

Access to Citizenship & Migrant Saving Choices

Hannah Zillessen *

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Abstract

In most Western countries, migrants hold significantly less wealth than their native counterparts. They also face significantly more uncertainty about their future. This paper examines the crucial role that uncertainty about citizenship prospects and future location plays in explaining migrant saving choices and wealth inequality. Exploiting quasi-experimental variation and extensive panel data from Germany, I show that migrants who have access to citizenship save as much as natives once individual characteristics such as labour market outcomes are accounted for — while migrants without this right persistently save 30% less. This unexplained gap is closed completely when migrants in the latter group become eligible to apply for citizenship. Developing a life cycle saving framework where migrants can vary in their location preference, I show that migrants with a preference for the immigration country choose to save less if they perceive a risk to their right to stay in retirement. If the risk can be eliminated early, for example through citizenship, migrants increase their saving rate. This is driven by a greater valuation of expected retirement consumption and willingness to commit to long term investments. I substantiate this prediction empirically by documenting that migrants, once they are eligible for citizenship, become significantly more likely to tie up capital in assets such as mortgage saving plans, housing and private pension plans. They also become more likely to express an intention to stay in the immigration country indefinitely. The results suggest that citizenship legislation can reduce the risk of old age poverty for migrants, while simultaneously making immigration a more effective tool for governments seeking to stabilise their pension systems.

JEL: D14, D15, D81, J15, J18

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*Department of Economics, University of Oxford, hannah.zillessen@economics.ox.ac.uk. I am grateful to Johannes Abeler, Abigail Adams-Prassl, Steve Bond and Hamish Low for their continuous guidance and encouragement on this project. For numerous helpful discussions and suggestions, I would also like to thank Luke Heath Milsom, Roland Bénabou, Ian Crawford, Flávio Cunha, Binta Zahra Diop, Martin Ellison, Armin Falk, Gunjita Gupta, Shihang Hou, Vatsal Khandelwal, Romuald Méango, Barbara Petrongolo, Simon Quinn, May Rostom, Tomasz Sulka, Séverine Toussaert and Verena Wiedemann. I would further like to thank seminar and conference participants at the NBER summer institute on household finance, the European Commission ECFIN seminar series, the EC Annual Research Conference 2021, the Royal Economic Society Conference 2022, Royal Economic Society Symposium of Junior Researchers 2021, Transatlantic Doctoral Conference 2022, HCEO/Briq Summer School 2022, and University of Oxford for many helpful comments and conversations.

1 Introduction

In most Western countries, migrants hold significantly less wealth than natives (e.g. [Muckenhuber et al. \[2022\]](#), [Ferrari \[2020\]](#), [Doiron and Guttmann \[2009\]](#), [Cobb-Clark and Hildebrand \[2006\]](#)). In countries such as Italy or Germany, this gap is as large as \$160,000 at the median ([Porpiglia et al. \[2011\]](#), [Bauer et al. \[2011\]](#)). Furthermore, the gap is particularly pronounced with regard to housing and pension wealth, the most important determinants of retirement security (e.g. [Poterba et al. \[2011\]](#)). Their lower wealth levels put migrants at a greater risk of poverty, particularly in old age (e.g. [Bárcena-Martín and Pérez-Moreno \[2017\]](#), [Muñoz de Bustillo and Antón \[2011\]](#), [Hansen and Wahlberg \[2009\]](#)). They are also likely to worsen migrants' health outcomes (e.g. [Schwandt \[2018\]](#), [Attanasio and Emmerson \[2003\]](#)) as well as those of their children (e.g. [Cunha and Heckman \[2007\]](#)). This persistent issue is set to accelerate over the next decades. As Western populations grow older — in 2032, about 20% of the US population and about 25% of the UK as well as the German population will be over the retirement age of 65¹ — their pension systems are under mounting pressure. In response to that demographic threat, Western countries are reducing state pensions and increasingly require constituents to prepare for retirement privately². Consequently, personal wealth is set to become an even stronger predictor of economic well being in retirement. And individuals who are unable to save during their working age are going to be at an ever greater risk of economic precarity (e.g. [Poterba \[2014\]](#)). This poses a threat to the welfare of migrants who choose to stay in their host country³. It also presents a challenge to the governments of said host countries. Many of them try to counteract the effects of their ageing populations not only via changes to their pension systems, but also through increased immigration — resulting in a younger workforce and higher fertility rates (e.g. [Bonin et al. \[2000\]](#)). However, the extent to which immigration can stabilise pension systems long term, is likely limited by migrants' ability to accumulate sufficient wealth to support themselves in retirement. If migrants are more likely than natives to require state assistance in old age (e.g. [Smedsvik et al. \[2021\]](#), [Gustafsson et al. \[2019\]](#)), this offsets some of the positive impact of immigration during migrants' working age. Moreover, with decreasing intergenerational mobility (e.g. [Hansen \[2014\]](#), [Piketty \[2000\]](#)), challenges that keep first generation migrants from accumulating wealth, hinder their children from doing so as well⁴.

To create an environment in which migrants are able to thrive in the host country long term, and immigration can effectively stabilise the pension system, it is crucial to understand why migrants and natives differ in their capacity and willingness to accumulate wealth in the host country. The existing literature has put forward a variety of factors that contribute to the migrant native wealth gap, such as remittances, differential labour market outcomes, or varying cultural norms surrounding thrift. Many of these channels can only be influenced to a limited degree by legislation, making it difficult for governments to level out inequities. In this paper, I suggest that migrants save less if they are uncertain about the permanence of their right to

¹Source: Statistisches Bundesamt, United States Census Bureau, Office for National Statistics for the German, US, and UK projections respectively

²Most countries in continental Europe now have a three pillar pension system where pay-as-you-go state pensions have to be supplemented by fully funded occupational and private pensions. In most English speaking countries such as the UK, the US or Australia, the role of private pensions is even more pronounced as the basic pensions are low and therefore have to be accompanied by private plans such as 401(k) plans in the US for example.

³As most long term migrants have been found to do, see [Bauer et al. \[2005\]](#) for example.

⁴As migrants from non-Western countries tend to have higher fertility rates than natives, migration holds the promise of attenuating the effects of Western countries' ageing populations even beyond the direct impact of current migration cohorts. But the actual extent of that potential effect likely varies again with the ability of the initial generation to accumulate wealth.

stay. Specifically, I demonstrate that migrants without access to citizenship, which *ensures* an indefinite right to stay in the host country, save substantially less than both natives and migrants who have access to citizenship. This difference persists when controlling for individual differences in labour market outcomes, household constellation or cultural background. But when migrants unexpectedly gain the right to apply for citizenship, they more than double their saving rate — fully closing the unexplained saving gap. Since citizenship, unlike other dimensions of integration, is under direct government control, this result provides policy makers with immediate scope for action. To uncover the drivers of this finding, I further develop a life cycle saving framework wherein migrants choose their saving level with or without having to account for a small risk of having to leave the host country in retirement. The model predicts that migrants who would like to stay in the host country save less under uncertainty as they hold off on investments in country specific assets. This is substantiated by the data as migrants become significantly more likely to invest in housing or pension plans after they become eligible for citizenship.

The empirical part of this paper focuses on Germany, a country where more than a quarter of the population has a migration background and where the wealth gap between migrants and natives is particularly pronounced⁵. I exploit two reforms to German citizenship law which unexpectedly rendered migrants eligible for citizenship. Even though Germany has had a large migrant population for decades, up until the 1990s the country did not have a formal naturalisation process in place. This changed in 1991 when the “Alien Act” established explicit criteria for migrants seeking German citizenship. Crucially, the reform introduced age dependent residency requirements of 15 years for adults and 8 years for adolescents. These regulations remained in place for decade until the “Citizenship Act” in 2000 reduced the residency requirements to 8 years for everyone and established birthright citizenship. The decision to acquire citizenship is inherently endogenous and depends on individuals’ characteristics and situation. By using the variation in eligibility introduced by the two reforms, I circumvent the endogenous choice problem and isolate the causal impact of gaining the right to naturalise. I do so in two disparate ways. First, I conduct a twoway fixed effect difference in difference analysis around the 1999 reform to estimate the direct impact of drastically improved citizenship prospects on migrants without prior access to it. Second, I exploit the variation in migrants’ eligibility status over time to estimate the impact of expected and unexpected eligibility, anticipation, and long term effects. As this paper is predominantly interested in the reduction in uncertainty that is associated with citizenship, access to citizenship rather than citizenship itself is the treatment of interest.

Using data from the German Socioeconomic Panel, I document that migrants’ citizenship status significantly influences their saving choices. While households headed by migrants with access to German citizenship⁶ save about 6.6% of their net income, households headed by migrants without that right save only 2.8%. Native households save 10.3% on average. Part of the differences in the raw saving rates can be explained by characteristics such as labour market outcomes, household constellation and family background. The difference between migrants eligible for citizenship and natives disappears once these factors are accounted for. But the saving gap to non-eligible migrants persists. Even when including all controls as well as individual fixed effects, they still save about 30% less than either natives or eligible migrants. However, this residual gap is closed completely when ineligible migrants receive access to citizenship. They increase their saving

⁵Bauer et al. [2011] find that it amounts to more than \$150,000.

⁶This excludes naturalised migrants i.e. migrants who acquired German citizenship. This group is more similar to natives in their saving behaviour, possibly reflecting their more secure legal status.

rate by 2.5pp compared to natives and 2pp compared to previously eligible migrants. These results hold robustly over a variety of different specifications.

To understand why access to citizenship increases migrants' saving rate, I develop a life-cycle model where migrants choose how much to save during their working age and whether to retire in their host or home country. Migrants derive utility solely from consumption, but I allow for heterogeneity in migrants' locality preferences: While some migrants have a preference for consumption in their host country, others prefer to consume back home. This means that, all else equal, migrants with a preference for their home over the host country will want to return once they retire. In contrast, migrants with a preference for the host country will want to stay. Furthermore, I assume that migrants can save in a country specific asset which yields a weakly higher return if migrants stay in the host country — providing some migrants who otherwise would want to return with a motive to want to stay. Finally, if migrants do not have access to citizenship, with a small chance, they might have to leave upon retiring. This risk can also be interpreted as a perceived one. That is, migrants might have a secure right to stay, but worry that this may change in the future. The model predicts that migrants intending to return to their home country save more than migrants wishing to stay. This shows that the standard result from the literature, that temporary migrants save more than natives (e.g. [De Arcangelis and Joxhe \[2015\]](#), [Sinning \[2011\]](#), [Dustmann \[1997\]](#)), does not stand in contrast to my finding that migrants save less than natives. One merely has to allow for differences in migrants' preferences⁷. Furthermore, the model predicts that migrants wanting to stay save more if their right to do so is ensured via access to citizenship. The effect is driven by them investing more in the country specific asset, and stronger the higher the host country rate of return is compared to the one they receive abroad. However, even if the rates of return are on par in both host and home country, migrants with a preferences for consumption in the host country, invest more in country specific assets if they do not have to account for risk in their right to stay. This is because future consumption is worth more to them if they can enjoy it in the host country. The saving rate of migrants planning to leave the host country is unchanged by (the elimination) of risk in their right to stay — as we would want. Finally, if rates of return and saving levels are non-separable in the utility function, fewer migrants with a preference for their home country will choose to stay in the host country for economic reasons. I then substantiate these predictions empirically. Specifically, I find that, upon becoming eligible for citizenship, migrants become significantly more likely to express an intention to stay in Germany indefinitely (8pp) and tie up capital in long term saving devices such as housing (about 6pp) or private pension plans (9pp).

The results imply that for immigration to effectively counteract the strain ageing populations put on the pension system, migrants should be given access to citizenship early on. With security about their right to stay, they will be able to accumulate wealth effectively from the beginning of their stay.⁸. This is an important insight for governments seeking to pass immigration legislation that will attract migrants and facilitate integration, as well as garner long term support from natives. Successful immigration policies require lasting

⁷[Adda et al. \[2021\]](#) also allow for variation in migrants' preferences for the host relative to the home country. They find that migrants who wish to stay longer acquire more country specific skills.

⁸Of course, providing migrants with easier access to citizenship can have other consequences policymakers may want to consider, such as increased incentives to stay or have family members migrate as well. Indeed, the model suggests that providing migrants with access to citizenship prompts not only those who always wanted to stay to do so, but also types with a weak preference for their home country — increasing the number of migrants wanting to remain in the host country overall.

support from a broad majority of citizens. Thus, a system which allows migrants to accumulate wealth more easily may have benefits beyond the direct impact on public expenditures. It preempts accusations that migrants resettle only in pursuit of benefit payments.

This paper contributes to the understanding of several persistent challenges discussed in the literature. First, I contribute to the literature examining how to solve the pension crisis. Many papers document the threat that demographic change poses to the stability of social security systems and the welfare of elderly individuals (e.g. Ito and Rose [2010], Krueger and Ludwig [2007], Bloom and Canning [2004], Razin et al. [2002], Miles [1999]). With regard to solutions, the literature concludes that pay-as-you systems need to be reformed to keep public expenditures manageable (e.g. Bonenkamp et al. [2017], Galasso [2008], Galasso and Profeta [2004], Boeri et al. [2002], Razin et al. [2002]). Furthermore, some papers point to the need for individuals to change their saving behaviour and accumulate more private wealth to prepare for retirement. They simultaneously show that those who will be unable to do so become more reliant on social security (e.g. Poterba [2014], Wise [2014], Bloom et al. [2007]). In 2001 Germany replaced its traditional pay-as-you go pension system with a three pillar pension system and required citizens to supplement their statutory pensions by occupational or private ones. In response to the law, German citizens have increased their saving rates, even amidst weak income trends (e.g. Börsch-Supan et al. [2015], Stein [2009], Klär and Slacalek [2006], Bartzsch [2006]). However, this average increase masks substantial heterogeneity. More affluent individuals increased their savings significantly and are amassing higher levels of private wealth for retirement than ever before. But low skilled individuals, single parents and individuals with a migration background did not change their saving behaviour and are facing a growing risk of poverty in old age (Börsch-Supan et al. [2015], Goebel and Grabka [2011], Arent and Nagl [2010], Börsch-Supan [2008]). I contribute to this literature, by documenting that migrants without a permanent right to stay save less than natives in an otherwise similar situation. This is because they have to factor uncertainty in their right to remain in the host country into their saving choices — a fact that dampens their proclivity to invest into illiquid (but lucrative) assets such as housing specifically. With this, I identify an impediment to using increased immigration as an instrument to lessen the effects of ageing societies. I also provide a solution by demonstrating that access to citizenship fully closes the saving gap between migrants and natives that otherwise persists even after accounting for individual differences.

Second, I contribute to the literature on how to organise immigration successfully. Several papers document a significant wealth gap between migrant and native households (e.g., Ferrari [2020], Halbmeier [2019], Doiron and Guttmann [2009], Gibson et al. [2007], Cobb-Clark and Hildebrand [2006], Borjas [2002]). This wealth gap seems particularly pronounced and persistent with regard to housing wealth (e.g. Sinning [2007, 2010]). It is especially large in Germany, where, at the median, migrant households hold about \$128,000 less wealth than their native counterparts (Bauer et al. [2011]). A variety of reasons have been brought forward to explain this migrant native wealth gap. One are differential income levels (e.g., Halbmeier [2019]) stemming from lower wages and lower employment (e.g. Chiswick [1978], Borjas [1985, 1994], Duleep and Regets [1996, 2002], Zimmermann [2005]). However, even though migrants tend to earn lower incomes than natives upon arrival in the host country, the earning differential decreases over time (e.g. Chiswick [1978]). Another factor influencing migrants' wealth accumulation in the host country are remittances (De Arcangelis and Joxhe [2015], Bauer and Sinning [2011]). In particular, *temporary* migrants who intend to remain in the host country for only a limited period of time, send large amounts back to their home country (Dustmann

and Mestres [2010], Sinning [2011]). Most notably this is the case when they are faced with high income risks in the host country (Amuedo-Dorantes and Pozo [2006], Dustmann [1997]). When looking at savings in the host and the home country (via remittances) combined, temporary migrants tend to save *more* than natives (e.g. Adda et al. [2021], De Arcangelis and Joxhe [2015], Dustmann [1997]). Finally, migrants and natives may pursue different saving strategies due to differences in their cultural background. Examining the saving behaviour of second generation migrants in Germany and the UK, Paule-Paludkiewicz et al. [2016] find that migrants, whose families emigrated from countries where thrift and wealth are valued highly, save more than their counterparts from regions of the world in which less importance is ascribed to these values. This is in line with aggregate evidence on differential saving behaviour in different countries (e.g. Falk et al. [2015], Dohmen et al. [2015], Galor and Özak [2016], Chen [2013], Guiso et al. [2006]) as well as evidence on the intergenerational transmission of values (e.g. Dohmen et al. [2011], Casey and Dustmann [2010])⁹. I add to this literature by demonstrating that migrants' legal situation affects their saving choices. This is true even after controlling for differences in labour market outcomes, education or household constellation. Thus, this paper identifies a novel factor determining migrants' saving choices in a quantitatively important manner. Moreover, it identifies a factor that governments have direct control over (unlike entrenched labour market disadvantages for example). Hence, it provides important insights for governments seeking actionable immigration policies that aid financial assimilation in particular.

Third, I add to the literature discussing if and when to give migrants access to citizenship. There is a debate in both economics and political science about whether access to citizenship is a catalyst for integration or rather the “crowning achievement” at the end of a completed integration process (Hainmueller et al. [2016]). A variety of studies document that obtaining the citizenship of the host country improves migrants' labour market outcomes – for example by reducing entry barriers to certain jobs or discrimination (e.g. Hainmueller et al. [2019], Gathmann and Keller [2018], Steinhardt [2012], Steinhardt and Wedemeier [2012], Bevelander et al. [2008], Bratsberg et al. [2002], Bevelander [2000]). Citizenship also appears to foster social integration by motivating migrants to engage more with their neighbours, invest more in language skills, read local newspapers, etc. (e.g. Hainmueller et al. [2016], Avitabile et al. [2013]). Furthermore, granting citizenship to children in particular, seems to affect family formation choices by migrants, reducing and delaying fertility while improving children's health and education outcomes (e.g. Gathmann and Monscheuer [2018], Avitabile et al. [2014], Saurer and Felfe [2014], Sajons [2010]). Thus, the positive impact of citizenship on *individual migrants* has been well documented. I provide suggestive evidence that easier access to citizenship benefits not only the affected migrants, but also the natives of a host country by lowering migrants' dependence on benefits and thus public expenditures.

