 20,000 individuals about their labor supply, income and demographic characteristics.²⁰ Our basic sample again consists of all first-generation immigrants who arrived in Germany between 1976 and 2000 and are between 16-30 years-old when they first get eligible for citizenship. Given these restrictions, the immigrant sample in the SOEP is much smaller than in the Microcensus. The main advantage is that we observe immigrants also before they get eligible for citizenship. Our main dependent variable are the age of first marriage, the marital status when an individual has been in the country for at least eight years. We further study self-reported language skills in writing or speaking German (recoded to range

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

²⁰Wagner, Frick and Schupp (2007) provide a comprehensive description of the data set. The SOEP oversampled immigrants in 1984 and 1994/5; as a consequence, the composition of immigrants in the SOEP differs from the immigrants surveyed in the Microcensus.

from 0 = not at all to 4 = very well). Our main control variables are year of arrival, year of birth and the number of years spent in Germany. In the SOEP, we distinguish between low-skilled (with no high school or vocational degree), medium-skilled (with high school or vocational degree), high-skilled (holding a tertiary degree) and those currently enrolled in school. We further classify immigrants into ten broad region of origins which are defined as in the Microcensus. Table A2 shows summary statistics for our sample of first-generation immigrants in the SOEP.

4.3 Identifying Variation and Estimation Approach

To study the effects of citizenship on social integration, we cannot just compare naturalized and non-naturalized immigrants as the decision to become a German citizen is endogenous. The stepwise liberalization of resident requirements in the 1991 and 2000 reforms introduces variation in years eligible across immigrants and over time which we can exploit to analyze the returns to citizenship. The key insight here is that the two reforms create variation in the eligibility for citizenship depending on an immigrant’s arrival year and year of birth (as well as calendar year).²¹ Figure 1 illustrates for selected arrival cohorts (shown on the x-axis) which birth cohorts get eligible under the reduced residency requirement (shown in red) and which birth cohorts do not (shown in blue). Take the arrival year of 1980. One immigrant is born in 1969 and therefore becomes eligible for citizenship in 1991 under the eight year resident requirement. Another immigrant is born in 1968 but would not be eligible for citizenship in 1991 because she is then 23 years-old and therefore does not qualify under the reduced resident requirement. Instead, she would become eligible in 1995 - after fifteen years in Germany. A similar logic applies to earlier arrival cohorts (arriving between 1977 and 1982): adolescent immigrants (born between 1969 and 1975) can naturalize right after the reform in 1991. Adult immigrants (born 1968 or before) in contrast can only naturalize between 1992 and 1997 or one and six years later than the adolescent immigrant in the same arrival cohort. For immigrants arriving between 1983 and 1985, the younger immigrant has been eligible seven years longer than the older immigrant when we first observe them in 2005 even though both are of similar age and arrived in Germany in the same year.

The reform of 2000 which reduced resident requirements for all immigrants to eight years provides us with additional variation. Take two immigrants who arrived in Germany in 1990: The younger immigrant (born in 1976, for example) gets eligible after eight years in 1998, while the older immigrant (born in 1975,

²¹We abstract in our analysis from other eligibility criteria discussed in Section 2 either because we do not have any information (e.g. about the criminal record) or because it is unclear how the criteria is applied (e.g. economic self-sufficiency). As a consequence, we are likely to misclassify a few immigrants who satisfy the resident requirements but are not eligible according to some other criteria. This misclassification will result in a downward bias of eligibility on naturalization propensities (as some individuals, which we classify as eligible, cannot naturalize in practice).

for example) gets eligible with the 2000 reform. The same argument applies to all immigrants arriving between 1986 and 1992: immigrants who arrive in Germany at age 14 or earlier are eligible after eight years while immigrants arriving at age 15 or later get eligible in 2000.²² Again, immigrants of the same arrival cohort get eligible in very different years because of small age differences.

We next discuss how we exploit these differences in access to citizenship for our analysis. In the first step, we define the year an immigrant first satisfies the resident requirement. The variable is calculated as follows: (a) the year in which an immigrant has lived in Germany for at least 8 years and is then between 16 and 22 years old in 1991-1999; (b) the year in which an immigrant has lived in Germany for at least fifteen years and is 23-30 years old in the 1991-1999 period (given that she has not qualified for citizenship under (a)); (c) the year in which an 16-30 years-old immigrant has lived in Germany for at least eight years in the 2000-2010 period. Finally, (d) some immigrants who have lived in Germany for at least eight years only become eligible in the year they turn sixteen. In a second step, we calculate the years since an immigrant has been eligible for citizenship as the difference between the current year and the year of first eligibility. The eligibility variable is zero before an immigrant becomes eligible for citizenship and equal to the number of years since an immigrant has become eligible thereafter.

We then estimate variants of the following model:

$$Y_{iabt} = \beta YrsElig_{abt} + \gamma_1 YSM_{at} + \gamma_2 YSM_{at}^2 + \alpha_1 Age_{bt} + \alpha_2 Age_{bt}^2 + \sum_{k=1}^K \mu_k Yob_{bk} + \sum_{l=1}^L \phi_l Coh_{al} + \delta' X_{ist} + \theta_t + \varepsilon_{iabt} \quad (1)$$

where Y_{iabt} is a social integration outcome of immigrant i from birth cohort b who arrived in Germany in year a and is observed in calendar year t . The key independent variable is $YrsElig_{abt}$ which defines the number of years since an immigrant has been eligible for citizenship. The main parameter of interest is β which identifies whether legal access to citizenship improves social integration.

Note that our analysis captures social integration outcomes several years after an immigrant has become eligible for citizenship. Estimation of equation (1) therefore identifies persistent differences of citizenship eligibility on fertility or marriage behavior. Our analysis would not identify a one-time level effect immediately after eligibility or naturalization. The reason is that the control group of immigrants which gets eligible under the 15-year resident requirements also qualifies eventually for citizenship during our sample period. For example, all immigrants arriving prior to 1998 have satisfied the resident requirement before we first observe them in the Microcensus in 2005. The control group would have therefore experienced the

²²Immigrants arriving between 1992 and 2000 all get eligible with eight years of residency after the 2000 reform. We include arrival cohorts between 1992 and 2000 mostly to identify general assimilation and year of birth effects.

same upward (or downward) shift in outcomes than the treated group. Given that many of the outcomes we study, like searching for a partner in the marriage market or getting a divorce, are dynamic decisions (see also our discussion in Section 2), we think that the focus on permanent effects is not a limitation of our study. A potential advantage of focusing on persistent effects is that our estimates are less likely to be affected by any other transitory shocks around the reform years.

Our specification in equation (1) includes cohort of arrival fixed effects $D(ACohort_a)$ to adjust for changes in the quality of immigrants arriving in Germany over time. We further include year of birth fixed effects $D(YOB_b)$ to control for differences in social integration across birth cohorts and year fixed effects (ϑ_t) to adjust for aggregate changes in fertility or family formation over time. As is well-known, one cannot separately identify cohort of arrival, current year and general assimilation effects because of multicollinearity (see e.g. Borjas, 1985; 1995). To control for the general assimilation effects, we therefore include a second-order polynomial of years since migration (YSM_{at}, YSM_{at}^2). Similarly, we cannot include fixed effects for year of birth, age and calendar simultaneously; we therefore include a second-order polynomial (Age_{bt}, Age_{bt}^2) to include for age effects in addition to year of birth effects. Additional controls X_{it} are immigrant's education and region of origin fixed effects to allow naturalization propensities to differ between education groups and between source countries. To capture differences in fertility, family formation and matching of partners across regions and changes therein over time, we further include state fixed effects and state-specific linear trends.

Conditional on cohort of arrival, year of birth and year fixed effects, the parameter of interest β in equation (1) is identified from the interaction between year of arrival, year of birth and year. The identifying assumption is that labor market outcomes have the same non-parametric year of birth pattern for subsequent arrival cohorts conditional on our control variables including age. Finally, we cluster the standard errors by age x arrival year to adjust for the level of aggregation in the eligibility variable.

There are several potential threats to our identification strategy: the first one is that age of arrival might bias our estimates. Immigrants who arrived at younger ages invest more in host country-specific human capital like language skills and therefore might integrate better along other dimensions as well (see Bleakley and Chin, 2010). Since younger immigrants become eligible earlier under the 1991 reform, an omitted age-of-arrival effect would bias our estimates upward. Another concern about our empirical strategy might be that we impose a specific functional relationship how eligibility, assimilation and age affect social and cultural integration outcomes. There might also be selective outmigration of immigrants. If return migrants are negatively selected from the pool of immigrants in the host country, return migration overestimates general assimilation effects, for instance. It would however, not affect our eligibility variable

as long as selection into return migration is similar for adolescent and adult immigrants, across arrival cohorts or regions of origin. We return to these issues after we discuss our main results.

5 Empirical Results

5.1 Eligibility for Citizenship and the Naturalization Decision

We first examine whether eligibility for citizenship has an effect on naturalization decisions. Without such a first-stage relationship, it would be unlikely to observe any impact on the social integration of immigrants.²³ To study naturalization decisions, we estimate two different models. The first model uses naturalization propensities as the dependent variable. To implement this model, we convert the Microcensus into a pseudo-panel for the 1985-2010 period. The dependent variable is then equal to one if an immigrant has naturalized in any year between 1985 and 2010 from the reported year of naturalization. The main independent variable is eligibility for naturalization which is zero prior to 1991 and calculated from information on year of birth and year of arrival in Germany after 1991 (see the last section for details). Finally, we assign education based on the information recorded in 2005-2010; here, education refers to the highest educational degree attained rather than the education level in a particular year. We then estimate a regression with the same control variables as in equation (1) above for the pseudopanel from 1985-2010. Table 1 shows for male and female immigrants that eligibility does affect the naturalization propensities (see columns (1) and (2)). At the same time, the effects are with 2.8 (men) and 3.5 (women) percentage points relatively modest.

Our second approach uses the Microcensus 2005-2010 with years since a person has naturalized as the dependent variable and years of eligibility for citizenship as the main independent variable. This specification is closest to our reduced-form relationship in equation (1) and reveals whether an additional year of eligibility affects when an immigrant gets naturalized (and hence, how long she has been naturalized in the 2005-2010 period). All control variables are again defined as in equation (1). Columns (3) and (4) in Table 1 show that an additional year of eligibility raises the average duration of naturalization by about 0.11 years for women; the effect is with 0.05 years weaker for men and statistically not significant. Table 1 then suggests that the citizenship reforms increased naturalizations and hence is in line with aggregate statistics on naturalizations (discussed in Section 3.2).

Yet, why is the take-up of citizenship in Germany so low? The first reason is substantive: take-

²³There could still be an effect if eligibility changes the behavior of citizens in the host country even in the absence of higher naturalization rates among eligible immigrants.

up of citizenship in Germany is lower than in traditional immigration countries (as discussed in Section 3.2.) which is in part related to the rule that immigrants have to renounce their old citizenship if they obtain German citizenship. We also think there are statistical reasons for the low impact of eligibility on naturalization in our data. First, we ignore any other option to obtain German citizenship, for example, through discretionary decisions by the bureaucracy (especially prior to 1991) or marriage with a German partner. That would induce a negative relationship between eligibility (which is zero before 1991) and naturalization. Second, we are likely to have substantial measurement error in the years in Germany variable which in turn enters the calculation of the eligibility variable. Our calculation assumes, for instance, that an immigrant has remained in Germany for the whole period since her arrival. If there is circular migration between Germany and the source country, for example, because the immigrant has family back home, we are likely to define eligibility too early (because extended periods abroad do not count toward the resident requirement). This upward bias in the eligibility variable is likely to be more important for immigrant men who often arrived in Germany first without their close family. At the same time, there could be a time lag between becoming eligibility and actual naturalization because of the time it takes the administration to process the application for naturalization. In both cases, the statistical relationship between eligibility and naturalization is weakened biasing our estimates to zero. We now turn to the discussion of our main results.

5.2 Main Results

The focus of our main analysis is on the reduced-form relationship between eligibility for citizenship and measures of social assimilation. Knowing whether a more liberal access to citizenship affects immigrants' integration is important in its own right. Furthermore, the 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 the immigrants themselves, it represents the option value of naturalization.

5.2.1 Fertility Choices

We start with an analysis of fertility choices among female immigrants. As a benchmark for comparison, we first present the OLS results that show the relationship between actual naturalization and fertility; we then present the reduced form estimates of how eligibility for citizenship affects fertility. Table 2 suggests that access to citizenship reduces both, the likelihood of having at least one child and the number of children born to immigrants. Ten years of eligibility reduces the probability of having children by 7 percentage points or about 11%. The number of children born to immigrant women reduces in the same

time by 0.18 or about 13%. Given that immigrant women have a higher fertility than native women, we can calculate how fast immigrants adjust to the native fertility level. On average, immigrant women have with 0.657 a higher probability of having children than native women with 0.452. This results in an initial immigrant-native gap of 20.5 percentage points. At the mean years of eligibility (7.2 years), the likelihood of having children of immigrant women reduces by 0.05 (-0.007×7.17) or 24% ($-0.05/0.205$) of the initial immigrant-native gap. For the total number of children born to immigrant women, the pattern is similar. On average, immigrant women in our sample have 1.41 children, while native women have 0.77 children - for an immigrant-native gap of 0.65 children. After 7.2 years, immigrant women have reduced their fertility by 0.13 (-0.018×7.2) or 20% ($0.13/0.65$) of the initial immigrant-native gap.

Because not all immigrant (and native) women in our sample have completed their fertility, the declining number of children may reflect either a reduction in total fertility or a postponement of birth among immigrants relative to natives. Columns (5) and (6) of Table 2 indicates that immigrant women indeed postpone their first birth: after 10 years of eligibility for citizenship, the age of first birth has increased by 1.4 years or about 6% ($10 \times 0.141/23.35$). We can again compare how fast immigrant women converge in their timing of birth to native women. In our sample, immigrant women give birth for the first time with 23.35 years and native women at age 27.65 years. As a consequence, the average immigrant woman has her first child 4.3 years earlier than the average native woman in our sample. After the mean years of eligibility, the immigrant-native gap has declined by 1.0 year or 24% ($0.141 \times 7.17/4.3$) in our sample. Hence, part of the decline in the demand for children is explained by a timing effect. Overall then, our results suggest that the effect of immigration on the host country's total fertility is likely to disappear in the long run as immigrant adapt their behavior to those of the native population. Finally, the probability of being a single mother is not significantly affected by citizenship access. We explore potential mechanisms for these changes in total fertility and the timing of birth in more detail in Section 6.

5.2.2 Family Formation

We next investigate whether citizenship affects family formation and the type of partners that immigrant men and women choose. Recall that we only identify persistent differences in marriage behavior as we observe marriage outcomes on average several years after an immigrant becomes first eligible for citizenship. For both men and women, we find that access to citizenship reduces the likelihood of marriage - both the probability of being currently married and the probability of ever being married. Eligibility for citizenship seems to have no impact on the stability of marriage however. Both female and male immigrants with access to citizenship are equally likely to be divorced (see columns (3) and (7) of Table 3). The absence of

an increased risk of divorce is good news given that divorce often implies a higher risk of poverty for children and those without a full-time job. Similarly, access to citizenship does not persistently shift the likelihood of cohabitation (see columns (4) and (8) of Table 3). Hence, the decline in marriage cannot be explained by immigrants choosing alternative models of partnerships. A third explanation for the decline in marriage could be that immigrants who get eligible for citizenship postpone marriage because the value of searching for a mate has increased. If the gains from search increase, we should see, for instance, that immigrants with access to citizenship marry later. Unfortunately, we do not observe the age of first marriage in our main data source. We do observe age at first marriage in previous versions of the Microcensus 1999-2004 and the smaller samples of the Socio-Economic Panel. Using the same estimation approach as in equation (1), we find in both datasets that eligibility for citizenship increases the age at first marriage for women with few effects for men.

What do these patterns for on family formation imply for the social assimilation process? To answer this question, we again compare the behavior of immigrants to those of natives. Take the example of being currently married. On average, 64% of women and 55.4% of men in our immigrant sample are currently married while among natives, the share is 54.4% and 45.8% respectively. On average then, the immigrant-native gap is then 9.5% (9.6%) for women (men). How fast does the gap close with access to citizenship? Evaluated at the mean years of eligibility (7.2 years for women and 8.0 years for men) in our sample, the share currently married declines in the immigrant population by 4.3% (women) and 4.8% (men). That implies that the initial gap in marriage rates decreases by about 45.3% (women) and 50% (men) with access to citizenship. For age at first marriage, immigrant women marry 4.5 years earlier than native women in our sample. Eligibility reduces this gap by 33% (GSOEP) or 43% (MZ). While citizenship speeds up assimilation in terms of marriage rates and age at first marriage, we do not find any assimilation in divorce rates or the propensity of cohabitation after immigrants obtain access to citizenship. As there are sizable immigrant-native gaps in divorce rates (immigrants are around 6% less likely to be divorced) and cohabitation rates (immigrants are about 15% less likely to be cohabitating), that implies that both immigration but also immigrant assimilation tend to reduce the growth in divorce and cohabitation rates in the host country.

5.2.3 Characteristics of Partner

Our final set of baseline results investigates whether access to citizenship changes the partners that immigrants have. Here, we investigate the characteristics of the immigrant's partner living in the same household, i.e. both married and cohabitating couples. We start with the question whether access to

citizenship affects intermarriage or the likelihood of having a German partner. As discussed in Section 2, the effect of citizenship on intermarriage (or having a German partner) is theoretically ambiguous. In our sample, around 20% of immigrant men and women have a German 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). These shares are substantially lower than in France or the Netherlands where about one-third of immigrants have a native partner (Adsera and Ferrer, 2014). The share of intermarriage among natives is naturally much lower in the native population, where only 3-4% have an immigrant partner. Again, these numbers are at the lower end where this share ranges from 5% to 7% in Europe.

Table 4 shows in the top panel that immigrants who are actually naturalized are more likely to have a native partner (and hence, less likely to have a partner from the same region of origin). One explanation for the positive relationship between actual naturalization and intermarriage could be reverse causality: immigrants intermarry because they want to get a German passport. Foreign spouses of citizens can apply for naturalization after three years of residency in Germany.²⁴ Even if a German passport is not the primary motive for intermarriage, immigrants who eventually naturalize might still be those that are most willing and most likely to integrate in the host country society. The reduced form estimates in the bottom panel tell however a different story. Eligible women are less likely to have a German native as partner (column (1) in Table 4). They are also less likely to have a second-generation immigrant from the same region of origin (who need not be naturalized) as partner (not reported). At the same time, immigrant women are not more likely to have a partner from the same region of origin (see column (2)). These patterns suggest that access to citizenship does not increase intermarriage but encourages partnerships between migrants from different origins. One likely interpretation of the reduced intermarriage with natives is that women now have their own access to citizenship and hence, can choose their partner independently of citizenship status. There is some evidence that access to citizenship makes eligible immigrants a more attractive partner: partners of immigrant women with access to citizenship have lived in Germany for a shorter time and are less likely to qualify for citizenship on their own (see column (3) of Table 4). Interestingly, we see no effect of eligibility on the partner's characteristics for immigrant men.

Eligibility for citizenship might not only affect the background of the partner. It might also affect assortative matching in the marriage (or partnership) market. The assimilation literature has shown that immigrants often downgrade in the marriage (or partnership) market. Hence, they are more likely to have a partner with lower education; and female immigrants in particular are more likely to accept a larger age

²⁴The immigrant has to be married for at least two years by the time he or she applies for naturalization; furthermore, the spouse has to have a German citizenship for at least two years. Finally, the couple has to have a permanent resident permit.

difference. If access to citizenship improves the position in the marriage or partnership market, it should not only prolong search but also allow immigrants to select different partners. With positive assortative mating we would expect that citizenship increases the partner’s education and reduces the partner’s age. The OLS estimates in columns (4) and (5) of Table 4 exactly reflect this pattern for immigrant men and women. Yet, most of these correlations are due to a selection effect; eligibility for citizenship only reduces the partner’s age of female immigrants.²⁵ Though the coefficient on partner’s education is positive for women, it is neither economically nor statistically significant.²⁶

Overall, our baseline estimates suggest that immigrants adjust their search and matching behavior once they have access to citizenship: they search longer and marry later. There is also some evidence that immigrant women but not men choose different matches as intermarriage becomes less important, for instance. At the same time, the effects on the characteristics of a partner are economically and statistically weaker than the adjustments observed for fertility and family formation.

5.3 Robustness Analysis

5.3.1 Specification Checks

Our empirical model in equation (1) allows for a full set of year of arrival, year of birth and calendar year effects, but imposes a second-order polynomial for general assimilation and age effects to avoid multicollinearity between calendar year, year of arrival and years since migration or calendar year, year of birth and age. Given that adolescent immigrants not only get eligible faster conditional on year of arrival but also have lived in Germany for a slightly shorter period, we would have a downward bias in our estimates if we did not adequately control for assimilation effects. To test this, we allow for different degrees of polynomials in years since migration starting from a linear specification up to a fourth-order polynomial in years since migration. The dependent variables are fertility choices, family formation and partner characteristics, while all other control variables are the same as in the baseline model. The first four columns of Table 5 show the results for immigrant women; the results for immigrant men are contained in Table A4 in the appendix. The estimates for years of eligibility are sometimes slightly larger and sometimes smaller than in the baseline with the second-order polynomial. Yet, the AIC criterion

²⁵If we look at age gaps between partners instead, the reduced-form coefficients suggest a reduction in the age gap for immigrant women and men; but neither of the coefficients reach statistical significance (not reported). Since we also observe that immigrant men and women marry later on average, these patterns suggest that immigrants live together with their partner at younger ages, but marry later - which is a pattern we also observe among natives.

²⁶We also find no effect of citizenship access on the earnings of partners which seems a bit surprising because citizenship does have monetary benefits for the naturalized immigrant herself (Gathmann and Keller, 2015). One possible explanation is that other changes in the partner market (like having a partner with foreign citizenship) offset the beneficial effect of access to citizenship on wages for the partner.

reported at the bottom of each panel suggests little improvements beyond the second-order polynomial for both women and men. Hence, the necessary functional form assumption for general assimilation effects does not affect our results.

Another concern is that adolescent immigrants (the treatment group) arrived in Germany at a younger age compared to adult immigrants (the control group) conditional on year of arrival. Research in psychology suggests that immigrants who arrive at younger ages are more likely to learn the host country's language (e.g. Birdsong, 2006; Johnson and Newport, 1989; Newport, 2002) than immigrants arriving at an older age. As a result, immigrating at a young age might also improve social integration as it facilitates the social contact with natives, for example. If age of arrival effects indeed matter conditional on our control variables, the estimated returns to citizenship would be upward biased because adolescent immigrants arrived in Germany at a younger age. We can assess this concern by following a similar strategy than Bleakley and Chin (2004): we generate a variable equal to one if an immigrant arrived prior to age 11 and zero if she arrived in Germany at a later age. The results in column (5) of Table 5 (and Table A4 for men) shows that the coefficient becomes somewhat smaller for some fertility choices like number of children or age at first birth; it has little effect on partner characteristics like whether the partner is a native or the age of the partner. As an additional test, we include 7-year dummies for age of arrival in addition to all other control variables; now, the coefficient on years since eligibility is identified from groups in the same 7 years of arrival which limits the amount of remaining variation we can use for identification. Column (6) shows that this very flexible model reduces the coefficient but also the precision of our estimates.