Finally, I contribute to the literature looking at how to enable individuals to make forward-looking financial decisions in non-conducive environments. While my theoretical framework assumes rational agents, it might very well be that the uncertainty about their right to stay keeps migrants from amassing wealth in ways going beyond a rational hesitancy to invest in country specific assets. First, there is growing evidence that risky environments prompt individuals to behave in a way that appears more present biased, foregoing investments

⁹Although it should be noted that the sub-population of people who choose to migrate is a nonrandom selection of a country's overall population (e.g. Bonin et al. [2009]) and so cross country evidence may not be informative about the saving behaviour of migrants (e.g. Carroll et al. [1999])

that would benefit them in expectation (e.g. [Mani et al. \[2013\]](#), [Lichand et al. \[2016\]](#), [Carvalho et al. \[2016\]](#)). Second, migrants without a assured right to stay might hold off on investments or even articulating a desire to stay in the host country due to loss aversion — an inclination that has been shown to impact saving and investment decisions by the literature (e.g. [Benartzi and Thaler \[1995\]](#), [Bowman et al. \[1999\]](#), [Kahneman and Tversky \[2013\]](#)). If migrants make preparation for a long term future in the host country, they implicitly articulate an expectation to stay there, potentially shifting their reference point (e.g. [Kőszegi and Rabin \[2006\]](#)). This in turn might render them more disappointed if they would eventually be denied a right to stay, and, anticipating this, they hedge their bets by holding off on specific investments. Furthermore, migrants might suffer a mental cost from enduring the uncertain waiting situation, ambiguity aversion (e.g. [Fox and Tversky \[1995\]](#)), and thus accept foregoing monetary benefits to avoid it. The vast majority of these papers draw on experimental evidence to sustain their theoretical claims. I contribute to this literature by documenting, in a large scale, real world setting, how increased uncertainty can impede individuals’ ability to optimally prepare for the future – above and beyond rational considerations.

The rest of the paper is organised as follows: Section 2 lays out the institutional context in Germany and the legal changes I use to identify the causal impact of citizenship. Section 3 describes the data. Section 4 presents the empirical approach and the sample, and then the results. Section 5 elaborates on the mechanisms. Finally, Section 6 discusses the implications of the results and Section 7 concludes.

2 Setting

2.1 Institutional Context

This paper focuses on Germany. The country, in many ways, provides an ideal setting to study migrants’ saving choices, how they are affected by the availability of a pathway to citizenship, and how they in turn affect the host country’s pension system. First, the question of how to boost migrants’ saving rates are of particular urgency to Germany. The country has both a very large migrant population, and a rapidly ageing one overall. If the government wants to use increased immigration to counteract the impact of that demographic change, it needs to put into place infrastructure that allows migrants to thrive in the country long term. This is not currently a given, especially for migrants without access to citizenship. Second, while changes in migrants’ citizenship status are often endogenous and it is thus difficult to estimate their causal impact, Germany offers an exceptional setting to actually do so. During the 1990s, German citizenship law was overhauled twice. In 1991, a reform established a formal pathway to citizenship and in 2000 a second reform made it significantly easier to become eligible for citizenship. I use this exogenous variation to identify the causal impact that access to citizenship has on migrants’ saving choices. Finally, while the German reforms provide a unique natural experiment to analyse the impact of access to citizenship on a large scale, the country shares sufficient characteristics with other Western countries experiencing demographic change and struggling to organise immigration to yield insights that are applicable to their challenges as well.

Current Situation. Germany has a large migrant population. As of 2019, more than 20 million people, a quarter of the German population, are first or second generation migrants. That is, they either have a direct

migration experience (68.2%) or at least one parent who does (31.8%).¹⁰ There is large heterogeneity in their legal status: 47.7% of first and second generation migrants are foreign citizens. And about 33% of foreign citizens do not have the right to stay in the country indefinitely. These differences in legal status seem to correlate with economic outcomes: On average, first generation migrants with foreign citizenship currently living in Germany have resided in the country for 16 years and arrived at age 25. They are less likely to have a professional or academic degree (43.2% do, compared to 64.4% in the overall population), are equally likely to be employed (though at lower income levels), less likely to draw a pension (9.8% do, compared to 21.8% in the overall population)¹¹ and more likely to depend on benefits (9.4% do, compared to 3.0% in the overall population).¹² In general, Germany has one of the most pronounced wealth gaps between migrants and natives in the Western world. [Bauer et al. \[2011\]](#) estimate it to be more than \$150,000 at the median — compared to \$44,000 in the US and only \$9,000 in Australia.

At the same time, Germany needs more migration to stabilise its workforce in the face of demographic change. Already, more than 20% of the population are over the age of 65 and thus the retirement age. Over the next ten years, as the baby boomer generation retires, the share of people over the age of 65 is expected to rise to more than 26%. In comparison, the share of children and adolescents below the age of 18 is expected to remain at just 17%. The impact of this process is expected to be so pronounced that Angela Merkel has declared demographic change to be one of the greatest forces for “change in our social life as well as the personal lives of each individual in the first half of the 21. century”.¹³ In response to this, Germany has intensified efforts to attract young foreign professionals, for example by passing the “Skilled Immigration Act” in March 2020 which speeds up the recognition of foreign degrees as well as German language lessons among other things. Germany has also been transitioning out of a pay-as-you-go to a three pillar pension system which requires citizens to supplement state and occupational with private pensions — to relieve demographic pressure on the statutory pension system. These two policy developments might come into increasing conflict. In the three pillar pension system, individuals who, for one reason or another, do not amass sufficient private wealth to support themselves during retirement are both at a high risk of poverty in old age, and of needing state assistance to pay for their costs of living. This in turn increases rather than decreases pressure on the social insurance system. So, if migrants are indeed in a worse position than natives to accumulate wealth, as prior research suggests, and people’s pensions are going to increasingly consist of their savings, then this puts migrants who stay in Germany at a heightened risk of future poverty — which in turn lowers the degree to which immigration can help solve Germany’s demographic problem. A variety of studies suggest that experienced or anticipated risk impacts individuals’ saving and investment choices — increasing (e.g. [Dustmann \[1997\]](#)) or decreasing (e.g. [Lichand et al. \[2016\]](#), [Mani et al. \[2013\]](#)) their propensity to save depending on context. In a country like Germany, with comparatively restrictive citizenship laws, migrants without access to citizenship might plausibly worry about the permanence of their right to stay. This in turn could keep them from investing in lucrative, but country specific assets and accumulating wealth all together.

Migration to Germany. Germany’s citizenship legislation is tied closely to it’s immigration experience. The country has experienced a continuous rise in the number of migrants living there since the second World

¹⁰Table with the numbers provided by the German statistical office can be found [here](#).

¹¹This is likely in part a reflection of migrants being younger on average – although the gap in the raw data is sizeable given that migrants on average are only 5-10 years younger than natives.

¹²All numbers are based on the 2019 census information provided by the German Federal Statistical Office.

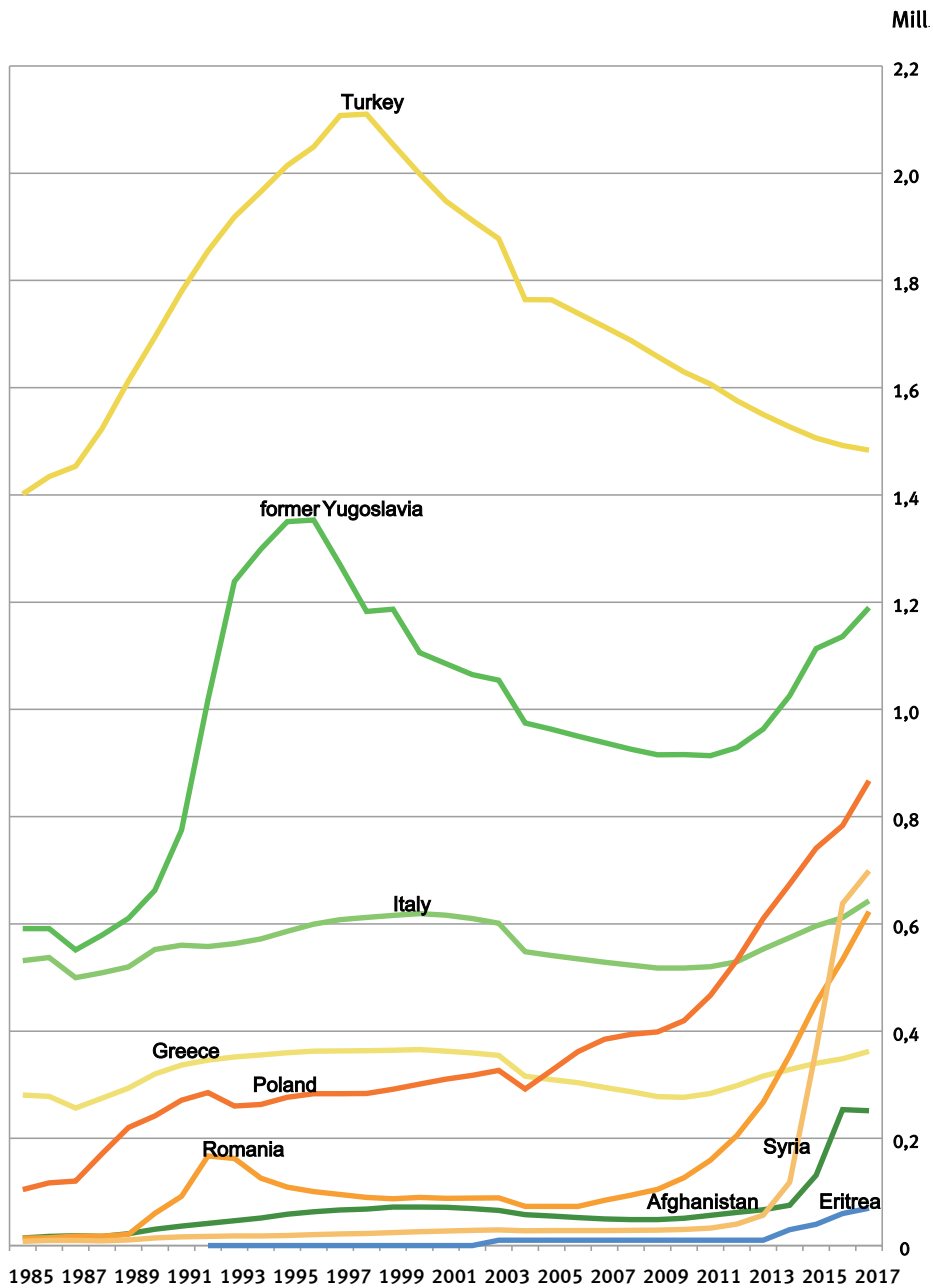
¹³Original transcript of the speech given at the “Demographic Summit can be found [here](#).

War. During the 1950s, millions of people from Eastern Europe relocated to Germany after their families were forced to flee the country earlier (so called “Aussiedler”). During the 1960s and early 1970s, the German government initiated the “guest worker programme” to recruit workers from Turkey, former Yugoslavia, Greece, Spain and Italy to fill low skilled labour vacancies. Family reunification and formation (Bauer et al. [2005]) led to an increase in the number of migrants during the following years. During the 1990s, after the disintegration of the Soviet Union, Germany again saw an inflow of migrants with German roots. Furthermore, the Yugoslav war caused a spike in the number of refugees coming to Germany (Zimmermann [1995]). After the EU enlargement in 2004¹⁴, a significant number of migrants from Poland, Bulgaria, Romania and Croatia moved to Germany. Many of them again filling low skilled vacancies, in the care or agricultural sector for example. Finally, in 2015, more than a million people came to Germany as refugees, with the majority fleeing the war in Syria. Since then, the German government has tried to limit the number of individuals able to seek asylum in Germany. In 2017, only about 14,000 people were granted refugee status and resettled in Germany.

The above overview illustrates several points about the German migration experience. Firstly, there is a lot of heterogeneity between migration cohorts (see figure 1). While the guest worker generation mainly arrived from Southern Europe and had specific jobs lined up upon arrival, most migrants who arrived during the 1990s fled a war and had no immediate job prospects. While early cohorts of migrants from Eastern Europe spoke German and had an immediate right to citizenship, most migrants arriving from there in the wake of the EU enlargement neither speak German, nor do they have a claim to citizenship. I address this heterogeneity in several ways in my empirical analysis. Secondly, Germany has always relied on migration to ensure the functioning of its economy. Thirdly, while Germany has been a country with a large migrant population for several decades, it has historically viewed the majority of these migrants as temporary ones — rather than migrants who permanently want to resettle and become part of German society. The guest worker programme was intended to be exactly this, a temporary scheme wherein individuals would work in Germany for a set number of years and then return to their home country. Similarly, refugees were expected to return to their country of origin after the original reason for asylum had subsided. Only migrants of German origin with a family history in the country were thought of as returning to stay. This understanding of migration as a temporary phenomenon shaped immigration policies and informed the legislative environment in which migrants have found themselves.

Legal Context. Even though Germany has had a large migrant population for the better part of a century, for the longest time it did not regard itself as a “country of immigration that strives to increase the number of German citizens by way of naturalisation” – as laid out clearly in the Federal Naturalisation Guidelines from 1977 (see, for example, Hailbronner and Renner [1992]). Instead, German citizenship law (following 1913 legislation) was based on the *ius sanguini* principle whereby individuals acquired German citizenship through German parentage. Although the 1977 guidelines stipulated that exceptions could be made in cases where there was a significant “public interest” in an individual becoming naturalised, by and large German citizenship law regarded citizenship as a heritable trait during most of the 20th century and therefore did not include provisions for an individual seeking German citizenship out of their own wishes.

¹⁴On 1. January 2004, Poland, Hungary, Estonia, Latvia, Lithuania, Slovenia, Slovakia, the Czech Republic, Malta and Cyprus joined the EU, giving their citizens the right to move freely and work in any EU member state. In 2007, Bulgaria and Romania joined, and in 2013, Croatia became the 28th member state.



The foreign population numbers refer to the Federal Republic of Germany, before 1991 to the area of former West Germany. – 1 Area of former Yugoslavia: Bosnia and Herzegovina, Croatia, Macedonia, Montenegro, Cosovo, Serbia (with and without Cosovo), Slovenia, including people with citizenship of the former Serbia and Montenegro and Yugoslavia without more detailed information – Because of a validation process of the central register for the foreign population (Ausländerzentralregister) in 2004, these results can only be compared to numbers of previous years in a limited capacity.

Source: Ausländerzentralregister

Source: Statistisches Bundesamt, Fachserie 1 Reihe 2, 2017

Figure 1 Foreign Population in Germany by Citizenship; Source: German Federal Statistical Office

This changed in April 1990 when the German parliament passed the “Alien Act” (“Ausländergesetz”), which came into effect on 1st January 1991. The law followed a Federal Constitutional Court ruling on immigrant voting rights¹⁵ and established a formal naturalisation process for migrants seeking German citizenship. This, for the first time, meant that naturalisation decisions were no longer at the discretion of the public servant assigned a specific case. Instead, migrants who fulfilled the criteria stipulated by the law now were *entitled* to German citizenship (although they normally had to give up their previous one¹⁶). The specific requirements were as follows: Adult migrants needed to demonstrate economic self-sufficiency, i.e. the ability to support both themselves and dependent family members without state assistance.¹⁷ Adolescent migrants needed to have spent a minimum of 6 years in a German school. And all migrants applying for citizenship had to demonstrate a clean criminal record, declare their loyalty to the democratic constitution of Germany on top of renouncing their previous citizenship. Finally, and crucially, the new law established age dependent residency requirements. While adult migrants aged 23 and older had to have resided in Germany regularly for at least 15 years, adolescent migrants aged 16-22 became eligible to naturalise after only 8 years of residence.

These regulations remained in place for nearly a decade, until May 1999, when the newly elected German parliament (now under the stewardship of the social democrats) passed the Citizenship Act (“Staatsangehörigkeitsgesetz”) which came into effect on 1st January 2000. The law represented another drastic overhaul of the existing naturalisation framework: Firstly, it reduced the residency requirements for adults from 15 to 8 years. Secondly, it moved away from the “*ius sanguinis*” principle which tied citizenship to German ancestry. Through the Citizenship Act, children of foreign parents got German citizenship upon birth, given that at least one parent had legally resided in Germany for at least 8 years and been in possession of a permanent residence permit for at least 3 years. Moreover, the children were allowed to hold both the German and their parents’ citizenship until reaching adulthood when they had to choose one.¹⁸ Finally, the law granted “ethnic Germans” (“Aussiedlern”) German citizenship upon settling in Germany – with no formal naturalisation process necessary. Today, these regulations, which remain comparatively restrictive,¹⁹ are still in place.

Impact of Reforms. The legal changes affected several dimensions of the immigration and integration process: Firstly, they brought about a rise in naturalisations. [Gathmann and Keller \[2018\]](#) note that prior to 1991, only about 34,000 individuals became naturalised in a given year (most often following marriage to a German citizen). This number rose to an annual 230,000 naturalisations during the 1990s (See figure 2). The number again fell to about 134,000 naturalisations per year after 2000 ([Gathmann and Keller \[2018\]](#)). However, considering that the 1999 reform rendered a substantial number of potential naturalisations superfluous by granting birthright citizenship to children and automatic citizenship to ethnic Germans,

¹⁵The Court, in 1989, ruled that under given law, immigrants did not have the right to vote in local elections. However, in the accompanying statement, the Court urged policymakers to reform the naturalisation process.

¹⁶Individuals were only allowed to retain the citizenship of their home country after they naturalised in cases where the home country did not or only under exceptionally difficult circumstances allow citizens to give up their citizenship. An exemption to this rule were migrants from EU countries who could have dual citizenship given that their home country allowed for this.

¹⁷I will discuss how this provision affects saving decisions in Section 5.

¹⁸Parents of children born in the 1990s who would have qualified for birthright citizenship under the new law, were given the right to apply for retroactive “birthright” citizenship for their children.

¹⁹For example, the US, UK or France, allow regular applications after 5 years of residency as well as dual citizenship irrespective of the country of origin.