Our identifying assumption would also be violated if birth cohort effects (or age effects) differ across arrival cohorts. In that case, our eligibility variable which is identified from the interaction between year of arrival, year of birth and calendar year would also pick up differential trends in birth cohorts for subsequent arrival cohorts. Note that we cannot include a full set of birth cohort trends for each year of arrival because the set of interaction between year of arrival and birth year available in our data is limited. If we regress years of eligibility for naturalization on all control variables in the Microcensus, we get a R^2 of 0.93 for both men and women. Given the limited variation left conditional on our control variables, we first include differential birth year trends for groups of arrival cohorts: 1976-82, 1983-89, 1990-95 and 1996-2000. The identifying assumption is now that birth cohort effects are stable within these arrival cohorts but allowed to vary across these groups. The results for a linear year of birth trend and quadratic year of birth trend for each arrival cohort in columns (7) and (8) of Table 5 (and Table A4) are similar to the baseline. Alternatively, we include for each arrival cohort separate dummies for 10-year birth cohorts (in column (9)) and even 5-year birth cohorts (in column (10)). Again, the results remain unchanged which suggests

that our baseline sample is fairly homogenous conditional on cohort of arrival and therefore not subject to differential year of birth trends over time.

5.3.2 Level versus Growth Effects and Selective Return Migration

Our empirical model (in equation (1)) identifies persistent effects on fertility, family formation and partner choice (a slope effect). Citizenship will have permanent effects if, for instance, immigrants invest more in human capital after naturalization. Our empirical model does however not identify any effect of citizenship on outcome levels. The reason is that by 2005, the first year of our data from the Microcensus, the control group of adult immigrants has become eligible for German citizenship as well. To test whether citizenship shifts outcomes immediately after naturalization (a level effect), we make use of additional waves of the Microcensus from 1999 to 2010. In the earlier years of the Microcensus, a large number of observations becomes eligible which allows us to disentangle the level and the growth effects. We capture the level effect by a dummy variable whether an individual is eligible in the current year. As before, we identify the slope effect by including a measure of years since eligibility for citizenship. Table A5 shows that access to citizenship has both persistent growth and level effects. The growth effects that we measure remain significant even if we include the slope effect. Moreover, our baseline specification is capable to measure the largest part of the overall effect of eligibility. Whereas the average overall effect of eligibility on being married is 0.05, our baseline specification measures a slightly smaller effect of 0.03. Our main results are thus only a lower bound of the true effect of citizenship. As an additional test, we follow the idea of a regression discontinuity design and we reduce the age window in which immigrants can become eligible around the cutoff age (columns (3) to (5)). Even if we narrow the age window, the coefficients of the slope and the level effect remain highly significant.

Another issue we need to address is selective dropout from our sample because of selective mortality or emigration. As the immigrant sample is relatively young (between 16 and 49 years-old), survivor bias due to mortality is of minor concern. A more important issue is selective out-migration. Return migration seems highest in the first years and levels off after about eight years in the host country (see e.g. Dustmann and Göhrlich, 2014). Yet, our sample of immigrants have spent at least five years in Germany but most have been in the country for many more years - the mean is around eighteen years. Return migration during the 2005-2010 period is therefore unlikely to be a major issue.

However, return migration prior to our sample period could still produce a selected sample. If there is negative selection in out-migration and adolescent immigrants (who get eligible faster conditional on the cohort of arrival) are more (less) likely to return than adult immigrants, then we would get an upward

(downward) bias in the estimated return to citizenship eligibility. If both groups are equally likely to leave Germany conditional on our control variables, there would be no bias in our estimates. In sum, it is not obvious how return migration before our study period would affect our estimates. While we cannot assess return migration in the repeated cross-sections of the Microcensus, we can test for selective dropout from our sample in the SOEP panel. We take the probability of attrition from our sample (either due to mortality, emigration or other dropout) as the dependent variable and test whether attrition depends on eligibility. All regressions include the same set of control variables as before. The right-hand side of Table A6 suggests that selective attrition from the sample is not related to eligibility or years since eligibility for immigrant men and women. Based on this evidence, return migration seems unlikely to bias our results.

5.4 Alternative Samples and Controls

Finally, we investigate whether our results are robust to alternative definitions of our sample. While our baseline uses 1991 as the reform year, the reform might have been fully implemented only in 1993 when a legal claim to eligibility was introduced. Using 1993 as the first year to define eligibility, we find very similar results (see first row in Table A7). Furthermore, immigrants in our sample may qualify for citizenship through marriage to a German citizen. To check whether the fast track affects our results, we drop in the second row all immigrants who report having a German spouse in 2005-2010.²⁷ Another potential issue is that the 2000 reform not only changed the resident requirement for adult immigrants but also granted citizenship to children born in Germany to foreign-born parents. Immigrants with dependent children therefore have 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 German citizenship independently of their parents. Hence, the benefits of citizenship might be smaller after 2000 for parents with very young children. Controlling for the presence and age structure of children (in the third row) in the household does however not change our results. We also rerun our analysis dropping all immigrants with children under ten in the household. In the remaining sample, children in eligible households were all born prior to 2000 and hence not directly affected by the reform.²⁸

²⁷Note that we only observe their current spouse, not the spouse or partner an immigrant had when they first lived in Germany. Some immigrants we drop from the sample might have naturalized through the provisions of the 1990 or 2000 reforms but married a German citizen only afterward. And some immigrants might have naturalized through a German 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 German spouse in the 2005-2010 period. We find similar results if we use the SOEP where we have annual information on the immigrant's partner from 1984-2009 (not reported).

²⁸The 2000 reform also included a transitory provision: Parents with children born between 1990 and 1999 could apply for German 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

Our sample could also be affected by changes in the inflow of refugees and asylum seekers. After the opening of the Iron Curtain, large numbers of asylum seekers and ethnic Germans began to arrive in Germany. Faced with ever-increasing numbers of refugees, the federal government restricted access to political asylum in 1993.²⁹ Hence, the selection of refugees arriving in Germany might have changed substantially over time, especially after 1993. Refugees who are granted political asylum face the same naturalization criteria as all other immigrants in Germany. In some cases, however, the resident requirement might be reduced to six years. As such, some refugees might have naturalized earlier than our definition of eligibility indicates. Unfortunately, as in most data sources, our data do not record whether an immigrant arrives in Germany as a refugee or applies for asylum. As a proxy for refugee status, we therefore rerun our baseline (in the fifth row) after dropping all immigrants from ex-Yugoslavia and the Middle East which formed the largest groups of refugees over our sample period. In addition, our sample might still contain some ethnic Germans who are not directly affected by the immigration reforms. We therefore restrict our data in the sixth row to the 2007-10 Microcensus; in those years, immigrants were asked explicitly whether they were eligible as ethnic Germans. Finally, changes in the German economy more broadly might influence our results. Germany's labor market experienced a substantial inflow of migrants after the fall of the Berlin Wall and the opening of the Iron Curtain. In addition, wage inequality in Germany increased in the late 1990s and 2000s with substantial net gains for the high-skilled but net losses for the low-skilled. In principle, these changes might be absorbed by year dummies or state-specific trends. Our reduced-form estimates would however be biased if business cycle effects or secular wage changes affect adolescent immigrants differently than adult immigrants. The seventh row then drops all East German states because immigration flows and labor market dynamics differ substantially between East and West Germany. Alternatively, we include state-level unemployment rates and GDP growth rates to our specification in the eighth row. In all cases, we find that our estimates for fertility choices and family formation are very robust to alternative samples. In contrast, the coefficients for partner characteristics do vary across specifications for immigrant women (while men had few effects even in the reduced form).

parents did apply which suggest that children older than ten in 2010 have mostly not benefited from the citizenship by birthplace reform. In addition, if we drop immigrants with children younger than 15, we find again very similar results (not reported).

²⁹After 1993, immigrants from source countries that are considered safe, or those arriving from safe third countries (which included all of Germany's geographic neighbors) could no longer apply for political asylum in Germany.

6 Potential Mechanisms: Economic and Cultural Forces

6.1 The Role of Personal Income

As discussed in the introduction, access to citizenship improves the labor market position of eligible immigrants. In Germany, female immigrants especially benefit from citizenship with higher wages and more stable jobs (Gathmann and Keller, 2015). We first explore whether changes in labor market income may explain our results on the speed of social integration. Unfortunately, we do not observe earnings prior to eligibility. Therefore, we need to be careful with the interpretation as better social integration, for example, because of intermarriage, may also improve wages (see Meng and Gregory, 2005).

The upper part of Table 7 shows the baseline estimates for employed women, while the lower part shows the reduced form estimates conditional on personal income. Personal income is significantly associated with all dependent variables. Immigrant women with higher personal income delay and decrease their fertility, implying that the substitution effect dominates the income effect. Conditional on personal income, the size of the eligibility coefficient is substantially smaller for the demand for children than unconditionally: from -0.008 to -0.006 for the propensity to have kids and from -0.02 to -0.015 for the number of kids. This reduction implies that 25 percent of the effects of access to citizenship on the static demand for fertility can be explained by changes in personal income (columns (1) and (2)). However, economic forces cannot explain much of the postponement of births, since the coefficient of our eligibility variable for age at first birth is almost unchanged when conditioning on personal income (column (3)). For the family formation outcomes, the personal income of female immigrants is negatively associated with the probability of being married and positively related with the probability of being divorced or cohabitating with a partner (columns (4)-(8)). Conditioning on personal income reduces the eligibility effect on currently married by more than 40 percent. The effect for ever married declines by 11 percent suggesting that higher personal income postpones marriage but does not reduce the incidence of marriage. For partner characteristics, personal income has little effect and cannot explain the effects of eligibility (columns (9)-(13)).

6.2 Cultural Influence of the Source Country

Our results show substantial effects of access to citizenship on social integration outcomes. Yet, do these integration forces work for all immigrants in a similar way; or, do some immigrants integrate faster than others? Immigrants, especially in the first generation, are imprinted with the norms and values of their country of origin. That influence vanes only slowly with time in the host country. In our case, there is an obvious distinction between EU immigrants who come in many cases from a very similar

cultural background and immigrants from outside the EU who mostly come from very different cultural backgrounds. In recent years, the epidemiological approach has provided convincing evidence that the norms and values of the source country still influences immigrants' behavior in the host country. Using this approach, recent studies show, for instance, that immigrant women who come from countries with high fertility rates have more children than immigrants from low-fertility countries (see e.g. Fernández and Fogli 2009 for the US; Stichnoth and Yeter, 2013 for Germany). Most studies also report a decline in the immigrant-native gap in fertility or labor force participation with time in the host country though full convergence might take several generations (e.g. Ben-Porath, 1973; and Blau et al., 1992 for the US; Mayer and Riphahn, 2000 for Germany).

Little is known however, whether norms and values of the source country also affect the speed of integration through citizenship. To investigate the link between cultural heritage and access to citizenship, we use the epidemiological approach on our sample of first-generation immigrants. First-generation immigrants who might not be a random sample of the population in their country of origin. However, this potential bias is not such an issue here as we focus on the assimilation process of immigrants (and not in the effect of immigrant culture for a random individual in the source country). A second concern could be that first-generation immigrants might experience a disruption or delay in their fertility or family formation because of migration. Yet, this delay should be less of an issue because our sample of migrants has lived in the host country for many years (17 years for women and 18 years for men). In addition, we only compare immigrants from the same arrival cohort who should have experienced the same delay in their choices.³⁰

In Table 8 and Table 9, we investigate the link between country of origin characteristics and the effect of citizenship on fertility and family formation choices, respectively. When analyzing the effect of cultural heritage on the speed of assimilation with respect to fertility outcomes, the total fertility rate of the country of origin serves as the origin country characteristic. For analyzing the same for the family formation outcomes, we use the female labor force participation rate in the country of origin. The top panel of both tables shows the baseline results for the sample of immigrants for which we could merge source country characteristics to our data. In the bottom panel, we add the source country characteristic within the five years before migration to our specification as well as an interaction term with our eligibility variable. The main effect of the source country characteristic shows whether cultural heritage affects

³⁰There is a counteracting force where immigrants reduce or at least postpone their fertility until after their relocation or until they get settled in the host country. Fertility might then be lower shortly after arrival because of the disruption of migration. This effect should not be an issue in our setting however, since most immigrants have been in the country for several years (the average duration of residence is 17 years for women and 18 years for men).

fertility or family formation choices; the interaction effect in turn indicates whether access to citizenship reduces the cultural influence of the source country. We find substantial heterogeneity with respect to cultural values in the country of origin.