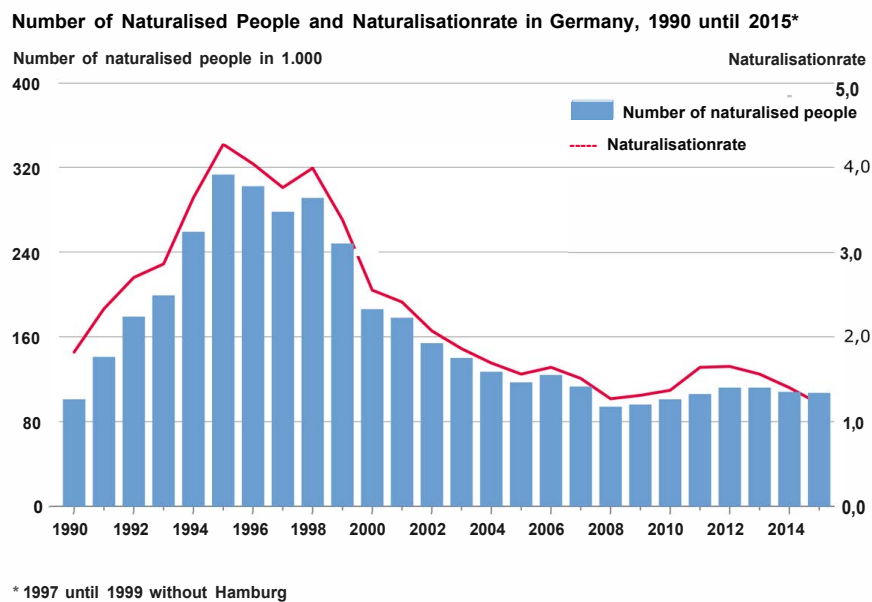


Figure 2 Naturalisations in Germany: 1990 - 2015, Source: German Federal Statistical Office

current naturalisation numbers still significantly exceed those before to the reforms.²⁰ Secondly, the reforms impacted migrants' labour market outcomes, improving women's employment and earnings prospects specifically. [Gathmann and Keller \[2018\]](#) find that female migrants who became eligible to naturalise after 8 rather than 15 years are 5.6pp more likely to be employed with a 0.112 log point higher labour income. In contrast, men's employment and earnings appear to be unaffected. Thirdly, the reforms affected family formation, with female migrants delaying both marriage and the birth of their first child if they become eligible to naturalise sooner ([Gathmann and Monscheuer \[2018\]](#)). Finally, the change to birthright citizenship impacted the integration outcomes of both the affected children and their parents: When children have access to birthright citizenship, their parents engage more with their neighbours and use the German language more frequently ([Avitabile et al. \[2013\]](#)). They also have fewer children overall and those children have better health and socio-emotional outcomes ([Avitabile et al. \[2014\]](#)).

2.2 Identification Strategy

I use the plausibly exogenous variation in eligibility introduced by the two reforms to the German citizenship law to identify the causal impact of migrants gaining access to citizenship and thus being less uncertain about their future in Germany.

To illustrate how the reforms affected migrants from different birth and immigration cohorts in different ways, let us think about five migrants arriving in Germany at varying points in time and ages: Anton is born in 1923 and arrives in Germany in 1970 at age 47. In 1991, when the Alien Act is enacted, he is 68 and has been in Germany for 21 years. That means he becomes immediately eligible to naturalise. Berta is also born in 1923, however, she only moves to Germany in 1980. In 1991, she too is 68 years old and thus

²⁰Comparing the two citizenship regimes in place during the 1990s and after 2000, [Gathmann and Keller \[2018\]](#) find that migrants who have to wait for only 8 compared to 15 years are 9pp more likely to naturalise.

subject to the adult provisions of the Alien Act. But since she has only been in Germany for 11 years when the law changed, she can only apply for citizenship in 1995, when her 15 years of residence are completed. Both of these people moved to Germany before a formal naturalisation scheme had been introduced and thus were surprised by the legal changes. However, Anton who is the same age as Berta but moved ten years earlier, becomes eligible four years earlier than her. Now take Carl, born 1962 and migrated 1990 at age 28. He moves to Germany after the Alien Act established the age-dependent residency requirements and, upon arrival, expects to become eligible to naturalise in 2005, after 15 years of residence. However, when the Citizenship Act is enacted in 2000, he becomes eligible 5 years earlier as he immediately fulfills the newly reduced 8 year residency requirement. And Dolores, who was born in 1962 and migrated four years after Carl, in 1995. She expects to become eligible in 2010 and when she arrives. But she actually becomes eligible 7 years earlier, in 2003, in accordance with the newly shortened residency requirements of the Citizenship Act. Here again, two migrants with the same birth cohort become eligible at different points in time by virtue of being in different immigration cohorts. However, there can also be variation between people of the same immigration, but different birth cohorts. Take Emil, who comes to Germany in 1990 at age 8. He arrives the same year as Carl, but was born 20 years later than him. So unlike him, he expects to become able to naturalise in 1998, not 2005 – as Emil would fall under the adolescent regulations of the Alien Act and thus become eligible to naturalise after only 8 years of residence.

These examples show how different migrants became eligible at different points in time and stages of their life depending on when they first arrived in Germany (and at what age). As none of the migrants coming to Germany before 2000 could correctly predict when they would become eligible, they also could not determine the time at which they would gain access to citizenship with their immigration decision and thus select into eligibility. The identifying assumption is that – conditional on a set of variables accounting for potential differences in observable and unobservable household characteristics – cohorts of migrants who became eligible early are not systematically different from cohorts who became eligible for citizenship later. Under this assumption, changes in behaviour after gaining access to citizenship only reflect migrants' changed legal status.

Threats to Identification. The identification assumption would not be justified if migrants from different immigration (or birth) cohorts either (i) systematically differed in ways I cannot control for, or (ii) encounter systematically different conditions upon arrival in Germany which shape their saving choices irrespective of their legal status. I try to address these concerns in various ways. First, I include household level fixed effects in my main specification to account for *stable* differences in unobservable characteristics – such as differences in cultural background for example. Thus, differences such as culturally different valuations of thrift between migrants from Southern Europe who are more likely to have arrived in Germany in the 1960s and 1970s and migrants from Eastern Europe who are more likely to have arrived during the 1990s should be partialled out. They also control for the (constant) year of arrival of each household in Germany and thus the economic conditions they initially encountered. Secondly, I limit my main analysis to a fixed group of migrants throughout the sample period to shut down composition effects. Finally, I test for differential pre-trends between migrants of earlier and later immigration cohorts by looking at investment choices during the 1980s – before the first reform passed parliament. The results of this pre-trend analysis show no significant differences and are available upon request.

3 Data

GSOEP. The data I use is from the German Socioeconomic Panel (GSOEP) - a representative panel interviewing more than 11,000 households with 20,000 members annually. The first wave of the panel was collected in 1984 and the version of the data set I use in this paper includes years up to 2016 (wave 33, [SOEP \[2017\]](#)). To answer my research question, I need information on both household saving decisions over time as well as individual migration biographies. This is because I can only estimate the causal impact of access to citizenship if I can cleanly identify (a) which migrants see their right to stay significantly changed through becoming eligible and (b) when exactly their status changes. Migrants from EU15 countries and migrants who already naturalised prior to the eligibility scheme being established (most commonly due to marriage to a native) should not see their prospects of staying in Germany swayed drastically through getting access to citizenship as they would have a right to stay indefinitely regardless. Furthermore, I need information on the year an individual was born in and migrated to Germany as well as time spent away from Germany after first arriving to determine the exact year they became eligible to naturalise. The GSOEP is the only German data set that inquires about individuals' migration biography in sufficient detail to isolate the sample of interest whilst also recording information on saving behaviour. Moreover, it collects information on both the individual and the household level²¹ allowing me to control for personal as well as household level determinants of saving – such as education, employment history, number of dependants, income, partner characteristics, etc.

Main Outcome Variables. The main outcome variables of interest are the amounts households save in Germany as well as remit abroad – in absolute terms and as a fraction of the net household income available to them. The amounts are measured in euros per month adjusted for inflation while the saving and remittance rates reflect the fraction of the households' monthly net income spent on one or the other. The households' monthly net income as well as the amounts of money they save and remit are self reported measures that are elicited annually in the household questionnaire. To construct the measure of household remittances, I sum over the transfers made by each member of the household to recipients living abroad (parents, partners, children, other relatives and other people respectively). The saving measure has been available since 1992 and the remittance measure since 1996.

Additional Outcome Variables. In addition to the main outcome variables, I also look at a number of other outcome variables that shed more light onto the motivation behind migrants adjusting their saving behaviour. Firstly, I look at migrants' intention to stay in Germany. In particular, I test the effect of eligibility on three binary variables indicating whether migrants say they want to stay one year maximally, several years or indefinitely in Germany. The variables are available from 1984 onwards and collected on the individual level. Secondly, I look at the propensity of households to save via different devices – namely, bank deposits, mortgage save plans, life insurance, fixed interest securities, unlisted or listed equity. I also look at their propensity to own the home they occupy. All of these binary variables are collected at the household level and are available from 1984 onwards with the exception of listed equity which was only added in 2000. Finally, I examine migrants' propensity to invest in a state subsidised, private pension plan (“Riesterrente”).

²¹Every member of a GSOEP household above the age of 17 is administered the individual questionnaire. In addition to this, one adult member of the household who can account for the household's housing situation, income, insurances, wealth, etc., the household head, fills out the household questionnaire.

This binary variable is available on the individual level. Individuals were first asked about paying into the scheme in 2004 and then again in 2006, 2007, 2010, 2013 & 2015.

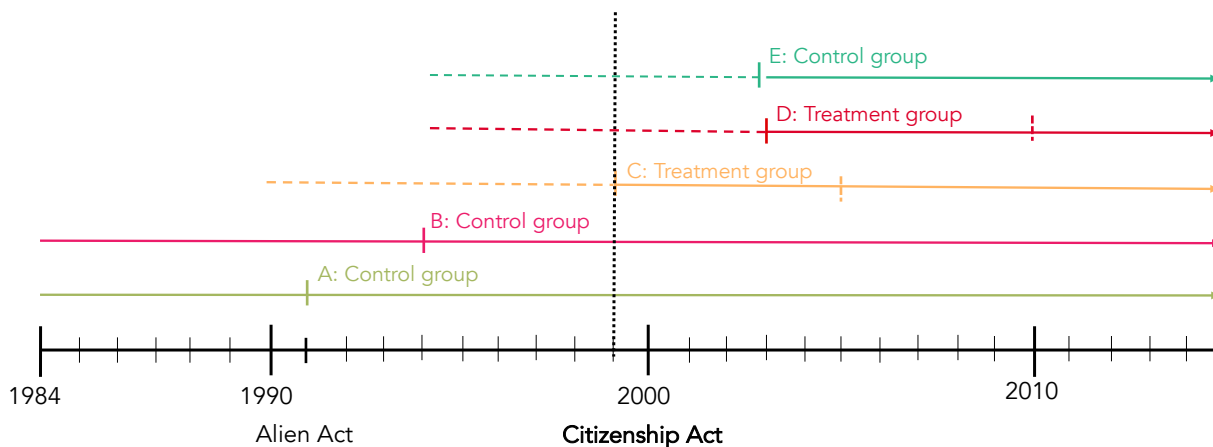
Explanatory Variables. The main explanatory variables I focus on are two sets of difference-in-difference estimates. One reflects being in the post-Citizenship Act era and either a migrant with or without access to citizenship prior to that. The other reflects changes in eligibility over time and whether or not those changes occurred within a regime (expectedly) or through a regime change (unexpectedly). I elaborate on how exactly these measures are constructed, how they identify the causal impact and which confounding factors I control for to ensure clean estimates in Sections 4 & 5.

4 Impact of the Citizenship Act on Migrants' Saving Choices

4.1 Empirical Approach

The most straightforward way to quantify the causal impact of easier access to citizenship, is to compare the behaviour of migrants who saw their prospects of becoming eligible for citizenship altered by the Citizenship Act to the behaviour of migrants who were unaffected by the reform.²² Specifically, my treatment group are migrants who had been in Germany for less than 15 years and thus were unable to apply for citizenship before the Citizenship Act reduced the residency requirements to 8 years. I compare their behaviour before and after the reform passed parliament to the behaviour of two control groups in two separate regressions. First, I compare them to natives who should be unaffected by the Citizenship Act and whose behaviour represents the benchmark governments target when trying to create a level playing field. However, I look at both saving in Germany as well as remittances to accurately account for migrants diverse saving strategies and natives do not remit money abroad in a manner comparable to migrants. Therefore, I also use migrants who had been in Germany for more than 15 years and thus could apply for citizenship even before the Citizenship Act passed as a second control group.

Figure 3 Assignment to Treatment and Control Group



²²Ideally, I would also like to look at the direct impact of the Alien Act. However, the GSOEP only introduced the saving measure in 1992, forcing me to focus on the second reform here.

To illustrate how migrants are categorised into either treatment or control group, I briefly return to the migrants introduced in the previous section. Anton and Berta both became eligible to naturalise before the Citizenship Act passed and thus should be unaffected by its reduction in residency requirements. They are members of the control group. On the other hand, Carl and Dolores were not eligible for citizenship prior to 1999. Instead, Carl anticipated becoming eligible in 2005 and Dolores in 2010. Through the reform, Carl became immediately eligible in 2000 when the Citizenship Act came into effect. And Dolores became eligible in 2003 – 3 years after the reform was enacted, but 7 years sooner than she anticipated. Therefore, both saw their prospects changed through the reduction in residency requirements and are assigned to the treatment group. I pool migrants who immediately become eligible through the reform and those who become eligible sooner than expected after the reform. That is because, in this section, I am trying to gauge the extent to which decreased uncertainty about their future right to stay — brought about by the simplified access to citizenship of the reform — impacted migrants’ saving choices. And both, migrants who immediately became eligible and migrants who saw their prospects changed, were affected by this. In Section 5, I look at the impact of changes in actual legal status as a second step. Finally, Emil, who was not eligible to naturalise prior to 1999, but who would have fallen under the adolescent naturalisation scheme and thus been eligible to naturalise after 8 years regardless of the reform is in the control group.²³

I estimate the following empirical model to quantify the impact of the reform on behaviour:

$$\begin{aligned} Y_{it} &= \alpha + \beta * \text{TreatedMig}_i * \text{PostRef}_t + \gamma * \text{ControlMig}_i * \text{PostRef}_t + \theta * X_{it} + \text{Year}_t + \text{State}_s + \text{HH}_i + \epsilon_{it} \\ &= \alpha + \beta * \text{TreatedMig}_i * \text{PostRef}_t + \theta * X_{it} + \text{Year}_t + \text{State}_s + \text{HH}_i + \epsilon_{it} \end{aligned}$$

In the first specification, natives form the hidden category and migrants are sorted into the treatment (TreatedMig_i) and additional control group (ControlMig_i) in the way laid out above. In the second specification, I restrict my sample to migrants only, with migrants in the control group forming the hidden category. I estimate the two models separately to gauge aggregate trends affecting migrants as opposed to natives irrespective of their legal status while simultaneously test for statistically significant effects for the treatment vis-à-vis both control groups. The post-reform variable PostRef_t is a binary variable which goes to 1 in 1999 when the Citizenship Act passed parliament.²⁴ As I have both year and household fixed effects (Year_t & HH_i) in the main specification, only the interaction and not the period or treatment & control group variables themselves are included. β and γ denote the difference-in-difference coefficients on these interactions. Specifically, β is the coefficient on the interaction of the treatment group and post reform period dummy – and thus the coefficient of interest which measures the effect of access to citizenship on behaviour compared to natives and migrants in the control group in specification 1 and 2 respectively. γ measures the effect that being in the post-reform period had on migrants in the control group compared to natives in the first specification. To isolate the effect of the reform, I control for a variety of individual and household characteristics (X_{it}). Firstly, I control for age and years spent in Germany in quadratic terms. I employ household as well as year fixed effects throughout the main analysis, which control for birth and immigration cohort as well as the progression of time and thus the linear effect of age and years in Germany. How-

²³In practice, this case is less relevant, as there are very few people under the age of 23 heading households and I am limiting my analysis to household heads (see Section 4.2).

²⁴I focus on the reform passing parliament rather than being enacted in January 2000 as the former act plausibly reduced uncertainty more significantly.

ever, as those two variables determine eligibility and I want to make sure I am not confounding the effect of eligibility with either of the two, I include squared terms for both in my main specification. Secondly, I control for the employment status of the household head with two binary variables indicating being employed either full or part time as well as two variables indicating years spent in full or part time employment up to the survey date. All four employment variables are collected at the individual level. Third, I control for the monthly net income of the household adjusted for inflation, measured at the household level. Fourth, I control for the education status of the household head, both with a categorical variable which ranges from no schooling (0), to finished secondary schooling (1), to vocational degree (2), to academic degree (3), and with a continuous variable reflecting years of education. Fifth, I control for the marital status of the household head with a binary variable, and the household constellation by including variables recording the number of people as well as the number of underage children in the household. Finally, I include fixed effects for the survey year, as well as the state a household is situated in and the household itself. Thus, I can control for unobservable characteristics that are stable over time but may systematically vary between natives and migrants as well as different groups of migrants. Y_{it} denotes the outcome of interest and standard errors are clustered at the household level.

4.2 Sample

The sample I focus on in this section consists of households headed by either natives or migrants with a direct migration experience. I restrict the sample to households headed by individuals under the age of 60 and thus at least five years before the legal retirement age. Furthermore, I drop households headed by migrants from EU-15 countries as the individuals from these countries had the right to stay in Germany indefinitely even without naturalising. I also drop households that are headed by migrants who are married to a German citizen as such a household would not experience a significant drop in uncertainty about the future in response to the foreign household head becoming eligible to naturalise. Finally, I drop households headed by migrants who naturalised before the Citizenship Act passed. I then assign the households headed by migrants to the treatment and control group depending on the household head’s eligibility to apply for German citizenship: If the household head (or their partner) had been a legal resident for more than 15 years and thus was eligible to apply for citizenship before the Citizenship Act passed parliament in 1999, the household is assigned to the control group. If, on the other hand, neither the household head nor their partner had been eligible to naturalise prior to the reform as they had been in Germany for less than 15 years, the household is assigned to the treatment group.

Table 1 summarises the sample characteristics of the treatment as well as the two control groups in the period before the reform passed parliament in May 1999. simply looking at the raw differences in the main outcome variables, households headed by migrants without access to citizenship save a much lower fraction of their net income than households headed by either migrants with access to citizenship or natives. While native households save about 10% of their net income, households headed by eligible migrants save about 6.6% of their net income and households headed by **non-eligible** migrants save only about **2.8%** – less than a third of native households. Furthermore, migrant households with access to citizenship remit slightly higher fractions of their net income than those without (2.3% and 1.8% respectively). Native households “remit” 0.6% of their net income, meaning that they send 0.6% of their net income to family members, friends or other people living abroad. However, these transfers will likely fulfil a different function for them

compared to migrant households (in particular, fulfil less of a saving function) and are mainly included to get a sense of the overall fraction of their net income households in different groups save. When looking at the fraction of income households saved either in Germany or abroad, households headed by migrants with access to citizenship are almost on par with native households (8.9% and 10.6%) – but households headed by migrants without access to citizenship still save only about half at 4.6% of their net income.