As in the previous literature, we find that fertility is substantially higher for immigrant women from high-fertility regions. Furthermore, they have children earlier and are less likely to be single mothers. More surprisingly, our results indicate that assimilation in fertility behavior is faster for women originating from high-fertility countries as the interaction terms are negative in columns (1) and (2), and positive in column (3). Taking the difference between the fertility rate in the source country between the 25th (1.84 children) and the 75th percentile (3.7 children) which is similar to the difference between Italy and Turkey, women from Turkey (roughly the 75th percentile) reduces the likelihood of having children and the number of children faster than for women from Italy (roughly the 25th percentile). Women in the 75th percentile also postpone their first birth more than women in the 25th percentile. After 10 years of eligibility, the woman in the 75th percentile decreases the difference between her and the woman in the 25th percentile by 3.7 percentage points in the probability to have children, by 0.06 children and by 0.26 years with respect to the age at first birth. These integration effects do not change much when controlling for personal income. That suggests that economic and cultural influences have largely independent effects on fertility choices. These integration effects do not change much when controlling for personal income.

While these results seem somewhat surprising at first, note that immigrant women from high-fertility countries also have the most room for adjustment. In addition, the institutional and economic constraints of women from high-fertility countries are probably very different from the institutions and family policies in Germany and other low-fertility countries. As such, we would expect that the response to the changing incentives should be largest among immigrants from countries that are very different from Germany both socially and economically. Interestingly, our results are different from Blau et al. (2011) who find that the speed of the assimilation in working hours is very similar for immigrants from very different cultural backgrounds. While women from areas with high female employment work on average more than women from countries with low female employment, the speed of assimilation is very similar for the two groups of women. We in contrast, find that women from high-fertility countries adjust faster than immigrant women from low-fertility countries.

With respect to the family formation choices of immigrant women, we find that women from countries with high female labor participation have a lower probability to be married, and are more likely to cohabitate. This corresponds to the expectation that a high female labor force participation rate is proxying more modern norms regarding gender roles and the family model. The coefficients of the interaction terms

show in the opposite direction of the effect of citizenship for all family formation outcomes. This indicates that assimilation in the family formation behavior is faster for women from countries with a lower female labor participation rate. Taking again the difference between the female labor force participation in the origin country between the 25th (0.367) and the 75th percentile (0.574), women in the 25th percentile are less likely to be married, and have a higher probability to be divorced and cohabitating than women from the 75th percentile. After 10 years of eligibility, the woman in the 25th percentile decreases the difference between her and the woman in the 75th percentile by 7.6 percentage points in the probability to be currently married, by 6.4 percent in the probability to ever have been married, by 2.6 percentage points in the probability of being divorced, and by 3.5 percentage points in the probability of cohabitating. The results for immigrant men do not reflect this pattern. While men from countries with higher female labor force participation are more likely to be married, they are less likely to be divorced. However, the interaction effects are all insignificant, and cultural distance thus does not foster assimilation for immigrant men. As for the fertility outcomes, controlling for personal income does not change these patterns.

7 Conclusion

Germany has accumulated a sizeable immigrant population over the past decades and continues to do so today. In international comparison, Germany has ranked second as destination country for immigrants - just behind the United States but before other traditional immigration countries like Australia and Canada. The large stock and rising inflow of immigrants raises important questions on how to integrate the new members into the host society - both in economic terms but also along social dimensions. Along both lines, Germany has traditionally had a relatively weak record compared to traditional immigration countries. In recent years however, substantial progress has been made in facilitating naturalization. Beginning in the early 1990s, Germany has moved from a country where citizenship was closely tied to ancestry to a more liberal understanding of citizenship and naturalization.

To identify the effects of citizenship acquisition on social integration, we exploit age-dependent resident requirements in Germany's reforms and the fact that many immigrants get eligible when the reforms are implemented. Our intention-to-treat effect shows that access to citizenship does have an impact on the marriage and fertility patterns of immigrants. The propensity of eligible female immigrants to have a lower and delayed fertility, in combination with the result that both, male and female immigrants, have less traditional opinions regarding the role of women, suggest that access to citizenship leads to assimilation to a more modern family model.

Overall, naturalization appears to be one channel to improve the social integration of immigrants even in countries where access to citizenship has traditionally been very restrictive. The benefits of a more liberal immigration policy seem to materialize especially if immigrants have the human capital necessary to succeed in the host country’s labor market - a condition more recent immigrants to Germany seem to satisfy. As such, the substantial inflow of immigration over the past decade is likely to provide large fiscal and labor market benefits for Germany. Yet, our results also caution that a more liberal access to citizenship does not work automatically for everybody and for all integration outcomes.

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A German Microcensus (2005-2010)

Data and Sample: The Microcensus interviews about 830,000 individuals each year. Participation is required by law (though answering some questions is voluntary) as the data form the basis for the calculation of nationally representative labor market statistics. The scientific use file is a 70% subsample of the official dataset. We restrict the sample to first-generation immigrants, i.e. foreign-born individuals who live in private households in Germany. For each person, we know the year the person arrived in Germany and the country of origin. Individuals born abroad to German parents are also contained in the foreign-born sample but can be identified as their country of origin is missing. We further restrict our sample to immigrants who arrived in Germany between 1976 and 2000 and are between 16 and 35 years of age in the post-reform period (1991-2009).

Since 2005, the survey records whether and how an immigrant has obtained German citizenship and the year in which naturalization took place. To define our sample of interest, we first calculate the number of years an immigrant has lived in Germany. Together with the age of an individual in the post-reform period, we then define the year an immigrant is first eligible for citizenship based on the resident requirement. An immigrant arriving in 1976 becomes eligible for citizenship in 1991 independent of her age. Adolescent immigrants (aged 16-22) arriving between 1977 and 1982 become eligible in 1991 while those arriving between 1983 and 2000 become eligible after 8 years (between 1991 and 2009). Adult immigrants (aged 23 and older) arriving between 1977 and 1985 become eligible after 15 years of residence (between 1991 and 2000). Adult immigrants arriving between 1986 and 1991 all become eligible in 2000 when the reduced resident requirement comes into effect. All adult immigrants arriving between 1992 and 2000 become eligible after 8 years of residency (between 2000 and 2009). In the final step, we then calculate the number of years an immigrant in 2007-2009 has been eligible for German citizenship.

We also need to distinguish regular immigrants from ethnic Germans (“Aussiedler”) who are not affected by the 1991 and 2000 reforms. Ethnic Germans have some German ancestry and therefore have access to German citizenship within three years of arrival. Aggregate statistics suggest that migration flows of ethnic Germans started in 1985 with less than 50,000 per year, peaked between 1988 and 1991 at around 300,000 per year, remained at about 200,000 per year between 1992 and 1996 and then subsided to 100,000 and below after 1998 (Bundesministerium des Inneren, 2009). We define ethnic Germans as individuals born outside Germany with a German passport who naturalized within three years of arrival in Germany (which is legally impossible for regular immigrants) and whose previous nationality was Czech, Hungarian, Kazakh, Polish, Romanian, Russian, Slovakian or Ukrainian as ethnic Germans (see Birkner, 2007; Algan et al., 2010 follow the same approach). Based on this definition, we identify and exclude more than 60,000 ethnic Germans in our data over the period from 2005 to 2010.

Dependent variables: Our main outcome variables are measures of fertility (having children, number of children, age at first birth, and being a single mother), family formation (currently married, ever married, being divorced and cohabitation), and partner characteristics (German-born, being from the same region of origin, years in Germany, age and education of the partner).

Control variables: Educational attainment is defined as low-skilled if the individual has no vocational degree and at most a lower secondary school degree. A migrant is medium-skilled if she has a vocational degree or high school degree; and she is high-skilled if she has a college degree. The occupation variable distinguishes between

self-employed, civil servant, employee, workers, trainees and soldiers while the sector variable distinguishes between 8 broad sectors. To control for differences across source countries, we define ten categories of countries of origin based on the current citizenship (for those who do not naturalize) or the citizenship prior to naturalization (for those naturalized). The first group (EU15: Austria, Belgium, Denmark, Finland, France, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden and United Kingdom) includes all countries from the European Union before the enlargement of 2004 as well as Switzerland and Norway. This group had already free access to the German labor market in the 1990s. The second group consists of immigrants from Eastern European countries which joined the EU in 2004 but did not have full access to the labor market prior to 2011 (EU12: Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, Slovenia as well as Malta and Cyprus). The other important source countries are former Yugoslavia except Slovenia (Bosnia and Herzegovina, Croatia, Kosovo, Macedonia, Montenegro, Serbia) and Turkey. We lump together other immigrants into broad regions: the Middle East (for example Afghanistan, Iran and Iraq), Africa (for example Morocco), Asia (for example China and Vietnam), North and South America as well as Russia and other former Soviet republics which are not member of the European Union. The last category contains immigrants who either have no exact region of origin (“other European country” or “rest of the world”) or report not having any citizenship at all.

B Socio-Economic Panel (1984-2009)

Data and Sample: The Socio-Economic Panel (SOEP) is a household survey that has been conducted annually since 1984 (in East Germany since 1990). The original sample oversampled migrants from traditional sending countries (like Turkey, Yugoslavia or Italy). Several refreshment samples including another immigrant sample added in 1994/95 have been drawn in subsequent years to maintain the representativeness of the SOEP. Interviews are performed in German, the respondent’s native language or a mixed mode. Our basic sample consists of all foreigners living in private households who were born abroad and migrated to Germany between 1976 and 2000 (“first-generation immigrants”). To distinguish first-generation immigrants from ethnic Germans, we use the same procedure as in the Microcensus (following Birkner, 2007).

Dependent variables: As additional dependent variable, we study the age when an immigrant gets married the first time. As potential channel for the social integration outcomes, we analyze language skills which are reported every second year (1984-1987, 1989, 1991, 1993, 1995, 1997, 1999, 2001, 2003, 2005, 2007 and 2009). We recode the language variables which are asked separately for writing and speaking German such that the highest value (4) corresponds to very good language skills while the lowest value (0) implies that the immigrant has no German language skills. Finally, our dropout variables is an indicator equal to one if the individual has died, left the sample because of emigration or other reasons.

Control variables: We define two eligibility variables: years since eligible which is defined as in the Microcensus; and an indicator variable equal to one if an immigrant is eligible; and zero for all years prior to 1991 or if an immigrant is not yet eligible for citizenship. Cohort of arrival and year of birth are coded as in the Microcensus. Educational attainment is defined as low-skilled if an immigrant has no vocational degree and at most a lower secondary school degree; medium-skilled if she has a vocational degree or high school degree (“Abitur”) and high-skilled if she has a college degree. We use the same definition as in the Microcensus to classify source countries into ten broad groups of origin.

Table 1: The Link between Eligibility and Naturalization

	<u>Naturalized</u>		<u>Years since Naturalized</u>	
	<u>Females</u>	<u>Males</u>	<u>Females</u>	<u>Males</u>
	(1)	(2)	(3)	(4)
Eligible	0.035*** [0.007]	0.028*** [0.007]		
Years since Eligible			0.112*** [0.036]	0.052 [0.033]
Years in Germany	0.013*** [0.001]	0.010*** [0.001]	-0.296*** [0.094]	-0.048 [0.092]
Years in Germany Squared	-0.000*** [0.000]	-0.000* [0.000]	0.016*** [0.003]	0.009*** [0.002]
Sample:	Pseudopanel 1985-2010		Microcensus 2005-10	
Year of Arrival Dummies	Yes	Yes	Yes	Yes
Year of Birth Dummies	Yes	Yes	Yes	Yes
Region of Origin Fixed Effects	Yes	Yes	Yes	Yes
Year, State FE and State Trends	Yes	Yes	Yes	Yes
Individual Education	Yes	Yes	Yes	Yes
Observations	37,426	38,124	18,532	17,213
R-Squared	0.079	0.086	0.327	0.323
Mean of Dependent Variable	0.365	0.381	3.684	3.778

Notes : The table reports results from a linear probability model where the dependent variable is a binary indicator equal to one if a migrant has naturalized in a given year and zero otherwise (in columns (1) and (2)); and the number of years since an immigrant has naturalized (in columns (3) and (4)). The sample includes all first-generation immigrants who are not ethnic Germans, arrived in Germany between 1976 to 2000, are 16-30 years old when they first get eligible during the 1991-2010 period, and report valid information on income, naturalization and years lived in Germany. The eligibility indicator in columns (1) and (2) is equal to one if an individual is a) 16-22 years old and has lived in Germany for at least 8 years; b) 23-30 years old and has lived in Germany for at least 15 years in 1991-1999; or c) 23-30 years old and has lived in Germany for at least 8 years after 2000. Years since eligibility is the number of years since an immigrant is first eligible for citizenship. Odd columns report results for women, even columns for men. All specifications include year of arrival and year of birth fixed effects, current year and state fixed effects as well as state-specific linear trends. We also include ten region of origin fixed effects (traditional EU member 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). The omitted region of origin are the EU-15 member states; the omitted education category is low-skilled (no high school or vocational degree). Standard errors in brackets are clustered by age x arrival year. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1.

Source : Microcensus (2005-2010)

Table 2: Naturalization, Eligibility for Citizenship and Fertility Choices

Sample: Female Immigrants	Having Children		Number of Children		Age at First Birth		Single Mother	
	OLS (1)	Reduced Form (2)	OLS (3)	Reduced Form (4)	OLS (5)	Reduced Form (6)	OLS (7)	Reduced Form (8)
Years since Naturalization	0.001 [0.001]		-0.001 [0.001]		0.057*** [0.008]		-0.003*** [0.001]	
Years since Eligible for Citizenship		-0.007*** [0.002]		-0.018*** [0.007]		0.141*** [0.036]		-0.001 [0.003]
Years in Germany	0.019*** [0.005]	0.022*** [0.005]	0.077*** [0.015]	0.084*** [0.015]	-0.040 [0.064]	-0.138** [0.070]	0.003 [0.005]	0.005 [0.005]
Years in Germany Squared	-0.001*** [0.000]	-0.001*** [0.000]	-0.002*** [0.000]	-0.002*** [0.000]	0.002 [0.002]	0.002 [0.002]	0.000 [0.000]	0.000 [0.000]
Medium-skilled	-0.158*** [0.009]	-0.156*** [0.009]	-0.623*** [0.020]	-0.624*** [0.020]	2.566*** [0.088]	2.634*** [0.089]	-0.000 [0.008]	-0.004 [0.008]
High-skilled	-0.370*** [0.017]	-0.369*** [0.017]	-1.173*** [0.032]	-1.176*** [0.032]	6.429*** [0.225]	6.483*** [0.228]	-0.039*** [0.014]	-0.043*** [0.014]
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	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State-specific Linear Trends	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	18,534	18,534	18,516	18,516	12,667	12,667	12,152	12,152
R-Squared	0.422	0.422	0.422	0.422	0.287	0.284	0.041	0.039
Mean of Dependent Variable	0.657	0.657	1.414	1.414	23.35	23.35	0.141	0.141

Notes : The dependent variables are whether a female immigrant has any child (columns (1)-(2)); the number of children born to the female immigrant (columns (3)-(4)); the age of the mother at the birth of her first child (columns (5)-(6)); and whether she is a single mother (columns (7)-(8)). Odd columns report OLS estimates of the relationship between years since naturalization and the respective fertility outcome. Even columns report reduced form estimates of years since eligibility and the respective fertility outcome. The sample includes all immigrants who arrived in Germany between 1976 and 2000 and who were between 16 and 30 years-old when they first get eligible for citizenship in the 1991-2010 period. We exclude ethnic Germans, i.e. immigrants with German ancestry who had faster access to German citizenship than regular immigrants. Years since eligible denotes the number of years since an immigrant became eligible for naturalization after the 1991 or 2000 immigration reforms. All specifications include year of arrival and year of birth fixed effects, current year and state fixed effects as well as state-specific linear trends. We also include 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). The omitted education category is low-skilled (without high school or vocational degree). Standard errors in brackets are clustered by age x arrival year. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1. *Source* : Microcensus (2005-2010)

Table 3: Citizenship and Family Formation

	Female Immigrants				Male Immigrants			
	<u>Currently Married</u> (1)	<u>Ever Married</u> (2)	<u>Divorced</u> (3)	<u>Cohabitation</u> (4)	<u>Currently Married</u> (5)	<u>Ever Married</u> (6)	<u>Divorced</u> (7)	<u>Cohabitation</u> (8)
	OLS Estimates				OLS Estimates			
Years since Naturalization	0.001* [0.001]	0.001 [0.001]	-0.001 [0.001]	0.001** [0.001]	-0.001 [0.001]	-0.001* [0.001]	0.000 [0.001]	0.001 [0.001]
Observations	18,532	18,532	13,148	12,221	17,213	17,213	10,184	10,289
R-Squared	0.332	0.467	0.032	0.134	0.400	0.467	0.029	0.151
	Reduced form Estimates				Reduced form Estimates			
Years since Eligible for Citizenship	-0.006** [0.003]	-0.009*** [0.002]	-0.004 [0.002]	-0.003 [0.002]	-0.006*** [0.002]	-0.008*** [0.002]	0.003 [0.002]	-0.001 [0.003]
Observations	18,532	18,532	13,148	12,221	17,213	17,213	10,184	10,289
R-Squared	0.333	0.468	0.032	0.133	0.401	0.467	0.029	0.151
Individual Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
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	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State-specific Linear Trends	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mean of Dependent Variable	0.639	0.709	0.099	0.085	0.554	0.592	0.063	0.112

Notes : The table reports OLS estimates of the relationship between years since naturalization and family formation in the top panel; and reduced form estimates between years since eligibility and family formation in the bottom panel. The left-hand side (columns (1)-(4)) reports results for female immigrants, the right-hand side (columns (5)-(7)) for male immigrants. The dependent variables are whether an immigrant is currently married (columns (1) and (5)); whether an immigrant has ever been married (columns (2) and (6)); whether the immigrant is divorced (columns (3) and (7)); and whether an immigrant is cohabitating with a partner without being married; the variable is zero if the person is married (columns (4) and (8)). The sample includes all immigrants who arrived in Germany between 1976 and 2000 and who were between 16 and 30 years-old when they first get eligible for citizenship in the 1991-2010 period. We exclude ethnic Germans, i.e. immigrants with German ancestry who had faster access to German citizenship than regular immigrants. Years since eligible denotes the number of years since an immigrant became eligible for naturalization after the 1991 or 2000 immigration reforms. All specifications include year of arrival and year of birth fixed effects, current year and state fixed effects as well as state-specific linear trends. We also include 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). The omitted education category is low-skilled (without high school or vocational degree). Standard errors in brackets are clustered by age x arrival year. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1.

Source : Microcensus (2005-2010)

Table 4: Citizenship and Characteristics of Partner

	Female Immigrants					Male Immigrants				
	<u>Native Partner</u> (1)	<u>Same Origin Partner</u> (2)	<u>Partner's Years in Germany</u> (3)	<u>Education of Partner</u> (4)	<u>Age of Partner</u> (5)	<u>Native Partner</u> (6)	<u>Same Origin Partner</u> (7)	<u>Partner's Years in Germany</u> (8)	<u>Education of Partner</u> (9)	<u>Age of Partner</u> (10)
	OLS Estimates					OLS Estimates				
Years since Naturalization	0.004*** [0.001]	-0.003*** [0.001]	0.014 [0.018]	0.030*** [0.005]	-0.022* [0.013]	0.006*** [0.001]	-0.006*** [0.001]	0.033 [0.020]	0.041*** [0.006]	-0.001 [0.014]
Observations	10,932	10,932	8,467	10,741	10,901	9,164	9,164	6,951	8,979	9,116
R-Squared	0.265	0.298	0.253	0.291	0.376	0.168	0.194	0.195	0.286	0.411
	Reduced form Estimates					Reduced form Estimates				
Years since Eligible for Citizenship	-0.006** [0.003]	0.002 [0.003]	-0.464*** [0.087]	0.011 [0.028]	-0.115** [0.056]	0.004 [0.003]	-0.004 [0.004]	0.042 [0.083]	-0.032 [0.025]	0.036 [0.046]
Observations	10,932	10,932	8,467	10,741	10,901	9,164	9,164	6,951	8,979	9,116
R-Squared	0.262	0.297	0.256	0.288	0.376	0.161	0.189	0.194	0.281	0.411
Year of Arrival Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year of Birth Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region of Origin Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State-specific Linear Trends	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mean of Dependent Variable	0.195	0.726	19.90	12.47	35.97	0.204	0.705	16.19	11.88	30.80

Notes : The table reports OLS estimates of the relationship between years since naturalization and family formation in the top panel; and reduced form estimates between years since eligibility and family formation in the bottom panel. The left-hand side (columns (1)-(5)) reports results for female immigrants, the right-hand side (columns (6)-(10)) for male immigrants. The dependent variables are whether an immigrant has a German partner or spouse (columns (1) and (6)); whether the partner or spouse comes from the same region of origin (columns (2) and (7)); whether the partner or spouse is a second-generation immigrant from the same region of origin (columns (3) and (7)); the years of education of the partner or spouse (columns (4) and (9)); and the age of the partner or spouse (columns (5) and (10)). The sample includes all immigrants who arrived in Germany between 1976 and 2000 and who were between 16 and 30 years-old when they first get eligible for citizenship in the 1991-2010 period. We exclude ethnic Germans, i.e. immigrants with German ancestry who had faster access to German citizenship than regular immigrants. Years since eligible denotes the number of years since an immigrant became eligible for naturalization after the 1991 or 2000 immigration reforms. All specifications include year of arrival and year of birth fixed effects, current year and state fixed effects as well as state-specific linear trends. We also include 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). The omitted education category is low-skilled (without high school or vocational degree). Standard errors in brackets are clustered by age x arrival year. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1.

Source : Microcensus (2005-2010)

Table 5: The Impact of Naturalization on Fertility and Family Formation

Female Immigrants	First Stage			Second Stage			
	<u>Years since Naturalized</u>	<u>Having Children</u>	<u># of Children</u>	<u>Age at First Birth</u>	<u>Currently Married</u>	<u>Ever Married</u>	<u>Divorced</u>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Years since Naturalized		-0.063** [0.030]	-0.156* [0.080]	1.563 [1.027]	-0.059* [0.031]	-0.079** [0.032]	-0.016 [0.012]
Years since Eligible for Citizenship	0.112*** [0.036]						
Years in Germany	-0.296*** [0.094]	0.003 [0.011]	0.038 [0.030]	0.454 [0.386]	0.001 [0.011]	-0.008 [0.011]	-0.007 [0.005]
Years in Germany Squared	0.016*** [0.003]	0.000 [0.001]	0.000 [0.001]	-0.026 [0.020]	0.000 [0.001]	0.001 [0.001]	0.000* [0.000]
Medium-skilled	1.168*** [0.097]	-0.083** [0.036]	-0.442*** [0.097]	0.420 [1.501]	-0.019 [0.037]	-0.000 [0.039]	0.023 [0.018]
High-skilled	1.215*** [0.227]	-0.293*** [0.043]	-0.986*** [0.108]	4.560*** [1.376]	-0.115*** [0.041]	-0.126*** [0.043]	-0.003 [0.021]
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	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State-specific Linear Trends	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	18,534	18,534	18,516	12,667	18,532	18,532	13,148
R-Squared	0.327						
F-statistic First Stage		9.72	9.44	2.64	9.70	9.70	17.20
Mean of Dependent Variable		0.657	1.414	23.35	0.639	0.709	0.099

Notes : The table reports instrumental variable estimates of the effects of the citizenship duration on fertility and marriage outcomes. The first stage estimates regress the years since naturalization on the years since eligible for citizenship and other control variables (column (1)). The second stage estimates (shown in columns (2)-(7)) are for the outcomes shown in the top row. The sample includes all immigrants who arrived in Germany between 1976 and 2000 and who were between 16 and 30 years-old when they first get eligible for citizenship in the 1991-2010 period. We exclude ethnic Germans, i.e. immigrants with German ancestry who had faster access to German citizenship than regular immigrants. Years since eligible denotes the number of years since an immigrant became eligible for naturalization after the 1991 or 2000 immigration reforms. All specifications include year of arrival and year of birth fixed effects, calendar year and state fixed effects as well as state-specific linear trends. We further include 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). The omitted education category is low-skilled (without high school or vocational degree). We further include a linear and squared term for age and years in Germany. Standard errors in brackets are clustered by age x arrival year. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1.