At least in part, the raw differences we observe in the main outcomes appear to be driven by differences in observable characteristics. Households headed by ineligible migrants have a monthly net income that, on average, is close to 1,000€ less than that of native households. They are also more likely to have underage children living in the household as well as more people overall. Moreover, migrant household heads without access to citizenship are less likely to be employed full time than either native or migrant household heads with access to citizenship and more likely to be employed part time than eligible migrant household heads. Finally, they have about two more years of education than eligible migrant household heads (and are nearly on par with native household heads), and, on average, are just over 34 years old while the household heads from the native and eligible migrant group are about 40 and 44 years old respectively.

Table 1 Pre-Reform Characteristics of the Sample

	Natives	Eligible Migrants	Non-Eligible Migrants
HH Saving Amount	300.773 (484.643)	183.560 (355.205)	57.012 (151.912)
HH Saving Rate	0.103 (0.119)	0.066 (0.104)	0.028 (0.068)
HH Remittance Amount	14.614 (115.469)	51.795 (156.073)	29.071 (89.792)
HH Remittance Rate	0.006 (0.049)	0.023 (0.079)	0.018 (0.059)
Age	40.377 (10.909)	43.914 (11.098)	34.253 (8.339)
Years in Germany	40.377 (10.909)	22.661 (4.847)	6.259 (2.814)
Employed Full Time	0.794 (0.404)	0.827 (0.378)	0.631 (0.484)
Employed Part Time	0.086 (0.280)	0.016 (0.124)	0.083 (0.277)
Years FT Employment	16.981 (11.430)	21.546 (11.004)	8.585 (7.178)
Years PT Employment	1.082 (3.273)	0.546 (1.906)	0.795 (2.923)
HH Net Income	2573.878 (1365.792)	2384.651 (1116.160)	1636.421 (629.928)
Education Category	2.084 (0.587)	1.362 (0.761)	1.802 (0.879)
Years of Education	12.125 (2.494)	9.631 (1.774)	11.410 (2.832)
Married	0.664 (0.472)	0.885 (0.319)	0.767 (0.424)
Num People in HH	2.717 (1.272)	3.570 (1.680)	3.107 (1.597)
Young Children in HH	0.423 (0.494)	0.526 (0.499)	0.678 (0.468)
Observations	29,708	2,839	396

Notes: The table summarises the average sample characteristics during the years 1992 - 1998.

4.3 Results

Table 2 Effect of the Citizenship Act on Saving & Remittances: Natives & Migrants

	Saving Amount GER	Saving Rate GER	Remittance Amount	Remittance Rate
Migrant Treatment * Post Reform	59.35*** (17.37)	0.0248*** (0.00577)	27.00* (15.19)	0.00967 (0.00694)
Migrant Control * Post Reform	21.36 (19.84)	-0.00111 (0.00568)	25.45** (13.235)	0.0110** (0.00614)
Years in Germany Squared	0.0632*** (0.0219)	1.10e-05 (7.56e-06)	-0.0160 (0.0113)	-5.27e-06 (4.40e-06)
Age Squared	-0.0175 (0.0232)	4.99e-06 (7.88e-06)	0.0132 (0.0113)	3.76e-06 (4.33e-06)
Employed Full Time	25.80** (10.84)	0.0242*** (0.00159)	1.878 (1.377)	0.000778* (0.000444)
Employed Part Time	-3.255 (5.844)	0.00729*** (0.00161)	1.101 (1.123)	0.000558 (0.000424)
Years FT Employment	-1.900 (1.369)	-0.000485 (0.000297)	0.166 (0.174)	9.56e-05 (6.42e-05)
Years PT Employment	-1.333 (1.738)	3.55e-05 (0.000474)	-0.345 (0.395)	-2.63e-05 (0.000136)
HH Net Income	0.140*** (0.0213)	8.30e-06*** (1.43e-06)	0.00218 (0.00198)	-2.27e-07* (1.23e-07)
Education Category	-7.533 (10.94)	0.00488* (0.00287)	-0.885 (2.252)	0.000245 (0.000854)
Years of Education	12.49*** (4.575)	0.00278** (0.00109)	0.821 (0.733)	0.000148 (0.000226)
Married	3.593 (8.808)	0.000855 (0.00190)	1.454 (2.157)	0.00167 (0.00105)
Num People in HH	-46.59*** (9.766)	-0.00881*** (0.000992)	-2.086 (1.425)	-0.000542** (0.000230)
Young Children in HH	11.97 (7.820)	-0.00113 (0.00152)	-1.908 (1.627)	-0.000797 (0.000553)
Observations	87,136	87,126	76,590	76,580
R-squared	0.113	0.031	0.008	0.013
State, Year & HH FE	YES	YES	YES	YES

Notes: OLS regressions. Standard errors in parentheses clustered at the HH level. *** p<0.01, ** p<0.05, * p<0.1. Dependent variables are reported at the top of each column. Regressions include year, state and HH fixed effects.

Result 1 *Easier access to citizenship increases the saving rate of migrants in the treatment group by 2.5pp opposite natives and 2pp opposite migrants in the control group.*

Table 2 shows the results of the difference-in-difference estimation laid out in section 4.1. In the post reform period, migrant households in the treatment group increase their saving rate in Germany by 2.48pp vis-à-vis natives — while the saving rate of migrant households in the control group does not appear to change significantly compared to native households. Furthermore, it appears as though the increase in saving in Germany is not compensated by an associated drop in remittances to the home country. Instead, the

remittance rates of migrant households in both the treatment as well as the control group appear to increase in the post reform period. This suggests that the increase in remittances is not caused by the Citizenship Act but rather aggregate trends affecting migrants from outside the European Union irrespective of access to citizenship — most likely the introduction of the Euro in 2000 which plausibly shifted exchange rates. Thus, it is also unsurprising that if we only compare migrant households in the treatment to those in the control group and drop native households, the saving rate in Germany still increases significantly, by about 2pp, for treatment households in the post-reform period while the remittance rate is unaffected. All controls have the expected sign. Household income and education exert a positive influence on the amounts as well as the fraction of income saved in Germany while being employed full time increases both saving in Germany as well as remitting money abroad. Also, the more people live in a household, the less the household saves either in Germany or remits abroad.

Table 3 Effect of the Citizenship Act on Saving & Remittances: Migrants Only

	Saving Amount GER	Saving Rate GER	Remittance Amount	Remittance Rate
Migrant Treatment * Post Reform	34.58** (16.74)	0.0194*** (0.00627)	1.697 (14.42)	0.000354 (0.00651)
Years in Germany Squared	0.0326 (0.0651)	-5.95e-06 (1.94e-05)	-0.0874*** (0.0274)	-3.22e-05*** (1.16e-05)
Age Squared	-0.0318 (0.0314)	-4.60e-06 (1.05e-05)	0.000926 (0.0179)	-1.99e-07 (6.65e-06)
Employed Full Time	-1.799 (27.28)	0.0224*** (0.00417)	29.69*** (6.460)	0.0122*** (0.00317)
Employed Part Time	3.444 (17.85)	0.0136*** (0.00452)	11.74* (6.054)	0.00770* (0.00421)
Years FT Employment	1.033 (2.936)	0.000251 (0.000822)	1.861 (1.499)	0.000976* (0.000536)
Years PT Employment	2.082 (5.630)	-0.00117 (0.00225)	-0.775 (4.048)	0.000928 (0.00135)
HH Net Income	0.155*** (0.0442)	1.69e-05*** (3.00e-06)	-0.00356 (0.00331)	-6.68e-06*** (1.73e-06)
Education Category	12.04 (22.72)	0.0106 (0.00881)	2.105 (9.946)	-0.000874 (0.00431)
Years of Education	-1.588 (8.243)	-0.00186 (0.00364)	-0.0153 (4.565)	-0.000504 (0.00176)
Married	-26.01 (24.63)	-0.00450 (0.00934)	33.22** (15.98)	0.0140** (0.00706)
Num People in HH	-47.53*** (17.64)	-0.00974*** (0.00286)	-0.498 (3.703)	-0.000404 (0.00157)
Young Children in HH	13.65 (20.76)	-0.000338 (0.00609)	-15.84* (8.569)	-0.00679* (0.00390)
Observations	5,802	5,801	4,849	4,848
R-squared	0.150	0.061	0.034	0.036
State, Year & HH FE	YES	YES	YES	YES

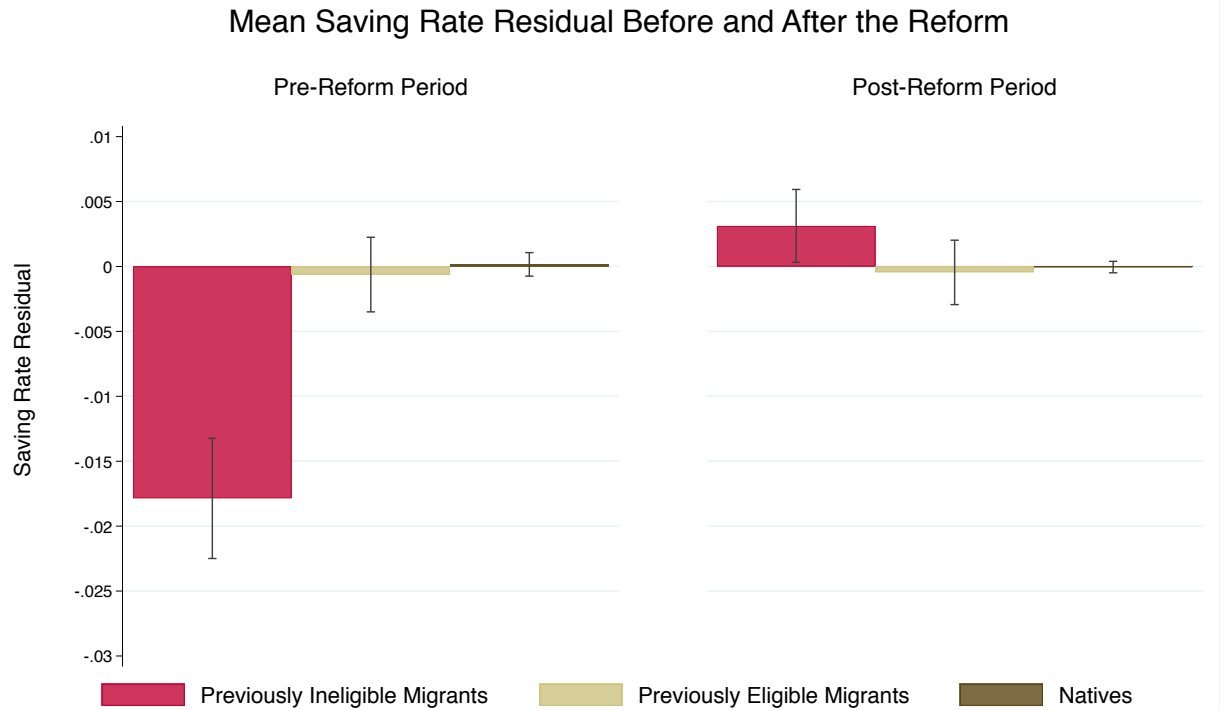
Notes: OLS regressions. Standard errors in parentheses clustered at the HH level.*** p<0.01,** p<0.05,* p<0.1. Dependent variables are reported at the top of each column. Regressions include year, state and HH fixed effects.

Result 2 *Before the Citizenship Act passed, migrants in the treatment group saved close to 2pp less than natives and migrants in the control group even after controlling for differences in relevant observable and unobservable characteristics. The reform passing closes this unexplained gap completely.*

From the point estimates on the difference-in-difference coefficients alone, it is unclear whether the positive impact the reform had on migrants' saving in Germany closes or perpetuates an existing gap. Even though we see significant saving differences in the raw data, they are likely driven by a variety of individual characteristics. And thus, conditional on the control variables and fixed effects, it could be that households headed by ineligible migrants actually save a larger fraction of their income than native or eligible migrant households.

To get a sense of the unexplained saving rate variation between migrant households in the treatment and control group as well as native households before and after the reform, I plot the residual of the saving rate after regressing the raw saving rate onto the full set of control variables and fixed effects laid out in section 4.1. Figure 4 shows that native households and those headed by migrants in the control group, i.e. those with access to citizenship before and after the reform, do not significantly differ with regard to their saving rate in Germany once differences in observables and stable unobservables are controlled for. This suggests that the observable difference in the raw saving rate between the two groups is driven entirely by differences in labour market outcomes, income, education, household constellation and cultural context. In contrast, households headed by migrants in the treatment group i.e. those *without access to citizenship before the reform* save significantly less than households in either of the control groups before the Citizenship Act passed – even after accounting for differences labour market outcomes, income, etc.

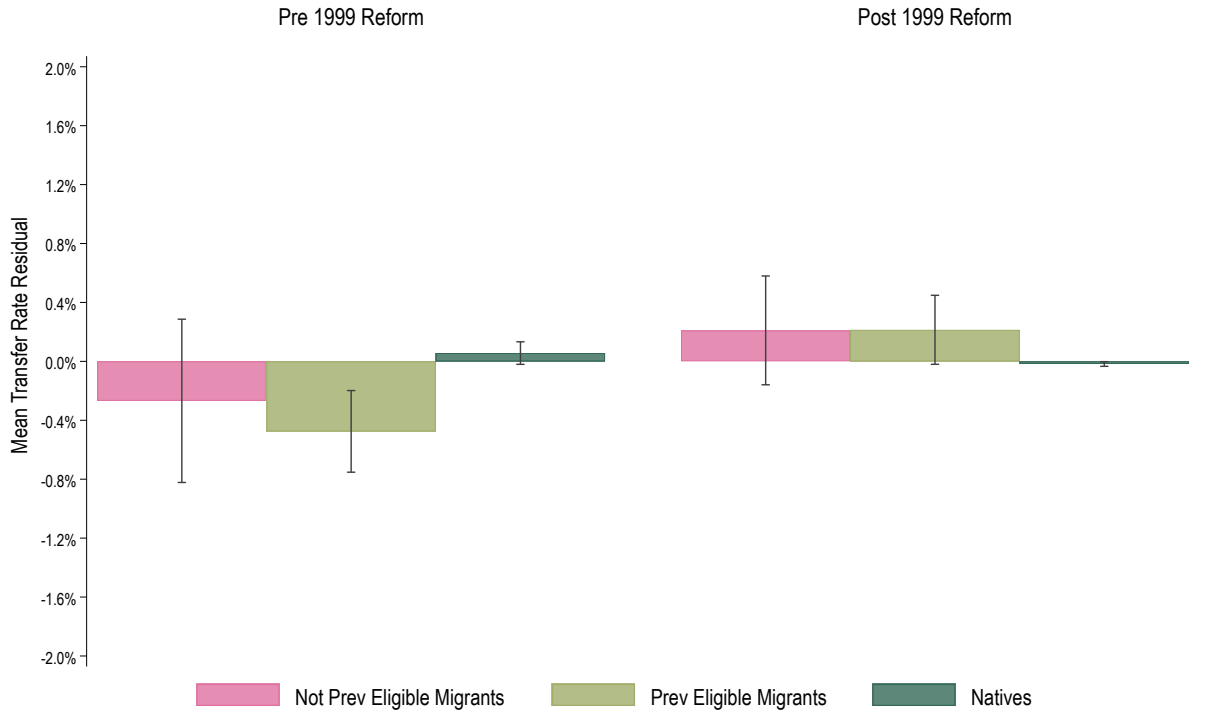
Figure 4 DID Pre/Post Residual Saving Rate



Notes: Saving rate residual is calculated by regressing the saving rate onto the full set of controls as well as fixed effects described in Section 4.1 with the exception of the DID variables. The caps represent 95% confidence intervals.

This residual gap of about 2pp is closed *entirely* through the reform. After the Citizenship Act passed, households in the treatment group increased their saving rate by more than 2pp. In the post reform period, their saving rate in Germany does no longer significantly differ from the saving rate of either control group once differences in observables and stable unobservables are accounted for.

Figure 5 DID Pre/Post Residual Remittance Rate



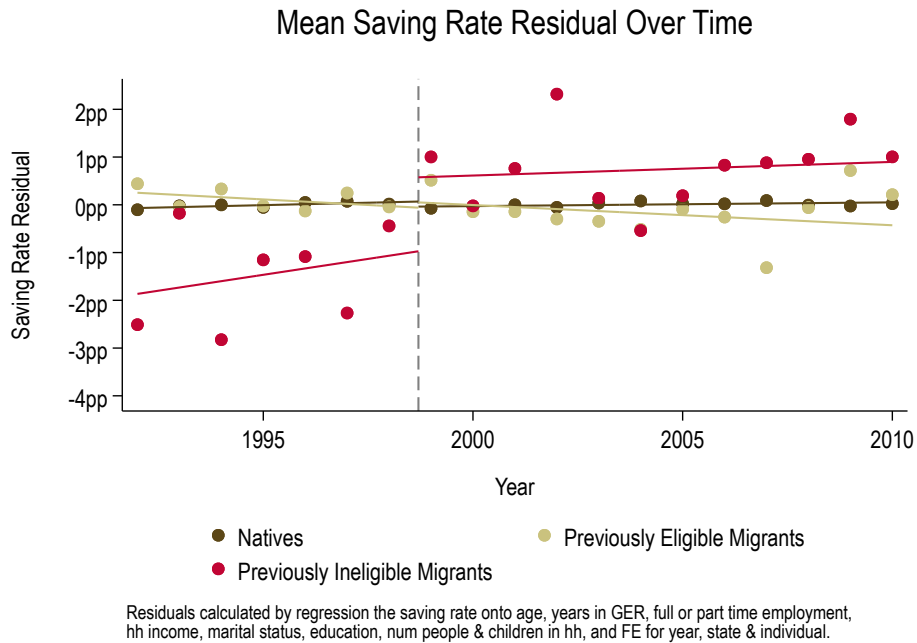
Notes: Saving rate residual is calculated by regressing the saving rate onto the full set of controls as well as fixed effects described in Section 4.1 with the exception of the DID variables. The caps represent 95% confidence intervals.

Figure 5 shows that migrant households in the treatment group do not appear to significantly differ from households in either control group with regard to their remittance rate once differences in labour market outcomes, income, etc. are partialled out — neither before nor after the reform.