Source : Microcensus (2005-2010)

Table 6: Specification Checks

Sample: Female Immigrants	Different Polynomials of Years in Germany				Age of Arrival Effects			Differential Birth Year Effects across Arrival Cohorts			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Number of Children											
Years since Eligible for Citizenship (N=18,904)	-0.025***	-0.020***	-0.022***	-0.023***	-0.012*	-0.024***	-0.019*	-0.026***	-0.019*	-0.019***	-0.021***
	[0.006]	[0.006]	[0.006]	[0.006]	[0.007]	[0.007]	[0.011]	[0.008]	[0.011]	[0.007]	[0.007]
R-Squared	0.427	0.428	0.428	0.428	0.429	0.428	0.427	0.428	0.429	0.428	0.428
AIC	53765.5	53725.1	53723.0	53720.6							
Age at First Birth											
Years since Eligible for Citizenship (N=12,789)	0.150***	0.147***	0.153***	0.166***	0.108***	0.149***	0.071	0.225***	0.225***	0.141***	0.146***
	[0.036]	[0.036]	[0.036]	[0.036]	[0.037]	[0.035]	[0.050]	[0.040]	[0.040]	[0.038]	[0.037]
R-Squared	0.287	0.287	0.287	0.288	0.288	0.291	0.293	0.289	0.289	0.288	0.288
AIC	72026.6	72025.1	72025.0	72011.9							
Ever Married											
Years since Eligible for Citizenship (N=18,921)	-0.011***	-0.010***	-0.010***	-0.010***	-0.008***	-0.011***	-0.006*	-0.013***	-0.013***	-0.011***	-0.011***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.003]	[0.003]	[0.003]	[0.002]	[0.002]
R-Squared	0.473	0.474	0.474	0.474	0.474	0.474	0.473	0.475	0.475	0.475	0.474
AIC	12198.4	12176.6	12176.4	12179.7							
Native Partner											
Years since Eligible for Citizenship (N=19,932)	-0.006**	-0.006**	-0.007**	-0.006**	-0.006**	-0.006**	0.004	-0.004	-0.004	-0.005	-0.005*
	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.004]	[0.003]	[0.003]	[0.003]	[0.003]
R-Squared	0.262	0.262	0.262	0.262	0.262	0.262	0.263	0.263	0.263	0.263	0.262
AIC	7674.9	7673.0	7676.8	7670.5							
Age of Partner											
Years since Eligible for Citizenship (N=10,901)	-0.104*	-0.115**	-0.116**	-0.117**	-0.110*	-0.110**	0.048	-0.129**	-0.096***	-0.146**	-0.121**
	[0.056]	[0.056]	[0.057]	[0.057]	[0.059]	[0.056]	[0.073]	[0.060]	[0.026]	[0.062]	[0.059]
R-Squared	0.376	0.376	0.376	0.376	0.376	0.376	0.376	0.376	0.376	0.376	0.376
AIC	71005.7	71005.0	71007.0	71007.0							
Years in Germany	Linear	Quadratic	Cubic	Quartic	Quadratic	Quadratic	Quadratic	Quadratic	Quadratic	Quadratic	Quadratic
Cohort Controls	Year FE	Year FE	Year FE	Year FE	Year FE	Year FE	No	Year FE	Year FE	Year FE	Year FE
Age of Arrival Controls	No	No	No	No	Under 11	10-year FE	Age-FE	No	No	No	No
Arrival Cohort-Specific Yob Trends	No	No	No	No	No	No	No	Linear	Quadratic	No	No
Arrival Cohort x Year of Birth FE	No	No	No	No	No	No	No	No	No	10-year	5-year

Notes : The table reports alternative specifications of the reduced-form for female immigrants. The dependent variables are fertility choices (number of children, age at first birth), family formation (whether an immigrant has ever been married) and partner characteristics (whether the partner is a native as well as partner age). The first four specifications (columns (1)-(4)) include different polynomials in years in Germany. Columns (5)-(7) test for the influence of age of arrival effects: (5) adds a dummy for immigrants which were under the age of 11 when they arrived in Germany; (6) include separate dummies for age of arrival (10-year bands); and column (7) includes age of arrival FE instead of cohort of arrival dummies. Columns (8) and (9) include linear and quadratic birth year trends separately for each arrival cohort. Columns (10) and (11) include arrival cohort x year and birth cohort fixed effects (for 10-year and 5-year year of birth groups). The sample includes all immigrants who arrived in Germany between 1976 and 2000 and who were between 16 and 30 years-old when they first get eligible during the 1991-2010 period. We exclude ethnic Germans, i.e. immigrants with German ancestry who had faster access to German citizenship than regular immigrants. All specifications also include education 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 brackets are clustered by age x arrival year. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1.

Source : Microcensus (2005-2010)

Table 7: The Role of Labor Market Income

Sample: Female Immigrants	Fertility Choices				Family Formation				Characteristics of Partner				
	Having Kids	Number of Kids	Age at 1st Birth	Single Mother	Currently Married	Ever Married	Divorced	Cohabiting	Native	Same origin	Years in Germany	Education	Age
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Years since Eligible for Citizenship	-0.008*** [0.002]	-0.020*** [0.007]	0.145*** [0.037]	-0.001 [0.003]	-0.007*** [0.003]	-0.009*** [0.002]	-0.004 [0.002]	-0.002 [0.002]	-0.006** [0.003]	0.001 [0.003]	-0.469*** [0.089]	0.015 [0.028]	-0.118** [0.057]
Observations	18,081	18,064	12,382	11,889	18,079	18,079	12,838	11,930	10,673	10,673	8,293	10,493	10,644
R-Squared	0.424	0.424	0.283	0.039	0.333	0.469	0.033	0.134	0.263	0.297	0.257	0.285	0.376
Years since Eligible for Citizenship	-0.006*** [0.002]	-0.015** [0.007]	0.143*** [0.037]	-0.002 [0.003]	-0.004* [0.002]	-0.008*** [0.002]	-0.004 [0.002]	-0.003 [0.002]	-0.007** [0.003]	0.002 [0.003]	-0.464*** [0.089]	0.013 [0.028]	-0.112* [0.057]
Personal Income (/1000)	-0.114*** [0.009]	-0.357*** [0.026]	0.311*** [0.078]	0.227*** [0.019]	-0.180*** [0.012]	-0.084*** [0.007]	0.137*** [0.011]	0.065*** [0.008]	0.032*** [0.007]	-0.049*** [0.008]	-0.752*** [0.212]	0.143*** [0.046]	-0.591*** [0.149]
Observations	18,081	18,064	12,382	11,889	18,079	18,079	12,838	11,930	10,673	10,673	8,293	10,493	10,644
R-Squared	0.441	0.446	0.285	0.168	0.376	0.479	0.101	0.150	0.265	0.301	0.258	0.285	0.378
Years in Germany (linear and squared)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year of Arrival Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year of Birth Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region of Origin Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State-specific Linear Trends	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mean of Dependent Variable	0.66	1.41	23.35	0.14	0.64	0.71	0.10	0.08	0.20	0.73	19.90	12.47	35.97

Notes : The table reports reduced form estimates for female immigrants. The dependent variables are fertility choices (columns (1)-(4)), family formation (columns (5)-(8)) and the characteristics of partner (columns (9)-(12)). The top panel shows the baseline while the bottom panel adds personal income (measured in 1,000 Euros) to the specification. The sample includes all immigrants who arrived in Germany between 1976 and 2000 and who were between 16 and 30 years-old when they first get eligible for citizenship in the 1991-2010 period. We exclude ethnic Germans, i.e. immigrants with German ancestry who had faster access to German citizenship than regular immigrants. Years since eligible denotes the number of years since an immigrant became eligible for naturalization after the 1991 or 2000 immigration reforms. All specifications include year of arrival and year of birth fixed effects, current year and state fixed effects as well as state-specific linear trends. We also include 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). The omitted education category is low-skilled (without high school or vocational degree). Standard errors in brackets are clustered by age x arrival year. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1.

Source : Microcensus (2005-2010)

Table 8: The Role of Culture for Fertility Choices

Sample: Female Immigrants	Fertility Choices			
	Having Kids (1)	Number of Kids (2)	Age at 1st Birth (3)	Single Mother (4)
Years since Eligible	-0.007*** [0.003]	-0.018** [0.007]	0.178*** [0.039]	-0.000 [0.003]
Observations	15,544	15,529	10,882	10,452
R-Squared	0.431	0.432	0.289	0.041
Years since Eligible	-0.001 [0.003]	-0.009 [0.009]	0.134*** [0.045]	-0.004 [0.004]
Years since Eligible*Fertility Origin	-0.002*** [0.001]	-0.003** [0.001]	0.014* [0.007]	0.001 [0.001]
Fertility Country of Origin	0.041*** [0.008]	0.100*** [0.024]	-0.455*** [0.100]	-0.035*** [0.009]
Observations	15,544	15,529	10,882	10,452
R-Squared	0.432	0.433	0.291	0.042
Year of Arrival Fixed Effects	Yes	Yes	Yes	Yes
Year of Birth Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Region of Origin Fixed Effects	Yes	Yes	Yes	Yes
State Fixed Effects	Yes	Yes	Yes	Yes
State-specific Linear Trends	Yes	Yes	Yes	Yes
Mean of Dependent Variable (Total Sample)	0.657	1.414	23.35	0.141
Mean of Dependent Variable (Sample used)	0.673	1.448	23.29	0.137

Notes : The table reports reduced form estimates for fertility choices of female immigrants. 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 with the fertility rate in the country of origin in the year prior to emigration as well as that variable interacted with years since eligible. All specifications include the same controls as in previous tables. See notes to Tables 2-4 for details. Standard errors are clustered at the age x arrival year level. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1.

Source : Microcensus (2005-2010)

Table 9: The Role of Culture for Family Formation

	Female Immigrants				Male Immigrants			
	Currently	Ever	Divorced	Cohabitation	Currently	Ever	Divorced	Cohabitation
	Married	Married	(3)	(4)	Married	Married	(7)	(8)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Years since Eligible	-0.006** [0.003]	-0.009*** [0.003]	-0.004* [0.003]	-0.001 [0.002]	-0.008*** [0.002]	-0.008*** [0.002]	0.004** [0.002]	0.001 [0.003]
Observations	14,679	14,679	10,736	9,918	13,643	13,643	8,213	8,355
R-Squared	0.340	0.484	0.032	0.150	0.414	0.480	0.027	0.179
Years since Eligible	-0.024*** [0.004]	-0.024*** [0.004]	0.002 [0.004]	0.007* [0.004]	-0.008* [0.004]	-0.010** [0.004]	-0.000 [0.004]	0.004 [0.005]
Years since Eligible*Female LFP Origin	0.037*** [0.007]	0.031*** [0.007]	-0.013** [0.006]	-0.017** [0.007]	-0.000 [0.007]	0.004 [0.007]	0.009 [0.007]	-0.007 [0.010]
Female LFP Origin	-0.280*** [0.065]	-0.264*** [0.058]	0.056 [0.062]	0.241*** [0.064]	0.225*** [0.067]	0.154** [0.066]	-0.168** [0.076]	0.043 [0.100]
Observations	14,679	14,679	10,736	9,918	13,643	13,643	8,213	8,355
R-Squared	0.341	0.486	0.032	0.152	0.415	0.481	0.028	0.179
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	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State-specific Linear Trends	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mean of Dependent Variable (Full Sample)	0.639	0.709	0.099	0.085	0.554	0.592	0.063	0.112
Mean of Dependent Variable (Sample used)	0.658	0.731	0.099	0.078	0.564	0.6	0.059	0.11

Notes : The table reports reduced form estimates of marriage outcomes for female (columns (1)-(4)) and male immigrants (columns (5)-(8)). The top panel shows the baseline for the subsample for which we have valid information on the female labor force participation rates in the country of origin. The bottom panel adds the female labor force participation in the country of origin just prior to emigration and that variable interacted with the years since eligibility. All specifications include the same variables in previous tables. See notes to Tables 2-4 for further details. Standard errors are clustered at the age x arrival year level. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1.

Source : Microcensus (2005-2010);

Table A1: Summary Statistics of the Microcensus

	<u>Female Immigrants</u>		<u>Male Immigrants</u>	
	Mean	Std. Dev.	Mean	Std. Dev.
Having Children	0.657	0.475		
Total Number of Children	1.414	1.318		
Age at Birth of First Child	23.35	4.739		
Single mother	0.141	0.348		
Currently Married	0.639	0.480	0.554	0.497
Ever Married	0.709	0.454	0.592	0.492
Divorced	0.0994	0.299	0.0634	0.244
Cohabiting	0.0848	0.279	0.112	0.315
Partner: German	0.195	0.396	0.204	0.403
Partner: Same Origin	0.726	0.446	0.705	0.456
Partner: Same Origin (2nd Generation)	0.0872	0.282	0.119	0.324
Partner: Years in Germany	19.90	9.221	16.19	9.163
Partner: Age	35.97	7.878	30.80	7.277
Partner: Age Gap	3.969	6.444	-2.638	5.708
Partner: Years of Education	12.47	3.207	11.88	3.224
Partner: Years of Education Gap	0.732	3.104	-0.030	3.210
Share Naturalized	0.365	0.481	0.381	0.486
Years since Naturalized	3.684	6.368	3.778	6.417
Years since Eligible for Citizenship	7.169	5.137	8.003	5.285
Years in Germany	16.86	6.937	18.07	7.112
Age	30.29	6.460	30.53	7.010
Low Education	0.549	0.498	0.497	0.500
Medium Education	0.391	0.488	0.449	0.497
High Education	0.060	0.237	0.054	0.226
<u>Region of Origin</u>				
Traditional EU member States (EU-15)	0.094	0.291	0.116	0.320
New EU Member States (EU-12)	0.140	0.347	0.093	0.290
Ex-Yugoslavia	0.125	0.331	0.145	0.352
Turkey	0.335	0.472	0.333	0.471
Middle East	0.068	0.251	0.086	0.281
Africa	0.039	0.193	0.047	0.211
Asia	0.049	0.216	0.042	0.200
America	0.020	0.14	0.014	0.118
Former Soviet Union (without EU-12)	0.117	0.321	0.109	0.311
Other or No Citizenship	0.013	0.115	0.016	0.127
Observations	18,534		17,216	

Notes: The table reports summary statistics for first-generation immigrants who arrived in Germany between 1976 and 2000 and who are 16-30 years old in the post-reform period (1991-2009). A person is eligible if (a) she has lived in Germany for at least 8 years in 1991 or later and is then 16-22 years-old; (b) she has lived in Germany for at least 15 years in the period 1991-1999 and is then 23-30 years-old; or (c) she has lived in Germany for at least 8 years and the year is 2000 or later and she is then 23-30 years-old. 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.

Source: Microcensus 2005-2010

Table A2: Summary Statistics of the Socio-Economic Panel

	<u>Male</u>		<u>Female</u>	
	Mean	Std. Dev.	Mean	Std. Dev.
Married	0.530	0.499	0.701	0.458
Divorced	0.0210	0.143	0.0422	0.201
Age at first Marriage	22.19	3.077	20.00	2.870
German Spouse	0.0729	0.260	0.0938	0.292
Years since Eligible	2.354	3.665	2.611	3.860
Years in Germany	12.24	6.256	12.09	6.476
Years in Germany Squared	189.0	189.3	188.2	192.7
Year of Arrival	1985	6.807	1986	6.945
Age	26.11	6.107	26.28	5.798
Age Squared	718.9	339.9	724.1	321.6
Low Education	0.540	0.498	0.647	0.478
Medium Education	0.434	0.496	0.316	0.465
High Education	0.0258	0.158	0.0376	0.190
<u>Region of Origin</u>				
Traditional EU member States (EU-15)	0.053	0.224	0.0930	0.291
New EU Member States (EU-12)	0.131	0.337	0.142	0.349
Ex-Yugoslavia	0.095	0.293	0.091	0.288
Turkey	0.487	0.500	0.461	0.499
Middle East	0.006	0.078	0.007	0.085
Africa	0.008	0.089	0.002	0.040
Asia	0.004	0.063	0.006	0.075
America	0.003	0.053	0.002	0.046
Former Soviet Union (without EU-12)	0.211	0.408	0.194	0.396
Other or No Citizenship	0.003	0.053	0.003	0.054
Observations	3,259		3,751	

Notes : The table reports summary statistics for first-generation immigrants who arrived in Germany between 1976 and 2000 and who are 16-30 years old when becoming eligible. A person is eligible if an individual is (a) aged 16-22, has lived in Germany for at least 8 years and the year is 1991 or later; (b) aged 23-30, has lived in Germany for at least 15 years in the period 1991-1999; or (c) aged 23-35, has lived in Germany for at least 8 years and the year is 2000 or later. Low-skilled individuals are those without a highschool degree or vocational degree; medium-skilled are those with highschool degree or vocational degree; high-skilled are those with college degree. Individuals are in school if they still attend school over the past four weeks.

Source : SOEP (1984-2009)

Table A3: Citizenship and Additional Marriage Outcomes

	Female Immigrants		Male Immigrants	Female Immigrants	
	<u>Age at First Marriage</u>			<u>Age at First Marriage</u>	<u>Divorced</u>
	(1)	(2)	(3)	(4)	(5)
Years since Eligible for Citizenship	0.289*** [0.036]	-0.031 [0.038]	0.190*** [0.043]	0.134** [0.066]	0.000 [0.006]
Observations	8,864	6,479	2,930	1,450	1,576
R-Squared	0.268	0.236	0.507	0.611	0.250
Individual Characteristics	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	Yes	Yes	Yes	Yes	Yes
State-specific Linear Trends	Yes	Yes	Yes	Yes	Yes
Mean of Dependent Variable	19.90	22.28	20.38	21.67	0.03

Notes : The table reports reduced form estimates between years since eligibility and family formation. The left-hand side (columns (1)-(2)) reports results for the Microcensus (1999-2004), the right-hand side (columns (3)-(5)) for the GSOEP. Columns (1) and (3)-(5) for female immigrants, column (2) for male immigrants. The dependent variables are the age an immigrant first gets married (columns (1)-(4)); and whether an immigrant is divorced (columns (5)). Columns (4) focus on immigrants who are single after 8 years in Germany; column (5) is restricted to immigrants who were married after 8 years in Germany. The sample overall includes all immigrants who arrived in Germany between 1976 and 2000 and who were between 16 and 30 years-old when they first get eligible for citizenship in the 1991-2010 period. We exclude ethnic Germans, i.e. immigrants with German ancestry who had faster access to German citizenship than regular immigrants. Years since eligible denotes the number of years since an immigrant became eligible for naturalization after the 1991 or 2000 immigration reforms. All specifications include year of arrival and year of birth fixed effects, current year and state fixed effects as well as state-specific linear trends. We also include 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). For the Microcensus before 2005, we do not have this information and replace the region of origin fixed effects by recent citizenship fixed effects (same categories including one category for German). The omitted education category is low-skilled (without high school or vocational degree). Standard errors in brackets are clustered by age x arrival year. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1.

Source : Microcensus (1999-2004) for columns (1)-(2); Socio-Economic Panel (1984-2009) for columns (3)-(5).

Table A4: Specification Checks

Sample: Male Immigrants	Different Polynomials of Years in Germany				Age of Arrival Effects			Differential Birth Year Effects across Arrival Cohorts			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Married											
Years since Eligible for Citizenship (N=17,213)	-0.008*** [0.002]	-0.006*** [0.002]	-0.007*** [0.002]	-0.007*** [0.002]	-0.004** [0.002]	-0.007*** [0.002]	-0.004 [0.004]	-0.010*** [0.003]	-0.008* [0.004]	-0.008*** [0.002]	-0.008*** [0.002]
R-Squared	0.399	0.401	0.401	0.401	0.401	0.401	0.400	0.401	0.401	0.401	0.401
AIC	16217.1	16177.5	16172.1	16175.3							
Ever Married											
Years since Eligible for Citizenship (N=17,213)	-0.009*** [0.002]	-0.008*** [0.002]	-0.008*** [0.002]	-0.008*** [0.002]	-0.006*** [0.002]	-0.008*** [0.002]	-0.006* [0.004]	-0.009*** [0.002]	-0.007* [0.004]	-0.009*** [0.002]	-0.009*** [0.002]
R-Squared	0.465	0.467	0.467	0.467	0.467	0.467	0.466	0.467	0.467	0.467	0.467
AIC	13820.8	13778.5	13772.5	13771.6							
Native Partner											
Years since Eligible for Citizenship (N=9,164)	0.005 [0.003]	0.004 [0.003]	0.004 [0.003]	0.004 [0.003]	0.000 [0.004]	0.005 [0.003]	0.002 [0.005]	0.006* [0.004]	0.006* [0.004]	0.003 [0.004]	0.007** [0.003]
R-Squared	0.160	0.161	0.161	0.161	0.162	0.162	0.164	0.163	0.163	0.163	0.161
AIC	7955.4	7946.7	7950.3	7948.7							
Age of Partner											
Years since Eligible for Citizenship (N=9,116)	0.040 [0.046]	0.036 [0.046]	0.035 [0.047]	0.038 [0.047]	-0.007 [0.048]	0.035 [0.046]	-0.016 [0.067]	0.097* [0.054]	0.097* [0.054]	0.016 [0.055]	0.015 [0.050]
R-Squared	0.411	0.411	0.411	0.411	0.412	0.412	0.411	0.412	0.412	0.413	0.412
AIC	57428.5	57426.9	57430.8	57428.4							
Years in Germany	Linear	Quadratic	Cubic	Quartic	Quadratic	Quadratic	Quadratic	Quadratic	Quadratic	Quadratic	Quadratic
Cohort Controls	Year FE	Year FE	Year FE	Year FE	Year FE	Year FE	No	Year FE	Year FE	Year FE	Year FE
Age of Arrival Controls	No	No	No	No	Under 11	10-year FE	Age-FE	No	No	No	No
Arrival Cohort-Specific Yob Trends	No	No	No	No	No	No	No	Linear	Quadratic	No	No
Arrival Cohort x Year of Birth FE	No	No	No	No	No	No	No	No	No	10-year	5-year

Notes: The table reports alternative specifications of the reduced-form for male immigrants. The dependent variables are family formation (whether an immigrant is currently married or has ever been married) and partner characteristics (whether the partner is a native and partner age). The first four specifications (columns (1)-(4)) include different polynomials in years in Germany. Columns (5) and (6) test for the influence of age of arrival effects: (5) adds a dummy for immigrants which were under the age of 11 when they arrived in Germany; (6) include separate dummies for age of arrival (7-year bands). Columns (7) and (8) include linear and quadratic birth year trends separately for each arrival cohort. Columns (9) and (10) include arrival cohort x year and birth cohort fixed effects (for 10-year and 5-year year of birth groups). The sample includes all immigrants who arrived in Germany between 1976 and 2000 and who were between 16 and 30 years-old when they first get eligible during the 1991-2010 period. We exclude ethnic Germans, i.e. immigrants with German ancestry who had faster access to German citizenship than regular immigrants. All specifications also include education 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 brackets are clustered by age x arrival year. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1.