Result 3 *The increase in the residual saving rate of migrant households in the treatment group is stable over time.*

Figure 6 displays the progression of the residual saving rate from 1992 to 2010 for the three groups of households. Specifically, it plots the mean saving rate residual in each year by group (still controlling for the same observables as before as well as household, year and state fixed effects) and indicates trend lines. From the graph, we can infer that the residual saving rate of native households remains completely unaffected by the reform as it is almost exactly zero throughout the sample period. The residual saving rate of migrant households in the control group, who had access to citizenship for the entirety of the sample period, is also close to zero in all years. In contrast, the residual saving rate of migrant households in the treatment group in the pre-reform period hovers around -2pp and then sharply increases to around zero at the time of the reform. It then stays around and even slightly above zero in all subsequent years. It should be noted that the residual saving rate of migrant households in both the treatment *and* the control group appears to increase slightly in the lead up to the Citizenship Act. This might be due to household heads in both groups edging closer to becoming eligible to naturalise (and some in the control group even doing so) and increasing their saving rate in Germany in anticipation. As the parallel trend assumption holds for the migrant households in both the treatment and control group, this does not affect the identification of the Citizenship Act’s impact.

Figure 6 Progression of the Mean Residual Saving Rate Over Time



Notes: Saving rate residual is calculated by regressing the saving rate onto the full set of controls as well as fixed effects described in Section 4.1 with the exception of the DID variables. Each dot represents the mean saving rate residual of the respective group in the given year. Vertical line represents the Citizenship Act passing parliament.

5 Mechanisms

There are two conceivable ways in which access to citizenship could impact the saving behaviour of foreign born individuals living in Germany. Theoretically, migrants without access to citizenship might save a higher fraction of their income than natives, to insure against higher labour market risks and future income fluctuations through saving. Becoming eligible to naturalise should mitigate *some* of the labour market risks migrants face as it provides them with access to more secure occupations, for example in the civil service. Thus, their overall saving rate — both in Germany and through remittances abroad — should decline in response to becoming eligible to naturalise. As we have seen in the preceding section, this is not what happens. Instead, it seems as though migrants without access to citizenship save a lower fraction of their income than either natives or migrants with access to citizenship. Moreover, they increase their saving rate once they do receive access to citizenship. There could be several reasons for this.

First, it could be that migrants increase their saving rate in preparation for actually applying for citizenship. One criterion for naturalisation is the ability to demonstrate “economic self-sufficiency”. That is, migrants have to demonstrate that they can support themselves as well as dependent children economically when submitting their application to become a German citizen. Thus, it could be that migrants try to increase their wealth at the time of the application by saving a higher fraction of their income in the years leading up to it – and potentially decrease their saving rate again once they become naturalised. While a preparing for naturalisation could play into the increase we observe in migrants’ saving rate, it does not appear as though there is a subsequent decrease as we see no dip in the saving rate even ten years after the Citizenship Act when plotting the progression over time (Figure 6).

Secondly, it could be that migrants change their plans about staying in Germany upon becoming eligible to naturalise. Either because eligibility sways migrants who previously were set on leaving the country to stay, or because it allows migrants who were at least partly keen to stay in Germany but unsure about whether it would be possible and thus unsure about committing to staying in the country. In practice, access to eligibility is probably a more potent force in swaying individuals who had a vague intention to stay even before they got a pathway to citizenship. This is because naturalisation is a complicated procedure and migrants with no real interest in staying would likely not be willing to pay the associated costs even when given the legal opportunity. However, migrants who previously were inclined to stay but unsure about whether or not they would be allowed to do so, plausibly could decide to stay in the country in response to getting access to citizenship. This decision in turn might change the way they perceive and prepare for this now more ascertained future. For one, being able to commit to *one* clear future path, rather than consider a variety of *potential* future paths where it is clear *ex ante* that most will never materialise, generally prompts individuals to assign more weight to the future. Applied to the situation of foreign born individuals living in Germany, this could mean that migrants, after getting access to citizenship and committing to stay, would be more inclined to incur costs in the present, decrease consumption and increase saving for the future – as they discount the value of the resulting wealth stock in the future less. Moreover, it could be that migrants become more inclined to invest in country specific, illiquid assets once they get access to citizenship. Returns to investments in assets such as housing or private pension plans become less uncertain after individuals become eligible to naturalise as this provides them with assurances that they will be able to reap benefits long term — for example by being able to grow old in a home they are thinking of buying. And even if they change their mind and decide to return to their home country eventually, they no longer have to worry about being asked to leave the country abruptly which could force sales at a point when the market situation is non-ideal. Thus, access to citizenship would mitigate variance in the rate of return to country specific assets even in the case where migrants are unsure about whether they want to leave eventually. The ability to invest in such assets likely bolsters wealth accumulation not only because it allows migrants to choose the investment strategy that maximises their payoff, but also because tying up capital may help individuals with bounded willpower to eschew overspending in service of saving (Kovacs and Moran [2017]).

In the following, I first develop a simple life cycle model of migrant saving choice under a risky right to remain in retirement and then solve it to show that savings increase with access to citizenship if either assets are country specific or migrants have a strong preference for host over home country consumption. I then present suggestive evidence in support of the former channel in particular. For that, I use the entire sample period and a second empirical strategy laid out in detail after the model section.

5.1 Theoretical Framework

I develop a *two period life cycle model* of migrants' saving and consumption choices under uncertainty to better understand why migrants without access to citizenship save less than migrants with the right to naturalise. In the first period, all migrants live and work in the immigration country (Germany in this case). They can either consume or save their income. In the second period, migrants retire and live off their savings, either in the immigration or their home country. Where migrants spend their retirement depends on personal choice as well as their legal right to stay.

Utility. Migrants' utility stems solely from consumption, but it depends on their preference for the immigration vis-à-vis their home country as well as the location in which they consume. At the beginning of a migrant's life, their attachment to their home country is determined through a random draw of $\xi \in [0; 2]$. ξ scales the pure utility migrants derive from consumption if they consume in the home country: $u^H(\cdot) = \xi * u(\cdot)$. On the other hand, if migrants consume in the immigration country, their utility is given by the product of their pure consumption utility as well as the factor $(2 - \xi)$: $u^I(\cdot) = (2 - \xi) * u(\cdot)$. It follows that a migrant's relative preference for consumption in their home rather than the immigration country is given by the parameter $\gamma = \frac{\xi}{(2-\xi)}$: $u^H(\cdot) = \frac{\xi}{2-\xi} * u^I(\cdot) = \gamma * u^I(\cdot)$. Whenever $\xi > 1$ and thus $\gamma = \frac{\xi}{2-\xi} > 1$, the migrant gains more utility from a given level of consumption in their home country. If $\xi < 1$ and thus $\gamma < 1$, then the migrant gains more utility from consumption in the immigration country. If $\xi = \gamma = 1$, then the migrant is indifferent between the immigration and their home country as they experience equal utility from consumption in either. In general, given similar economic conditions in both countries, migrants who prefer consuming in their home country are likely to stay a set amount of time only, that is migrate *temporarily*. On the other hand, migrants who prefer to consume in the immigration country are likely to want to stay indefinitely, that is migrate *permanently*. The distinction of temporary and permanent migrants is motivated by the fact that in reality, we observe both individuals only migrating for a short term and individuals leaving behind their home country for good. This observable difference in return choices is likely motivated at least in part by different valuations of consumption in the immigration and respective home countries – with clear implications for their saving decisions. Much of the literature on migration either pools over all migrants or focuses on *temporary* migrants that have a preference for consumption in their home country. These migrants often move with the goal of amassing funds to either spend themselves later in their life or to support family and friends. Their saving rate tends to be higher than that of natives and they send a substantial fraction of their savings to their home country (Dustmann [1997], Dustmann and Mestres [2010], De Arcangelis and Joxhe [2015], Amuedo-Dorantes and Pozo [2006] etc.). To account for both this pattern as well as the fact that most migrants in my sample save less than natives – particularly if they do not have a right to naturalise – I allow for heterogeneity in the preference for either country. In reality, such differences could be driven by variation in taste for specific natural or societal conditions, desire to be close to family or friends in either country, or economic conditions. In the model, γ captures predominantly the first two factors, as I account for the latter separately by allowing returns on investment to vary between home and immigration country.

The optimisation problem migrants face is the following:

$$\begin{aligned}
\max_{a_1, s} V(c_1, c_2) = & \underbrace{u^I(c_1)}_{\text{Working Age Utility}} \\
& + \beta \underbrace{[(1 - \theta) * \max \{u^I(c_2^I; s = 1), u^H(c_2^H; s = 0)\}]}_{\text{Retirement Utility in Country of Choice}} \\
& + \underbrace{\theta * u^H(c_2^H; s = 0/1)}_{\text{Retirement Utility When Forced to Leave}}.
\end{aligned} \tag{1}$$

c_1 and a_1 denote the level of consumption and saving (assets) that migrants choose during their working age. c_2^I and c_2^H denote the levels of consumption that migrants are able to afford in retirement in either the immigration or their home country. $s = 1/0$ denotes migrants' choice to either stay in or leave the

immigration country in retirement. And θ denotes the probability with which they will be asked to leave the immigration country – regardless of what they would have preferred. I assume that generally, migrants face a (small) risk $\theta > 0$ of having to leave the immigration country once they stop working²⁵. This risk is eliminated if migrants have access to citizenship: $\theta = 0$. For a migrant with access to citizenship, their choice to stay or leave always manifests: $P(S = 0|s = 0) = P(S = 1|s = 1) = 1$. If a migrant does *not* have access to citizenship, they can still always choose to leave with certainty: $P(S = 0|s = 0) = 1$. However, if they choose to stay, their choice will NOT necessarily manifest, as with risk θ they will have to leave the immigration country: $P(S = 1|s = 1) = (1 - \theta)$. θ can be interpreted as the *perceived* risk of being asked to leave, i.e. the probability with which migrants *expect* to have to leave: $E[P(S = 1|s = 1) = (1 - \theta)]$. For simplicity, I assume that θ is the same for all migrants and does not respond to investments.

Resources. In the baseline model, migrants earn an exogenously given income y_1^I that is independent of access to citizenship. During their working age, they can either consume or save their income by investing into asset a_1 . During retirement, they can consume the value of their asset stock, that is, the amount they saved in a_1 multiplied out by the interest rate of the country they find themselves in: q_2^I if they stay in the immigration country or q_2^H if they return to their home country²⁶ :

$$\begin{aligned} c_1 + a_1 &= y_1^I \\ c_2^I &= q_2^I a_1 & \text{if } S = 1 \\ c_2^H &= q_2^H a_1 & \text{if } S = 0. \end{aligned} \tag{2}$$

I assume that there are no minimum quantities individuals have to invest if they wish to save in the asset, and that they cannot go into debt. Further, I assume that the asset is weakly country specific, that is: $q_2^I \geq q_2^H$. I do so out of the following rationale: Most of the saving devices for retirement are long term saving devices and, unlike a bank account, require set up costs. They also come with higher change costs. The most common and most important of these devices is housing. For most households, housing wealth makes up the biggest fraction of their wealth by the time they enter retirement. Housing wealth is also country specific – at least part of the return on housing is generated by *living in the place*. And while property can be resold, this is usually a costly process involving estate agents, notaries, etc – both in selling the old home and in finding and then buying or renting a new place and moving there. To make profit from this, the resale value of the old home needs to be substantially above that of the new one. However, if migrants have to vacate a place abruptly because they do not have a permanent right to stay and are asked to leave the country, they cannot wait for the market to be at an optimum²⁷ when they sell. Thus, in *expectation*, the rate of return to housing is higher in the immigration than in the host country. Also, bequest motives often play into housing investments. As parents receive the right to stay in Germany, often so do their children. Assuming that children born in the immigration country are more likely to want to stay there, this could further increase the rate of return to housing wealth in the immigration country. Furthermore, many people save for retirement through pension schemes – which at least in the German case mechanically create higher

²⁵Upon which, I assume migrants return to their home, rather than a third country.

²⁶Capital $S=1/0$ denotes whether a migrant *actually* stays or leaves. It is thus different from migrants' *decision* to stay or leave $s = 1/0$.

²⁷Unless of course they are very wealthy and do not need to sell their old home to afford getting a new one in their country of origin.

payoffs in Germany as opposed to other countries. While statutory and occupational pension claims can be paid out in countries other than Germany as well, the most popular scheme for private retirement savings, the Riester scheme, is country specific. In a push to get more citizens to prepare for retirement with private savings, the government is granting tax breaks and subsidies to everyone who participates in the scheme. However, even though migrants can still access their pension claims when leaving the country, they have to pay back all tax breaks and subsidies. This effectively reduces the rate of return on these savings in the home as opposed to the immigration country. Finally, other long term assets such as investments in private businesses or tangibles come with a degree of country specificity as liquidating or managing/maintaining them from abroad is typically more costly. Finally, it should be noted that while I assume that the rate of return on the asset is at least as high in the immigration as in the home country in the baseline case, none of my main results require the rate of return to be higher in the immigration country. Plus, I get the same qualitative results even if I relax the assumption completely and allow for the rate of return to be *higher* in the home country – just slightly changing the subset of migrants to whom the results apply. Thus, the model predictions remain unchanged even if, for example, the lower price level in a country of origin meant that the *real* rate of return to the asset were higher in the home country.

Impact of Uncertainty. One factor, which might motivate migrants to save more if they have access to citizenship, could be that the right to naturalise eliminates the risk of being asked to leave the immigration country in retirement. In the model, this would be reflected though $\theta = 0$ from working age onward. The optimisation problem of a migrant with access to citizenship would thus be given by:

$$\max V(c_1, c_2; s) = \underbrace{u^I(c_1^I)}_{\text{WA Utility}} + \beta \underbrace{[\max \{u^I(c_2^I; s = 1), u^H(c_2^H; s = 0)\}]}_{\text{RT Utility in Country of Choice}} \quad (3)$$

To analyse the impact of uncertainty and determine whether it can explain the empirical patterns, we can compare the choices migrants make with regard to their saving as well as their location in retirement in the situation both with and without access to citizenship. In the former case migrants can optimise unconstrained over their entire lifespan, while in the latter case, they do not have that luxury. Thus, their choices regarding a_1 and s in the situation without risk can be interpreted as their desired, their *optimal* choices: a_1^* and s^* . In contrast, migrants saving and location choices in the situation with risk are likely not what they would have preferred ex-post, they are suboptimal.

Location Choice. In the beginning of their life, migrants learn about their relative preference for their home country γ . Given that they know this as well as the rates of return in both countries q_2^I & q_2^H , and their income y , migrants have information on all relevant decision parameters already during their working age. Hence, they can perfectly predict whether or not they will choose to stay in retirement and the model can be solved through backwards induction. First, let us consider the case where migrants receive the same rate of return on the asset in both countries $q_2^I = q_2^H$. In this case, migrants can consume the same stock of wealth in either country in retirement: $c_2^I = c_2^H = c_2$. Consequently, in the situation without any risk, migrants with a preference for the immigration country gain more utility from consuming there, while for

migrants with a preference for the home country the reverse is true:

$$\begin{aligned} u^I(c_2) &> u^H(c_2) \quad \text{if } \gamma < 1 \\ u^H(c_2) &> u^I(c_2) \quad \text{if } \gamma > 1 \end{aligned} \tag{4}$$

As a consequence, migrants with a preference for the immigration country always stay and migrants with a preference for their home country always leave. This decision does not change if $\theta > 0$. The risk reduces the expected utility from staying, but it is still always more than the expected utility of leaving for migrants who prefer the immigration country. And always worse for migrants who prefer their home country:

$$\begin{aligned} (1 - \theta)u^I(c_2) + \theta u^H(c_2) &> u^H(c_2) \quad \text{if } \gamma < 1 \\ u^H(c_2) &> (1 - \theta)u^I(c_2) + \theta u^H(c_2) \quad \text{if } \gamma > 1. \end{aligned} \tag{5}$$

Now, let us turn to the situation where $q_2^I > q_2^H$. Migrants can now consume *more* in the immigration than in their home country during retirement: $c_2^I = q_2^I a_1 > c_2^H = q_2^H a_1$ for a given stock of wealth. This means that migrants with a preference for the immigration country still always want to stay. However, some migrants with a (weak) preference for the home country now also want to stay if the consumption utility surplus in the immigration country is great enough to compensate them for their “preference” loss:

$$\begin{aligned} \text{stay if:} \quad & u^I(c_2^I) \geq u^H(c_2^H) \\ \Leftrightarrow & (2 - \xi) u(q_2^I a_1) \geq \xi u(q_2^H a_1) \\ \Leftrightarrow & \gamma = \frac{\xi}{(2 - \xi)} \leq \frac{u(q_2^I a_1)}{u(q_2^H a_1)}. \end{aligned} \tag{6}$$

This inequality either hinges only on the rates of return, or the level of savings also – depending on the assumed utility function. For utility functions where rates of return and level of savings are multiplicatively separable, the location decision hinges solely on the rate of return differential. For example, for Cobb Douglas utility of the form $u(c) = c^\alpha$ where $0 < \alpha < 1$, the inequality simplifies to:

$$\text{stay if: } \gamma = \frac{\xi}{(2 - \xi)} < \frac{u(q_2^I a_1)}{u(q_2^H a_1)} \Leftrightarrow \gamma < \left(\frac{q_2^I}{q_2^H}\right). \tag{7}$$

In this case, migrants’ location decision does not change if $\theta > 0$:

$$\begin{aligned} \text{stay if:} \quad & (1 - \theta)u^I(c_2^I) + \theta u^H(c_2^H) \geq u^H(c_2^H) \\ \Leftrightarrow & (1 - \theta) (2 - \xi)u(q_2^I a_1) + \theta \xi u(q_2^H a_1) \geq \xi u(q_2^H a_1) \\ \Leftrightarrow & (1 - \theta) (2 - \xi)u(q_2^I a_1) \geq (1 - \theta) \xi u(q_2^H a_1) \\ \Leftrightarrow & \gamma = \frac{\xi}{(2 - \xi)} \leq \frac{u(q_2^I a_1)}{u(q_2^H a_1)}. \end{aligned} \tag{8}$$

That is, the same migrants choose to either stay in or leave the immigration country regardless of whether or not they face a risk in their right to stay. This is different, if for utility functions where q_2^I & q_2^H are not separable from a_1 . There, the location and saving amount decision are interconnected. For example, for

logarithmic utility of the form, $u(c) = \ln(c)$, the inequality becomes:

$$\text{stay if: } \quad \gamma = \frac{\xi}{(2 - \xi)} < \frac{u(q_2^I a_1)}{u(q_2^H a_1)} \quad \Leftrightarrow \quad \gamma < \frac{\ln(q_2^I a_1)}{\ln(q_2^H a_1)} \quad (9)$$

in the case without risk in right to stay. $\frac{u(q_2^I a_1)}{u(q_2^H a_1)}$ increases in a_1 . So, if migrants own more than cutoff wealth \bar{a}_1 , defined by $\gamma = \frac{u(q_2^I \bar{a}_1)}{u(q_2^H \bar{a}_1)}$, they want to stay in the immigration country, even if they have a (weak) relative preference for their home country. \bar{a}_1 will be lower, the higher q_2^I , the lower q_2^H or the lower γ is. Since migrants know q_2^I , q_2^H & γ from the beginning, they also know their personal cutoff wealth value \bar{a}_1 . This means migrants' optimisation problem can still be solved through backwards induction. Only now they have to solve two optimisation problems when deciding where to stay and how much to save. Either they decide to save as much or more than the cutoff wealth value and stay in the immigration country. Or they decide to save less than the cutoff value and return to their home country. $\tilde{a}_1 \geq \bar{a}_1$ is the optimal saving amount if a migrant decides to save a lot and stay in the immigration country. That is, the amount which solves:

$$\begin{aligned} \max V(c_1, c_2) &= u^I(c_1^I) + \beta u^I(c_2^I) \\ &= u^I(y - a_1) + \beta u^I(q_2^I a_1). \end{aligned} \quad (10)$$

$a_1 < \bar{a}_1$ is the optimal saving amount if a migrant decides to save relatively less and return to their home country. That is, the amount which solves:

$$\begin{aligned} \max V(c_1, c_2) &= u^I(c_1^I) + \beta u^H(c_2^H) \\ &= u^I(y - a_1) + \beta u^H(q_2^H a_1). \end{aligned} \quad (11)$$

Knowing the optimal values for either location choice, migrants then compare and choose the path which generates the highest lifetime utility. That is, they choose to stay, *if*:

$$\begin{aligned} u^I(y - \tilde{a}_1) + \beta u^I(q_2^I \tilde{a}_1) &\geq u^I(y - a_1) + \beta u^H(q_2^H a_1) \\ \Leftrightarrow \quad \underbrace{u(y - a_1) - u(y - \tilde{a}_1)}_{\text{Cons utility in working age}} &\leq \underbrace{\beta [u(q_2^I \tilde{a}_1) - \gamma u(q_2^H a_1)]}_{\text{Cons utility in retirement}} \end{aligned} \quad (12)$$

This decision is changed by the presence of risk in right to stay. For a given set of parameters, $\theta > 0$ decreases the number of migrants who would like to stay compared to the case where $\theta = 0$. This is because, for a given rate of return differential $\frac{q_2^I}{q_2^H}$, the cutoff value of γ beyond which migrants choose to return decreases:

$$\begin{aligned} u^I(y - \tilde{a}_1) + \beta [(1 - \theta) u^I(q_2^I \tilde{a}_1) + \theta u^H(q_2^H \tilde{a}_1)] &\geq u^I(y - a_1) + \beta u^H(q_2^H a_1) \\ \Leftrightarrow \quad \underbrace{u(y - a_1) - u(y - \tilde{a}_1)}_{\text{Cons utility in working age}} &\leq \underbrace{\beta [(1 - \theta) u(q_2^I \tilde{a}_1) + \theta \gamma u(q_2^H \tilde{a}_1) - \gamma u(q_2^H a_1)]}_{\text{Cons utility in retirement}} \end{aligned} \quad (13)$$

and:

$$u(q_2^I \tilde{a}_1) - \gamma u(q_2^H a_1) \geq (1 - \theta) u(q_2^I \tilde{a}_1) + \theta \gamma u(q_2^H \tilde{a}_1) - \gamma u(q_2^H a_1). \quad (14)$$

This means that if the rate of returns and level of savings are non-separable in the utility function, fewer migrants with a preference for their home country will choose to stay in the immigration country when there

is risk in their right to do so. Specifically, only migrants with a weaker relative preference for their home country will choose to stay (i.e. a lower $\gamma > 1$). That is because it is costly to forego a lot of consumption and save high amounts during the working age. It is only profitable for migrants who suffer a smaller “preference” cost due to staying once risk in right to stay lower the expected purely economic returns during retirement.

Saving Choice. In anticipation of their location choice in retirement, migrants choose their optimal saving amount during their working age. In the case without risk to their right to stay, this yields the following optimality conditions: Migrants who want to stay $s = 1$ save more, the higher the rate of return q_2^I and the patience β :

$$\begin{aligned} \frac{\delta V(\cdot)}{\delta a_1^I} &= -u^I(c_1^I) + \beta q_2^I u^I(c_2^I) \stackrel{!}{=} 0 \\ \Leftrightarrow \frac{u^I(c_2^I)}{u^I(c_1^I)} &= \frac{1}{\beta q_2^I} \quad \Leftrightarrow \quad \frac{u'(c_2^I)}{u'(c_1^I)} = \frac{1}{\beta q_2^I} \end{aligned} \quad (15)$$

Migrants who want to leave, $s = 0$ save more, the higher the rate of return q_2^H , the patience β , and the home country preference γ :

$$\begin{aligned} \frac{\delta V(\cdot)}{\delta a_1^H} &= -u^I(c_1^I) + \beta q_2^H u^H(c_2^H) \stackrel{!}{=} 0 \\ \Leftrightarrow \frac{u^H(c_2^H)}{u^I(c_1^I)} &= \frac{1}{\beta q_2^H} \quad \Leftrightarrow \quad \frac{u'(c_2^H)}{u'(c_1^I)} = \frac{1}{\gamma \beta q_2^H} \end{aligned} \quad (16)$$

In line with the literature, if $q_2^I = q_2^H$, migrants who plan to leave, save more:

$$\begin{aligned} q_2^I = q_2^H &\Leftrightarrow \frac{1}{\beta q_2^I} = \frac{1}{\beta q_2^H} \\ \Rightarrow \frac{u^I(c_2^I)}{u^I(c_1^I)} = \frac{u^H(c_2^H)}{u^I(c_1^I)} &\Leftrightarrow \frac{u'(c_2^I)}{u'(c_1^I)} = \gamma \frac{u'(c_2^H)}{u'(c_1^I)} \\ \Leftrightarrow \frac{u'(q_2^I a_1^I)}{u'(y - a_1^I)} = \gamma \frac{u'(q_2^H a_1^H)}{u'(y - a_1^H)} &\Leftrightarrow \frac{u'(q_2 a_1^I)}{u'(y - a_1^I)} = \gamma \frac{u'(q_2 a_1^H)}{u'(y - a_1^H)} \end{aligned} \quad (17)$$

since $\gamma > 1$ for migrants choosing to return, this implies:

$$\frac{u'(q_2 a_1^I)}{u'(y - a_1^I)} > \frac{u'(q_2 a_1^H)}{u'(y - a_1^H)} \quad \Rightarrow \quad a_1^H > a_1^I. \quad (18)$$

By the same logic, if $q_2^I > q_2^H$, only those migrants who plan to leave *and* for whom $\gamma > \frac{u(q_2^I a_1^I)}{u(q_2^H a_1^H)}$, save more than migrants planning to stay.

If migrants' face risk in their right to stay, the optimal saving choice of migrants intending to leave in retirement are unchanged:

$$\frac{\delta V(\cdot)}{\delta a_1^I} = -u^I(c_1^I) + \beta [(1 - \theta)q_2^H u^H(c_2^H) + \theta q_2^I u^I(c_2^I)] \stackrel{!}{=} 0 \quad \Leftrightarrow \quad \frac{u^H(c_2^H)}{u^I(c_1^I)} = \frac{1}{\beta q_2^H}. \quad (19)$$

But the saving choice of migrants wanting to stay in the immigration country is affected:

$$\begin{aligned} \frac{\delta V(\cdot)}{\delta a_1^I} &= -u^I(c_1^I) + \beta [(1-\theta)q_2^I u^I(c_2^I) + \theta q_2^H u^H(c_2^H)] \stackrel{!}{=} 0 \\ \Leftrightarrow \frac{u^I(c_2^I)}{u^I(c_1^I)} &= \underbrace{\frac{1}{(1-\theta)} \frac{1}{\beta q_2^I}}_A - \underbrace{\frac{\theta}{(1-\theta)} \frac{q_2^H}{q_2^I} \frac{u^H(c_2^H)}{u^I(c_1^I)}}_B \end{aligned} \quad (20)$$

A denotes the consumption utility migrants could get in the immigration country during retirement, adjusted for risk. And B denotes the consumption utility they could get in their home country during retirement, adjusted for risk and expressed in immigration country utils. To learn whether migrants intending to stay in the immigration country save more or less under risk, compare the Euler Equations in the two situations. In the situation without risk, migrants choose the saving amount that satisfies:

$$\frac{u^I(c_2^{*I})}{u^I(c_1^{*I})} = \frac{u^I(q_2^I a_1^{*I})}{u^I(y - a_1^{*I})} = \frac{1}{\beta q_2^I} \quad (21)$$

where a_1^{*I} , c_1^{*I} & c_2^{*I} denote migrants' *optimal* saving and consumption levels. In the situation *with* risk, migrants choose the saving amount that satisfies:

$$\begin{aligned} \frac{u^I(c_2^I)}{u^I(c_1^I)} &= \frac{u^I(q_2^I a_1^I)}{u^I(y - a_1^I)} = \frac{1}{(1-\theta)} \frac{1}{\beta q_2^I} - \frac{\theta}{(1-\theta)} \frac{q_2^H}{q_2^I} \frac{u^H(c_2^H)}{u^I(c_1^I)} \\ &= \frac{1}{(1-\theta)} \frac{1}{\beta q_2^I} - \frac{\theta}{(1-\theta)} \frac{q_2^H}{q_2^I} \frac{u^H(q_2^H a_1^I)}{u^I(y - a_1^I)} \end{aligned} \quad (22)$$

where a_1^I , c_1^I & c_2^I denote the levels of saving and consumption migrants choose when they have to account for risk. Migrants save less under uncertainty if $a_1^I < a_1^{*I}$. To find out whether this is the case, we rearrange the equation (22) so that $\frac{1}{\beta q_2^I}$, the term independent of uncertainty, is isolated on one side:

$$\frac{1}{\beta q_2^I} = (1-\theta) \frac{u^I(q_2^I a_1^I)}{u^I(y - a_1^I)} + \theta \frac{q_2^H}{q_2^I} \frac{u^H(q_2^H a_1^I)}{u^I(y - a_1^I)} \quad (23)$$

Now, we can equate terms 21 and 23, and rearrange to isolate the difference in utility differentials on the left hand side:

$$\begin{aligned} \frac{u^I(q_2^I a_1^{*I})}{u^I(y - a_1^{*I})} &= (1-\theta) \frac{u^I(q_2^I a_1^I)}{u^I(y - a_1^I)} + \theta \frac{q_2^H}{q_2^I} \frac{u^H(q_2^H a_1^I)}{u^I(y - a_1^I)} \\ \Leftrightarrow \frac{u^I(q_2^I a_1^{*I})}{u^I(y - a_1^{*I})} - \frac{u^I(q_2^I a_1^I)}{u^I(y - a_1^I)} &= \theta \underbrace{\left[\frac{q_2^H}{q_2^I} \frac{u^H(q_2^H a_1^I)}{u^I(y - a_1^I)} - \frac{u^I(q_2^I a_1^I)}{u^I(y - a_1^I)} \right]}_{m(\theta)}. \end{aligned} \quad (24)$$

$a_1^I < a_1^{*I}$ if $m(\theta) < 0$, that is if $\frac{q_2^H}{q_2^I} \frac{u^H(q_2^H a_1^I)}{u^I(y - a_1^I)} < \frac{u^I(q_2^I a_1^I)}{u^I(y - a_1^I)}$. If $q_2^I = q_2^H$ this always holds for migrants with a preference for the immigration country (who are the only migrants intending to stay if $q_2^I = q_2^H$):

$$u^H(q_2^H a_1^I) < u^I(q_2^I a_1^I) \Leftrightarrow \xi u'(q_2 a_1^I) < (2 - \xi) u'(q_2 a_1^I) \Leftrightarrow \gamma < 1. \quad (25)$$

If $q_2^I > q_2^H$, this always holds for migrants who prefer the immigration country, as well as some migrants

who prefer their home country (who might now also stay in the immigration country):

$$\begin{aligned} \frac{q_2^H}{q_2^I} u^H(q_2^H a_1^I) < u^I(q_2^I a_1^I) &\Leftrightarrow \frac{q_2^H}{q_2^I} \xi u'(q_2^H a_1^I) < (2 - \xi) u'(q_2^I a_1^I) \\ \Leftrightarrow \frac{q_2^H}{q_2^I} \gamma u'(q_2^H a_1^I) < u'(q_2^I a_1^I) &\Leftrightarrow \gamma < \underbrace{\frac{q_2^I}{q_2^H} \frac{u'(q_2^I a_1^I)}{u'(q_2^H a_1^I)}}_{>1} \end{aligned} \quad (26)$$

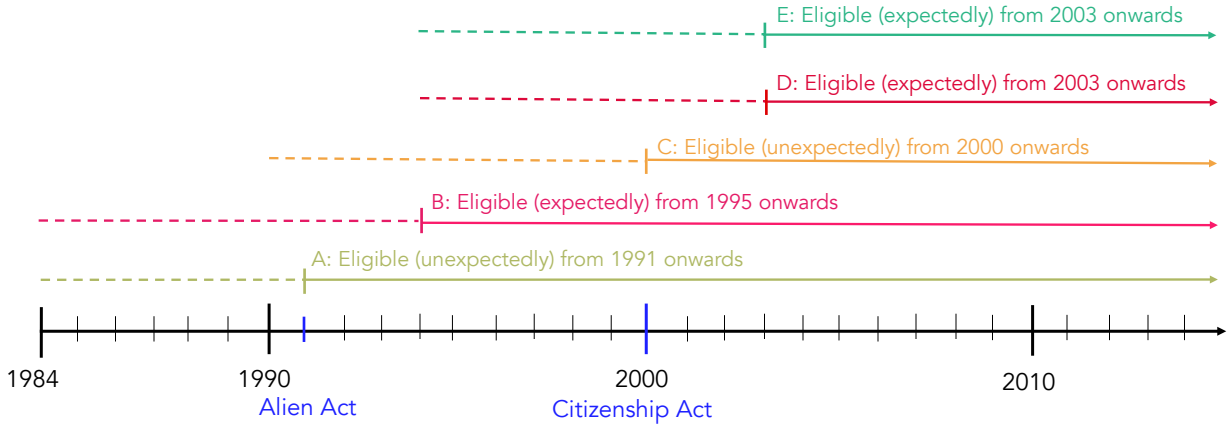
This means that migrants who intend to stay in the immigration country save less if they face risk in their right to stay – both for $\gamma < 1$ and γ (weakly) > 1 , while migrants who intend to leave the immigration country are unaffected by uncertainty. Furthermore, as $m(\theta)$ linearly increases in size (becomes more negative) in θ , migrants wanting to stay save less, the more risk they face. That is, they save less, the more likely they believe it is that the immigration country’s government will ask them to leave after they stop working.

5.2 Empirical Strategy

In this section, I focus on the impact of changes in the household head’s eligibility over time on migrant households’ saving and investment choices. This allows me to extend my main analysis in four ways. First, it allows me to exploit the variation introduced by both the Alien and the Citizenship Act. Second, it allows me to quantify the impact of changes in migrants’ actual legal status, compared to the pooled effect of changes in legal status and the prospect thereof. And third, it allows me to distinguish between the impact of expected eligibility within a given regime and unexpected eligibility brought about by a regime change. This way, I can estimate whether eligibility influences behaviour even when uncertainty about the future is already less pronounced and gauge whether migrants adjust behaviour already in anticipation of becoming eligible. That is, I can get a better understanding of whether changes in pure legal status or uncertainty are the main driver of the observable changes. Finally, it allows me to test how eligibility impacts behaviour over time. Especially with regard to bigger investments such as housing, it is possible that migrants only react to eligibility with a delay.

The sample now consists of only households headed by migrants without access to citizenship at the beginning of the sample period in 1992. That is, only households headed by direct migrants below the age of 60 from non-EU15 countries without German citizenship who are not married to a German citizen and did not become eligible to naturalise before 1992. I regress the main outcomes on a binary variable indicating eligibility as well as the full set of controls and fixed effects employed earlier. In a second specification, I split the eligibility dummy into two binary variables indicating whether someone became eligible unexpectedly or expectedly. And in a third specification, I regress the outcomes of interest onto a set of dummy variables indicating whether a migrant has been eligible for 1-5, 6-10, 11-15, 16-20 or 21-25 years. I use five year bins rather than a continuous years of eligibility variable to both increase power in the relatively small sample and allow for non-linear effects over time. The coefficients on each of the eligibility variables are identified by exploiting the discontinuities in eligibility created by the two reforms and comparing migrants of the same birth cohort who arrived in Germany in slightly different years, as well as migrants of the same arrival cohort who were born in different years.

Figure 7 Changes in Eligibility Over Time



Returning to our five hypothetical migrants: Anton had been in Germany for more than 15 years when the Alien Act came into effect and thus become eligible unexpectedly in 1991.²⁸ Consequently, the dummy variables indicating eligibility and unexpected eligibility will equal 1 for him thereafter (while the expected eligibility dummy will remain at 0 throughout). From 1991 to 1995, the dummy indicating eligibility for 1 to 5 years will equal 1. From 1996 to 2001, the dummy indicating eligibility for 6 to 10 years will be equal 1, etc. Berta, on the other hand, had only been in Germany for 11 years when the Alien Act came into effect. Thus, she only gains the right to apply for citizenship 4 years later & expectedly. That is, the binary variables for eligibility and expected eligibility will equal 1 from 1995 onwards. The same dynamic applies to the other three migrants: Carl becomes eligible unexpectedly in 2000 when the enactment of the Citizenship Act means that his 10 years of residence are now sufficient. Dolores becomes eligible expectedly in 2003, because even though the Citizenship Act reduced her waiting time considerably, she knew three years before becoming eligible when the change would occur. Finally, Emil becomes eligible expectedly in 2003 – something he knew from the date he arrived in Germany.