Table A5: Additional Specification Checks

	Functional Form		Age Window Used for Estimation		
	Baseline	+ eligible-Dummy	Ages 19-27	Ages 21-25	Ages 22-23
Sample: Female Immigrants	(1)	(2)	(3)	(4)	(5)
<u>Having children</u>					
Years since Eligible for Citizenship	-0.006*** [0.002]	-0.005*** [0.002]	-0.013*** [0.005]	-0.016** [0.007]	-0.018 [0.020]
Eligible		-0.057*** [0.012]	-0.045*** [0.016]	-0.054** [0.025]	-0.058 [0.039]
Observations	35,341	35,341	17,584	8,799	3,433
R-Squared	0.413	0.414	0.287	0.246	0.274
<u>Currently Married</u>					
Years since Eligible for Citizenship	-0.004** [0.002]	-0.003 [0.002]	-0.011*** [0.004]	-0.015** [0.006]	-0.021 [0.021]
Eligible		-0.032*** [0.011]	-0.019 [0.015]	-0.042** [0.020]	-0.045 [0.035]
Observations	35,354	35,354	17,589	8,800	3,433
R-Squared	0.333	0.334	0.189	0.143	0.138
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	No	No	No	No	No
State Fixed Effects	Yes	Yes	Yes	Yes	Yes
State-specific Linear Trends	Yes	Yes	Yes	Yes	Yes

Notes: The table reports alternative specifications of the reduced-form for female immigrants using the Microcensus years from 1999 to 2010. The dependent variables are fertility choices (having children) and family formation (whether an immigrant is currently married). The first set allows for both a level and slope effect of eligibility: column (1) shows the baseline specification with a slope effect only, while column (2) also includes a dummy variable whether the individual is eligible for naturalization (level effect). The second set of results reduces the window of ages that are included in the estimation: column (3) only include immigrants between 19 and 27 years-old when first eligible for citizenship; column (4) immigrants between 21-25 years-old and column (5) immigrants aged 22-23 when first eligible. The sample includes all immigrants who arrived in Germany between 1976 and 2000 and who were between 16 and 30 years-old when they first get eligible during the 1991-2010 period. All specifications control for year of birth and year of arrival fixed effects as well as calendar year and state fixed effects as well as state-specific trends. We further include education dummies and linear and quadratic terms of current age and years in Germany. Standard errors in brackets are clustered by age x arrival year. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1.

Source : Microcensus (1999-2010)

Table A6: Selective Attrition

	Female Immigrants		Male Immigrants	
	Selective Attrition		Selective Attrition	
	(Mortality or Emigration)		(Mortality or Emigration)	
	(1)	(2)	(3)	(4)
Years since Eligible for Citizenship		0.001 [0.001]		0.001 [0.002]
Eligible for Citizenship	0.004 [0.005]		-0.003 [0.007]	
Observations	5,308	5,308	4,767	4,767
R-Squared	0.055	0.055	0.053	0.053
Year of Arrival Fixed Effects	Yes	Yes	Yes	Yes
Year of Birth Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Region of Origin Fixed Effects	Yes	Yes	Yes	Yes
State Fixed Effects	Yes	Yes	Yes	Yes
State-specific Linear Trends	Yes	Yes	Yes	Yes
Mean of Dependent Variable				

Notes : The dependent variable is the probability of attrition due to outmigration or mortality (in columns (1)-(2) for women and columns (3)-(4) for men). The sample includes all immigrants who arrived in Germany between 1976 and 2000 and who were between 16 and 30 years-old when they first get eligible for citizenship in the 1991-2009 period. We exclude ethnic Germans, i.e. immigrants with German ancestry who had faster access to German citizenship than regular immigrants. Years since eligible denotes the number of years since an immigrant became eligible for naturalization after the 1991 or 2000 immigration reforms; eligible is an indicator equal to one if an immigrant may naturalize and zero otherwise. All specifications include year of arrival and year of birth fixed effects, current year and state fixed effects as well as state-specific linear

Source : Socio-Economic Panel (1984-2009)

Table A7: Alternative Samples

	Female Immigrants						Male Immigrants			
	Fertility Choices		Family Formation		Partner		Family Formation		Partner	
	Number of Kids (1)	Age at 1st Birth (2)	Currently Married (3)	Ever Married (4)	Native (5)	Age (6)	Currently Married (7)	Ever Married (8)	Native (9)	Age (10)
Use Legal Claim to Eligibility since 1993	-0.014*** [0.003]	0.220*** [0.042]	-0.019*** [0.004]	-0.023*** [0.004]	-0.001 [0.003]	-0.349** [0.146]	-0.006*** [0.002]	-0.013*** [0.003]	-0.001 [0.004]	-0.009 [0.153]
Drop Immigrants with German Partners	-0.018*** [0.004]	0.125*** [0.041]	-0.022*** [0.004]	-0.027*** [0.004]	-0.010*** [0.003]	-0.177 [0.255]	-0.002 [0.002]	-0.015*** [0.003]	-0.001 [0.002]	-0.036 [0.203]
Control for Children in Household (2000 Reform)	-0.019*** [0.003]	0.165*** [0.027]	-0.016*** [0.003]	-0.020*** [0.003]	-0.005** [0.003]	-0.133 [0.127]	-0.007*** [0.002]	-0.017*** [0.003]	0.004 [0.003]	-0.144 [0.119]
Drop if Children under Age 10 (2000 Reform)	-0.018*** [0.004]	0.185*** [0.070]	-0.015*** [0.003]	-0.019*** [0.003]	-0.001 [0.005]	-0.139 [0.127]	-0.012*** [0.002]	-0.018*** [0.003]	0.003 [0.005]	-0.124 [0.119]
Drop Ex-Yugoslavia and Middle East	-0.017*** [0.004]	0.172*** [0.037]	-0.014*** [0.004]	-0.020*** [0.004]	-0.004 [0.003]	-0.087 [0.146]	-0.007*** [0.002]	-0.019*** [0.003]	0.007** [0.003]	-0.144 [0.128]
Drop All Ethnic Germans	-0.023*** [0.004]	0.152*** [0.042]	-0.016*** [0.004]	-0.021*** [0.004]	-0.007** [0.003]	-0.263* [0.158]	-0.008*** [0.002]	-0.021*** [0.003]	0.004 [0.004]	-0.294** [0.146]
Drop East German States	-0.018*** [0.004]	0.133*** [0.034]	-0.015*** [0.003]	-0.019*** [0.003]	-0.005* [0.003]	-0.147 [0.128]	-0.006*** [0.002]	-0.018*** [0.003]	0.004 [0.003]	-0.141 [0.119]
Add Economic Conditions	-0.025*** [0.005]	0.148*** [0.048]	-0.016*** [0.004]	-0.023*** [0.004]	-0.005 [0.004]	-0.374* [0.208]	-0.009*** [0.003]	-0.022*** [0.004]	0.000 [0.004]	-0.447** [0.177]
Years in Germany (linear and squared)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year of Arrival Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year of Birth Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region of Origin Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State-specific Linear Trends	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes : The table reports reduced-form estimates where the dependent variables are fertility choices (columns (1) and (2)), family formation (columns (3)-(4) and (7)-(8)) and characteristics of the partner (columns (5)-(6) and columns (9)-(10)). The left-hand side shows the results for female immigrants, the right-hand side for male immigrants. The key independent variables are the number of years since a person is eligible for naturalization. The first row uses the introduction of a legal claim to eligibility in 1993 to calculate the eligibility variable (rather than the 1991 reform year). The second row drops immigrants with a German spouse in 2005-10. The third row includes controls for the number and age structure of children in the household. The fourth row drops immigrants with children under 10 who might have benefitted from the introduction of birthright citizenship in 2000 for all children born on or after January 1, 2000. The fifth row excludes all immigrants from Ex-Yugoslavia and the Middle East; the sixth row restricts the sample to the 2007-10 Microcensus where we can directly identify and exclude ethnic Germans. The seventh row drops observations from East German states except Berlin, while the last row adds labor market controls (a linear and squared term in state unemployment rate and the state GDP growth rate). See notes to previous tables for the definition of the sample. All specifications include the same individual characteristics as before (year of arrival and year of birth fixed effects, a second-order polynomial of years in Germany, education), state and year fixed effects, state-specific linear time trends and ten region of origin fixed effects. Standard errors in brackets are clustered by age x arrival year. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1.

Source : Microcensus (2005-2010).

Figure 1: Eligibility for Different Birth Cohorts and Arrival Year

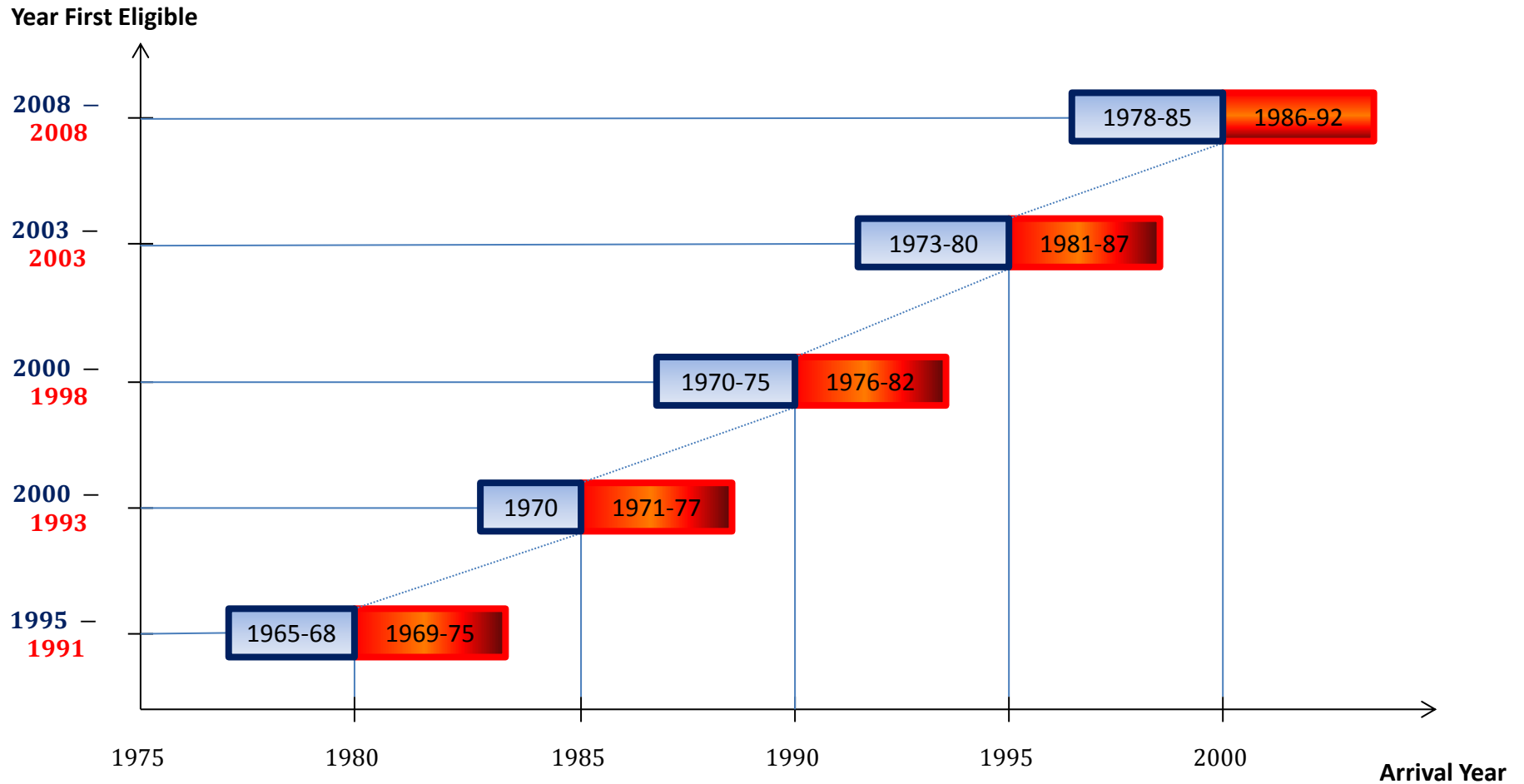


Figure 2: Are there Nonlinear Returns to Eligibility for Citizenship?