I use the following empirical specifications to estimate the effect of changes in migrants' legal status:

$$\begin{aligned}
 Y_{it} &= \alpha + \omega * \text{Eligible}_{it} + \theta * X_{it} + \text{Year}_t + \text{State}_s + \text{HH}_i + \epsilon_{it} \\
 &= \alpha + \delta_1 * \text{EligibleExp}_{it} + \delta_2 * \text{EligibleUnexp}_{it} + \theta * X_{it} + \text{Year}_t + \text{State}_s + \text{HH}_i + \epsilon_{it} \\
 &= \alpha + \eta_1 * \text{Yearseli}_{1-5}_{it} + \eta_2 * \text{Yearseli}_{6-10}_{it} + \eta_3 * \text{Yearseli}_{11-15}_{it} \\
 &\quad + \eta_4 * \text{Yearseli}_{16-20}_{it} + \eta_5 * \text{Yearseli}_{21-25}_{it} + \theta * X_{it} + \text{Year}_t + \text{State}_s + \text{HH}_i + \epsilon_{it}
 \end{aligned}$$

The outcome and control variables as well as the fixed effects are defined as in Section 4.1 and standard errors are again clustered at the household level. The coefficient on the eligibility dummy ω measures the impact of generally becoming eligible to naturalise. δ_1 and δ_2 measure the impact of becoming eligible either expectedly or unexpectedly, and $\eta_1, \eta_2, \eta_3, \eta_4$ & η_5 measure the impact of being eligible for 1-5, 6-10, 11-15, 16-20 or 21-25 years respectively.

²⁸Of course the change is not completely unexpected for him or anyone else insofar as the act passed parliament half a year prior to being enacted. However, as I only observe individuals and households on an annual basis and half a year is still only a short amount of time to fundamentally adjust your saving and investment behaviour, I believe it is reasonable to classify becoming eligible through a reform as unexpected.

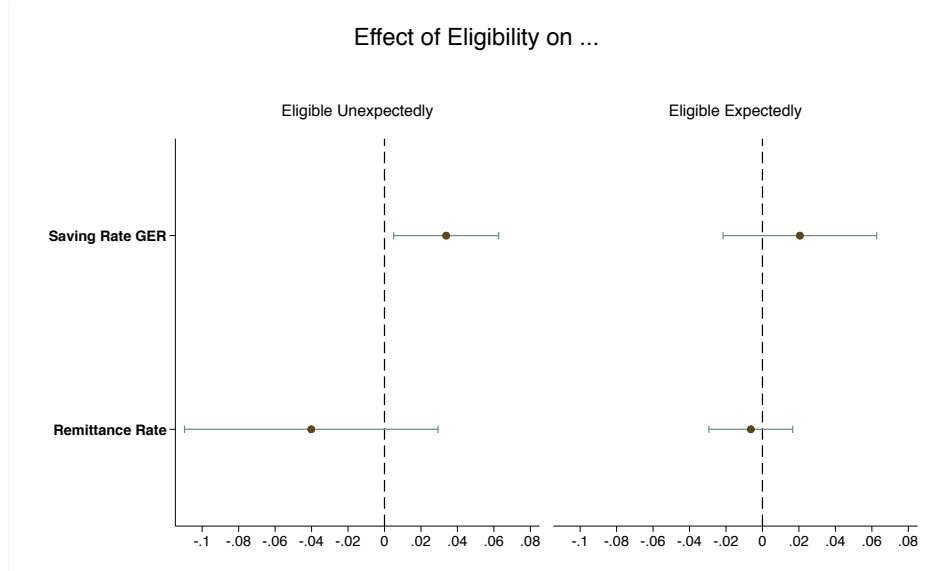
5.3 Results

5.3.1 Saving and Remittances

Result 4 *Unexpectedly becoming eligible to naturalise increases the fraction of their net income migrant households save in Germany by more than 3pp compared to households headed by migrants who do not yet have access to citizenship.*

Figure 8 illustrates the impact of becoming eligible either either expected or unexpectedly on the main outcomes of interest, saving in Germany and remittances. The full estimation results, for both the specification distinguishing between expected and unexpected eligibility and the specification looking at eligibility changes overall, can be found in Tables 5 & 4 in the Appendix.

Figure 8 Effect of Becoming Eligible Expected or Unexpectedly On Saving and Remittances



Notes: Graph shows treatment effects from specification 2 detailed in Section 5.2. The caps represent 95% confidence levels.

Becoming eligible to naturalise has a positive impact on the fraction of their income migrant households save in Germany. This is further true whether the change is unexpected or expected – but only if the change occurs unexpectedly is the effect significant. More precisely, households headed by migrants who unexpectedly gain access to German citizenship increase their saving rate in Germany by 3.38pp (or by about 125% when taking the 2.7% raw saving rate observed for migrants without access to citizenship throughout the 1990s as the base). The fact that the impact of becoming eligible expectedly is not significant at conventional levels, in combination with the fact that eligible migrants save higher fractions of their income in Germany (both in the raw data and when controlling for differences in confounding factors), suggests anticipatory effects. Specifically, it seems as though migrants begin to increase their saving rate not just once they become eligible, but already in the lead up, when they know they will be eligible soon. These anticipatory effects appear to only be of consequence close to the actual eligibility date. After all, we do see a significant effect for migrants who become eligible unexpectedly after seeing their residency requirements reduced. If knowing they will be eligible eventually would suffice to increase migrants' saving rates in Germany, we would see no effect there.

This also lends credence to the interpretation that it is indeed a decrease in uncertainty about their right to stay long term that leads migrants to increase their saving rate in Germany – rather than a mechanical effect of a change in their legal status.

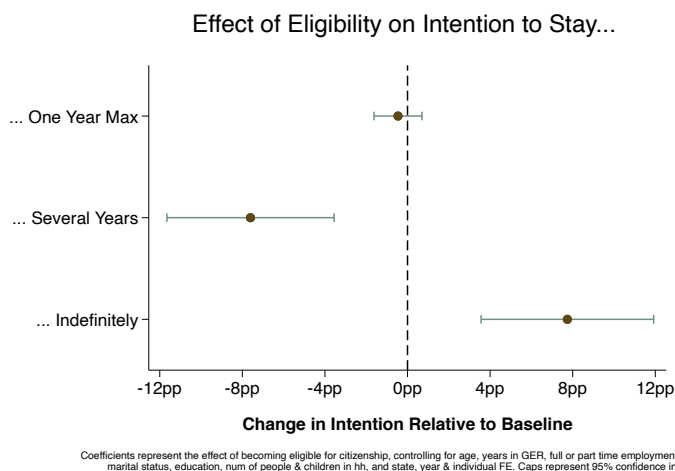
Focusing on remittances, I find some indicative evidence for the remittance rate decreasing in response to becoming eligible either expected or unexpectedly. However, neither the effect of unexpected nor of expected eligibility is significant at a conventional level. Thus, the decrease in remittances could merely reflect noise in the data.

5.3.2 Intention to Stay

Result 5 *After becoming eligible for citizenship, migrants become 8pp more likely to state that they intend to stay in Germany indefinitely.*

The first extra dimension I am interested in, is whether migrants change their plans to stay in Germany in response to getting access to citizenship. Figure 9 depicts how migrants’ expressed intention to stay in Germany for “one year maximally”, “several years” or “indefinitely” changes in reaction to becoming eligible to naturalise (the exact results can be found in Table 6 in the Appendix). Migrants who only want to stay in Germany for maximally one more year do not appear to be affected in their plans by becoming eligible to naturalise. In contrast, migrants become 7.6pp less likely to indicate they want to stay in Germany for a set number of years in response to eligibility. This decrease is matched almost exactly by an increase in their propensity to say that they intend to stay in Germany indefinitely (7.7pp).

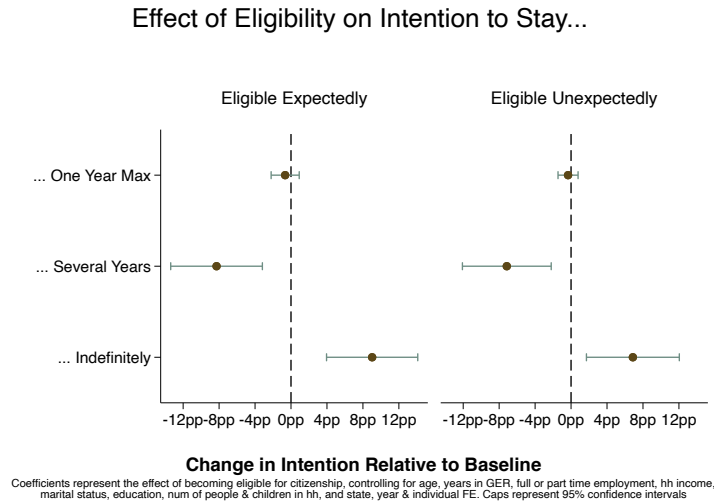
Figure 9 Effect of Becoming Eligible on Intention to Stay



Notes: Graph shows treatment effects from specification 1 detailed in Section 5.2. The caps represent 95% confidence levels.

Thus, it seems as though migrants indeed adjust their plans to stay in Germany with access to citizenship and that migrants who were planning to stay longer before are more affected by changes in their legal status. Moreover, as Figure 10 depicts, it does not seem to matter whether the change in legal status occurs expected or unexpectedly (full results again can be found in the Appendix, in Table 7).

Figure 10 Effect of Becoming Eligible Expected or Unexpectedly on Intention to Stay



Notes: Graph shows treatment effects from specification 2 detailed in Section 5.2. The caps represent 95% confidence levels.

5.3.3 Saving Devices

Result 6 *Becoming eligible, and in particular becoming eligible unexpectedly, renders migrants 6pp more likely to own their home, 8pp more likely to have a bank deposits in Germany and 9pp more likely to own a government subsidised private pension plan.*

Next, I test if migrants who become eligible to naturalise also become more likely to invest in different saving devices and especially if they become more likely to invest in housing – an investment that is particularly potent in reducing the risk of poverty in old age but is specific to the country one lives in. Figure 11 depicts the effect of eligibility on the propensity of migrant households to tie up capital in various devices (the full estimation results can be found in Tables 8 & 9 in the Appendix).

In response to becoming eligible to naturalise, migrant households become more than 6pp more likely to own their home. Considering that among migrant households without access to citizenship only about 20% own their home, this represents a 30% increase in migrants’ likelihood to own their home. Moreover, gaining access to citizenship exerts a positive impact on the propensity of migrant households holding capital in any of the different saving devices the GSOEP inquires about – be that a bank deposit, mortgage save plan, life insurance, fixed interest securities, firm equity or firm securities. However, the effect is only significant at the 5% level for bank deposits, with eligibility prompting a 7.5pp increase in migrant households’ propensity to have money deposited in a bank, and firm equity, which migrant households become 1.5pp more likely to hold. Eligibility moreover reduces the likelihood of migrant households owning no assets by 4.4pp.

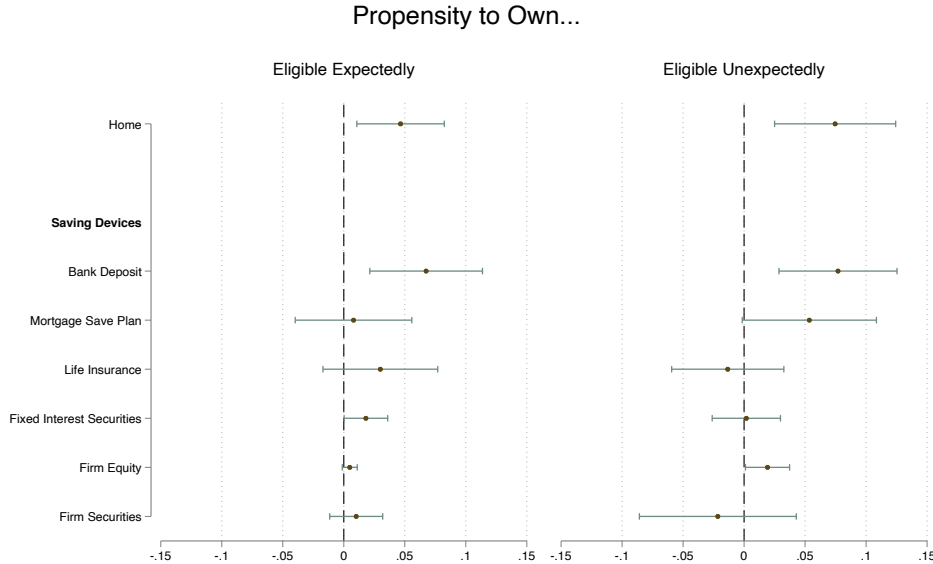
Figure 11 Effect of Becoming Eligible on Propensity to Own Different Assets

Notes: Graph shows treatment effects from specification 1 detailed in Section 5.2. The caps represent 95% confidence levels.

Figure 12 shows that both expected and unexpected eligibility exert a positive influence on migrant households’ likelihood to have money tied up in various assets and saving devices. But the impact of unexpected eligibility is more pronounced (full estimation results can be found in Tables 10 & 11 in the Appendix).

Specifically, while expected eligibility increases migrant households' propensity to own their home by about 5pp, unexpected eligibility raises the likelihood by close to 8pp. Furthermore, unexpected eligibility also significantly increases migrant households' propensity to own a mortgage save plan by about 5pp. Expected eligibility does not seem to shift investments in this regard.

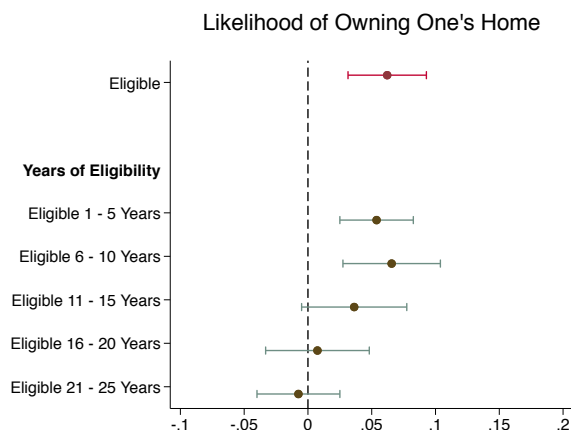
Figure 12 Effect of Becoming Eligible Expected or Unexpectedly on Propensity to Own Different Assets



Notes: Graph shows treatment effects from specification 2 detailed in Section 5.2. The caps represent 95% confidence levels.

This is interesting for two reasons. Firstly, it stresses that uncertainty about one's future right to stay – even more so than a pure change in legal status – affects housing investments. This lends credence to the notion that migrants may hold off on investments in country specific illiquid assets if rates of return are uncertain – even if they would generally like to make them. Secondly, it suggests that even migrants who accumulated sufficient wealth to invest in a house upon gaining access to citizenship without prior notice hold off on larger investments until their future is more calculable. This hints at the potential scope of uncertainty's detrimental effect on long term saving in the host community. It is mirrored further in Figure 13, which shows that the effect of eligibility on the probability of migrant households' buying their home is especially marked in the first decade of the household head being eligible to naturalise. However, the fact that the effect is most pronounced for 6-10 years of eligibility suggests that a majority of migrant households wanting to make an investment in housing still have to build up *some* capital stock before making a down payment on their home after becoming eligible. This is an interpretation that would be in line with unexpected eligibility increasing their probability to get a mortgage save plan in preparation.

Figure 13 Effect of Eligibility and Years of Eligibility on Propensity to Own One's Home



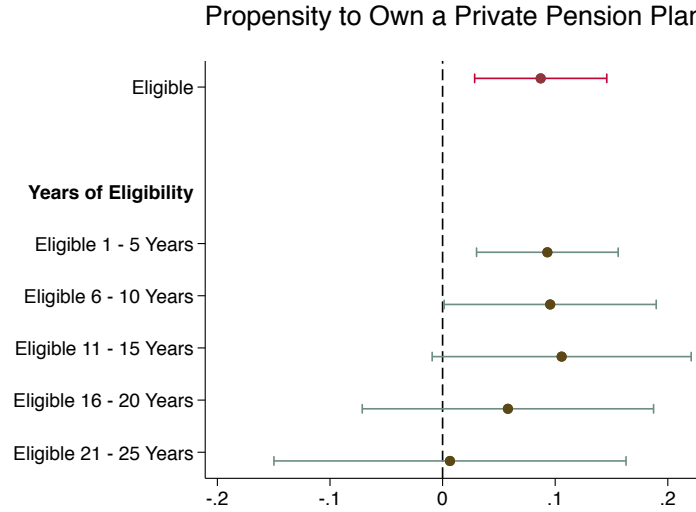
Notes: Graph shows treatment effects from specification 1 & 3 detailed in Section 5.2. The caps represent 95% confidence levels.

Finally, Figure 14 depicts the effect of eligibility on migrant households' propensity to own a government subsidised private pension plan, a so called "Riester" pension plan.

In 2001, the German government passed a sweeping reform to the pension system, markedly reducing the statutory retirement benefits financed out of the traditional pay-as-you-go system. Instead, the government introduced a new private pension scheme in 2002 (named after the federal minister of labour at that time, Walter Riester) which both directly subsidises private saving for old-age and allows individuals who pay into a private pension scheme to detract the amounts from their taxable income. It is not required to be a German citizen to make use of the Riester pension plan. Instead, it is open to every individual who pays into the statutory pension scheme – which encompasses everyone formally employed in Germany. However, while migrants paying into the statutory pension system for a set number of years can take the pension claims they amass with them should they leave Germany – this transfer would be more difficult when it comes to Riester pension plans. Just as with statutory pension claims, migrants can choose to have their Riester pension claims be either paid out to them or receive them abroad. However, in this case they have to *repay* the German government for both the subsidies and the tax breaks they were granted during the time they paid into the pension scheme. Thus, Riester pension claims constitute at least to an extent a country specific asset.

Figure 14 illustrates the effect of becoming eligible to naturalise on migrants' propensity to own a Riester pension plan. The effect amounts to an increase of almost 9pp. Furthermore, we see that the effect of eligibility appears to be strongest in the first 15 years of eligibility (the detailed estimation results can be found in Table 12 in the Appendix). As the pension scheme was only introduced in 2002 and all changes in eligibility occurring after 2000 have been expected changes, I cannot differentiate between expected and unexpected eligibility. However, if the other results are any indication, expected changes if anything give us a lower bound of the overall impact of becoming eligible to naturalise. Potentially, because they are not accompanied by a change in uncertainty about the future. Thus, it is encouraging that we find a strong effect even for expected eligibility here. In particular as it gives us insights into one of the key dimensions governments are hoping to shift.

Figure 14 Effect of Becoming Eligible on Propensity to Own a Private Pension Plan



Notes: Graph shows treatment effects from specification 1 & 3 detailed in Section 5.2 without HH fixed effects. The caps represent 95% confidence levels.

6 Implications

We have established that migrants without access to citizenship generally save significantly less than natives and migrants *with* access to citizenship. And that the residual gap can be closed by giving migrants the prospect of easier access to citizenship. Furthermore, we see that the lasting increase in migrants’ saving rate is accompanied by a higher propensity to invest in housing as well as private pension plans and other assets in Germany. These observable changes imply that migrants are more likely to accumulate higher levels of private wealth when given access to citizenship. This in turn should reduce their personal risk of being poor in old age and increase their lifetime welfare – assuming that as restrictions are lifted, they are better able to make choices in line with their actual preferences. However, could the individual improvements also have aggregate implications for welfare?

If the higher saving rate and propensity to invest in country specific assets indeed translates into higher wealth accumulation, then migrants choosing to stay in Germany will have a higher wealth stock by the time they retire. This in turn will make them less likely to depend on government transfers during retirement. In general, there are different sources of state transfers that individuals can receive in retirement besides statutory pension payments – irrespective of whether they are a German citizen or non-German a resident. Transfers are available to all individuals whose combined retirement income from the statutory and potential occupational and private pensions is less than the legal minimum below which individuals are determined to be “in need of help” (hilfebedürftig) – unless they have sufficient wealth. In practice, this currently means that an individual with a monthly net income of less than 893€ and not more than 5000€ in wealth would be eligible to receive “basic security in old age” (Grundsicherung im Alter) payments (pending case specific regulations). Furthermore, even if the requirements of “basic security in old age” payments are not met, individuals with a monthly net income of less than 432€ and less than 5000€ in wealth can receive “livelihood security” (Hilfe zum Lebensunterhalt) payments or housing assistance (Wohngeld) if the household net income is deemed insufficient to meet rent or upkeep costs (exact income cutoffs depend on

number of people living in the household, area of residence, etc). In 2020, about 2% of the non-German population living in Germany received “basic security in old age” transfer payments, compared to only 1.2% among German citizens.

These are, of course, raw numbers which are influenced by a variety of factors. However, they do provide us with an idea of how the host society at large might be able to benefit from granting migrants earlier access to citizenship. If migrants accumulate more wealth when having access to citizenship, then every extra year of them residing in Germany in which they are eligible rather than ineligible to naturalise is one year in which they will save a higher fraction of their income and accumulate more wealth for retirement. Thus, each year, that migrants can have access to citizenship sooner, can increase their wealth stock in retirement and thus make them less likely to depend on transfer payments. Consequently, future public expenditures could potentially be lowered by reducing the residency requirements for naturalisation, for example from 8 to 3 years.

7 Conclusion

Ageing populations pose an increasing threat to the stability of pension systems in Western countries. In response, governments of these countries have adopted a dual strategy to mitigate the impact of the growing demographic burden: They increasingly require citizens to prepare for retirement with private savings. And they try to recruit foreign professionals to rejuvenate their work force (both directly and indirectly through higher fertility rates among migrant families). However, migrants accumulate less wealth than natives during their employment history and thus are more likely to have lower levels of wealth when they retire. If they choose to retire in the host country, this poses a problem for both their individual as well as aggregate welfare: They are less likely able to support themselves in old age, and thus at a bigger risk to require state assistance.

In this paper, I provide evidence that uncertainty about the permanence of their right to stay keeps migrants from accumulating wealth in the host country. Specifically, I show that migrants in Germany, who do not have access to citizenship and thus are uncertain about their ability to stay in the country long term, save significantly less than either natives or migrants who do have access to citizenship. This saving gap persists even after controlling for observable differences in labour market outcomes or household constellation, as well as unobservable differences through household level fixed effects. However, the unexplained gap is closed completely by giving migrants the prospect to become eligible for citizenship in the foreseeable future. Specifically, in response to a reduction in residency requirements from 15 to 8 years, migrants who were not previously eligible for citizenship increased their saving rate in Germany from 2.7% to 4.7% holding all else equal. At the same time, remittances are unaffected. Furthermore, I show that migrants become significantly more likely to invest in housing as well as own a private pension plan when becoming eligible for citizenship. I also show that these adjustments appear to be at least in part motivated by changes in migrants’ intention to stay in Germany. Finally, I show that migrants react more strongly to unexpected than expected changes to their eligibility status, suggesting that it is predominantly uncertainty about the future rather than purely legal access to citizenship that drives the observable changes.

These are important insights for governments seeking to attract migrants to address the growing threat ageing populations pose to the stability of pension systems. The findings of this paper show that earlier access to citizenship can lastingly increase the saving rate of new migrants. This enables them to accumulate

more wealth in the host country, be more self sufficient in retirement, and require less public assistance. As an added benefit, migrants' decreased reliance on state transfers preempts allegations of them trying to take advantage of the host country's welfare system, and generates support among a broader fraction of the native population. And as citizenship, unlike other dimensions of integration, is under direct government control, the findings of this paper provide policy makers with immediate scope for action.

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Appendix A: Additional Tables and Figures

Table 4 Effect of Becoming Eligible on Saving & Remittances

	Saving Amount GER	Saving Rate GER	Remittance Amount	Remittance Rate
Eligible	79.94 (81.63)	0.0246 (0.0191)	-49.55 (39.76)	-0.0279 (0.0248)
Years in Germany Squared	-0.108 (0.300)	-5.96e-05 (0.000104)	-0.0304 (0.160)	8.65e-06 (8.26e-05)
Age Squared	-0.427 (0.350)	-8.45e-05 (9.43e-05)	0.0471 (0.157)	-2.05e-05 (8.10e-05)
Employed Full Time	35.59 (25.20)	0.0175** (0.00716)	3.682 (10.99)	0.00129 (0.00474)
Employed Part Time	-64.84 (43.91)	-0.0159 (0.0109)	22.96 (16.46)	0.00954 (0.00857)
Years FT Employment	3.092 (6.483)	0.000453 (0.00192)	2.823 (3.971)	0.000993 (0.00182)
Years PT Employment	6.203 (10.37)	0.000910 (0.00287)	6.751 (5.382)	0.00324 (0.00264)
HH Net Income	0.124*** (0.0269)	2.50e-05*** (5.78e-06)	0.0117** (0.00558)	1.57e-06 (1.96e-06)
Education Category	-11.77 (61.63)	-0.0167 (0.0184)	40.47 (27.33)	0.0141 (0.0119)
Years of Education	21.31 (22.45)	0.0130* (0.00766)	-15.69 (15.32)	-0.00369 (0.00609)
Married	16.68 (58.46)	0.00602 (0.0218)	27.86 (23.25)	0.0160 (0.0131)
Num People in HH	-51.31* (29.15)	-0.0142** (0.00688)	-5.657 (7.975)	-0.00202 (0.00371)
Young Children in HH	43.92 (60.93)	0.00592 (0.0229)	-35.24 (25.78)	-0.0175* (0.0104)
Observations	811	811	736	736
R-squared	0.215	0.148	0.069	0.074
State, Year & HH FE	YES	YES	YES	YES

Notes: OLS regressions. Standard errors in parentheses clustered at the HH level.*** p<0.01,** p<0.05,* p<0.1. Dependent variables are reported at the top of each column. Regressions include year, state and HH fixed effects.

Table 5 Effect of Becoming Eligible Expected or Unexpectedly on Saving & Remittances

	Saving Amount GER	Saving Rate GER	Remittance Amount	Remittance Rate
Eligible Unexpectedly	55.17* (32.78)	0.0338** (0.0163)	-64.50 (64.28)	-0.0402 (0.0418)
Eligible Expectedly	90.81 (116.9)	0.0205 (0.0253)	-23.40 (25.12)	-0.00637 (0.0138)
Years in Germany Squared	-0.154 (0.265)	-4.25e-05 (0.000110)	-0.0486 (0.147)	-6.37e-06 (6.97e-05)
Age Squared	-0.434 (0.365)	-8.17e-05 (9.58e-05)	0.0379 (0.166)	-2.80e-05 (8.80e-05)
Employed Full Time	35.21 (25.22)	0.0176** (0.00713)	3.227 (11.10)	0.000919 (0.00486)
Employed Part Time	-64.62 (43.59)	-0.0160 (0.0109)	22.71 (16.67)	0.00934 (0.00876)
Years FT Employment	3.300 (6.551)	0.000375 (0.00190)	3.076 (3.880)	0.00120 (0.00172)
Years PT Employment	6.089 (10.47)	0.000953 (0.00287)	6.817 (5.407)	0.00329 (0.00267)
HH Net Income	0.124*** (0.0273)	2.47e-05*** (5.73e-06)	0.0124** (0.00586)	2.12e-06 (2.24e-06)
Education Category	-14.54 (63.98)	-0.0157 (0.0188)	37.14 (28.44)	0.0113 (0.0131)
Years of Education	20.53 (22.77)	0.0133* (0.00759)	-16.36 (15.20)	-0.00424 (0.00592)
Married	16.12 (57.47)	0.00623 (0.0218)	28.06 (23.45)	0.0162 (0.0133)
Num People in HH	-52.20 (31.42)	-0.0139* (0.00715)	-6.646 (8.722)	-0.00283 (0.00437)
Young Children in HH	42.87 (60.89)	0.00631 (0.0231)	-35.69 (25.97)	-0.0179* (0.0105)
Observations	811	811	736	736
R-squared	0.215	0.148	0.070	0.076
State, Year & HH FE	YES	YES	YES	YES

Notes: OLS regressions. Standard errors in parentheses clustered at the HH level.*** p<0.01,** p<0.05,* p<0.1. Dependent variables are reported at the top of each column. Regressions include year, state and HH fixed effects.

Table 6 Effect of Becoming Eligible on Intention to Stay

	Max One Year	Several Years	Indefinitely	Number of Fixed Years
Eligible	-0.00461 (0.00705)	-0.0761*** (0.0246)	0.0774*** (0.0254)	0.587 (0.607)
Years in Germany Squared	-2.36e-06 (2.05e-05)	-2.51e-05 (0.000116)	4.11e-05 (0.000119)	0.00160 (0.00253)
Age Squared	4.07e-05** (1.76e-05)	3.54e-06 (7.80e-05)	-2.94e-05 (7.98e-05)	-0.0119*** (0.00172)
Employed FT, In LF	-0.0137*** (0.00408)	0.0126 (0.0171)	-0.00148 (0.0176)	-0.0742 (0.309)
Employed PT, In LF	-0.00866 (0.00595)	-0.00401 (0.0207)	0.00673 (0.0210)	-0.152 (0.424)
Years Full Time Employment	0.00144 (0.000942)	-0.00318 (0.00435)	0.00200 (0.00452)	-0.0470 (0.0885)
Years Part Time Employment	0.00228 (0.00165)	0.00570 (0.00625)	-0.00881 (0.00659)	-0.266** (0.115)
HH Monthly Net Income	-5.03e-07 (8.39e-07)	2.37e-06 (3.86e-06)	-2.82e-06 (3.93e-06)	-4.63e-05 (7.46e-05)
Education - Broad Categories	-0.00209 (0.00610)	0.0359 (0.0296)	-0.0296 (0.0313)	1.950 (2.202)
Years of Education	0.000864 (0.00266)	-0.00889 (0.00980)	0.00141 (0.0104)	-0.563 (0.456)
Married	-0.00698 (0.00545)	0.0496* (0.0279)	-0.0345 (0.0290)	-0.839 (0.678)
Num People in HH	0.000117 (0.000945)	0.00218 (0.00509)	-0.00194 (0.00528)	-0.0855 (0.102)
Young Children in HH	0.000387 (0.00409)	-0.0152 (0.0201)	0.0120 (0.0208)	0.132 (0.459)
Observations	14,226	14,226	14,050	3,888
R-squared	0.010	0.078	0.059	0.088
State, Year & Individual FE	YES	YES	YES	YES

Notes: OLS regressions. Standard errors in parentheses clustered at the HH level.*** p<0.01,** p<0.05,* p<0.1. Dependent variables are reported at the top of each column. Regressions include year, state and HH fixed effects.

Table 7 Effect of Becoming Eligible Expected or Unexpectedly on Intention to Stay

	Max One Year	Several Years	Indefinitely	Number of Fixed Years
Eligible Unexpectedly	-0.00335 (0.00678)	-0.0715** (0.0300)	0.0688** (0.0314)	1.347* (0.721)
Eligible Expectedly	-0.00649 (0.00950)	-0.0828*** (0.0310)	0.0903*** (0.0308)	-0.949 (0.749)
Years in Germany Squared	-4.42e-06 (2.01e-05)	-3.25e-05 (0.000117)	5.54e-05 (0.000121)	-0.000812 (0.00269)
Age Squared	3.99e-05** (1.79e-05)	8.54e-07 (7.80e-05)	-2.45e-05 (7.99e-05)	-0.0124*** (0.00167)
Employed FT, In LF	-0.0138*** (0.00410)	0.0125 (0.0171)	-0.00121 (0.0176)	-0.0854 (0.308)
Employed PT, In LF	-0.00868 (0.00594)	-0.00407 (0.0207)	0.00677 (0.0210)	-0.137 (0.425)
Years Full Time Employment	0.00147 (0.000960)	-0.00307 (0.00438)	0.00180 (0.00454)	-0.0392 (0.0871)
Years Part Time Employment	0.00231 (0.00166)	0.00581 (0.00628)	-0.00902 (0.00661)	-0.266** (0.115)
HH Monthly Net Income	-5.18e-07 (8.42e-07)	2.31e-06 (3.88e-06)	-2.72e-06 (3.95e-06)	-5.92e-05 (7.38e-05)
Education - Broad Categories	-0.00212 (0.00610)	0.0358 (0.0296)	-0.0293 (0.0313)	1.943 (2.211)
Years of Education	0.000858 (0.00266)	-0.00891 (0.00981)	0.00141 (0.0104)	-0.561 (0.478)
Married	-0.00694 (0.00547)	0.0498* (0.0279)	-0.0348 (0.0289)	-0.757 (0.684)
Num People in HH	0.000125 (0.000947)	0.00221 (0.00509)	-0.00199 (0.00528)	-0.0941 (0.100)
Young Children in HH	0.000424 (0.00409)	-0.0150 (0.0202)	0.0118 (0.0208)	0.131 (0.457)
Observations	14,226	14,226	14,050	3,888
R-squared	0.010	0.078	0.059	0.092
State, Year & Individual FE	YES	YES	YES	YES

Notes: OLS regressions. Standard errors in parentheses clustered at the HH level. *** p<0.01, ** p<0.05, * p<0.1. Dependent variables are reported at the top of each column. Regressions include year, state and HH fixed effects.

Table 8 Effect of Becoming Eligible on Home Ownership & Saving Devices

	Home	Bank Deposit	Mortgage SP	Life Insurance
Eligible	0.0621*** (0.0187)	0.0750*** (0.0221)	0.0352 (0.0223)	0.00540 (0.0223)
Years in Germany Squared	-0.000112 (7.40e-05)	-0.000109* (6.19e-05)	-0.000165** (7.03e-05)	-0.000186*** (6.75e-05)
Age Squared	-0.000133*** (3.97e-05)	7.97e-06 (4.35e-05)	-6.96e-05 (5.42e-05)	-0.000127** (5.11e-05)
Employed FT, In LF	-0.0200* (0.0107)	0.0308* (0.0162)	0.0646*** (0.0169)	0.0407** (0.0159)
Employed PT, In LF	0.00486 (0.0122)	0.0284 (0.0206)	0.0277 (0.0194)	0.0294 (0.0185)
Years Full Time Employment	0.0144*** (0.00329)	0.00440 (0.00327)	0.00255 (0.00397)	0.00805** (0.00340)
Years Part Time Employment	0.0105** (0.00466)	-0.000941 (0.00563)	0.00779 (0.00556)	0.00401 (0.00504)
HH Monthly Net Income	2.42e-05*** (5.74e-06)	3.99e-05*** (7.74e-06)	2.62e-05*** (7.99e-06)	2.93e-05*** (7.44e-06)
Education - Broad Categories	-0.00161 (0.0206)	0.00929 (0.0324)	0.0237 (0.0399)	0.0183 (0.0379)
Years of Education	-0.00582 (0.00701)	0.00774 (0.0122)	0.00686 (0.0150)	0.0133 (0.0124)
Married, Legally	0.0624*** (0.0203)	-0.0358 (0.0279)	0.0269 (0.0305)	0.0273 (0.0317)
Num People in HH	0.00877 (0.00710)	-0.00553 (0.00840)	0.00898 (0.00930)	0.0127 (0.00792)
Young Children in HH	0.00958 (0.0179)	0.00483 (0.0200)	-0.0254 (0.0215)	0.000952 (0.0204)
Observations	18,200	15,157	15,157	15,157
R-squared	0.173	0.024	0.027	0.031
State, Year & Individual FE	YES	YES	YES	YES

Notes: OLS regressions. Standard errors in parentheses clustered at the HH level.*** p<0.01,** p<0.05,* p<0.1. Dependent variables are reported at the top of each column. Regressions include year, state and HH fixed effects.

Table 9 Effect of Becoming Eligible on Saving Devices

	Fixed Int Sec	Firm Equity	Firm Sec	Zero Assets
Eligible	0.0150 (0.0103)	0.0149** (0.00676)	0.00950 (0.0127)	-0.0436** (0.0199)
Years in Germany Squared	-3.31e-05 (3.63e-05)	2.19e-05 (2.54e-05)	1.29e-06 (4.28e-05)	0.000140*** (5.23e-05)
Age Squared	1.47e-06 (2.22e-05)	-1.93e-05 (1.52e-05)	-2.16e-06 (3.27e-05)	1.65e-05 (4.40e-05)
Employed FT, In LF	0.00417 (0.00694)	0.000880 (0.00336)	0.00403 (0.00828)	-0.0781*** (0.0167)
Employed PT, In LF	-0.00496 (0.00935)	0.00182 (0.00630)	0.00778 (0.0111)	-0.0618*** (0.0218)
Years Full Time Employment	0.000811 (0.00121)	5.09e-05 (0.000657)	-0.00112 (0.00224)	-0.00589* (0.00340)
Years Part Time Employment	-0.00204 (0.00254)	-0.000996 (0.000945)	-0.00220 (0.00378)	-0.00538 (0.00592)
HH Monthly Net Income	1.33e-05*** (4.55e-06)	9.33e-06** (4.70e-06)	7.83e-06 (5.37e-06)	-3.46e-05*** (7.03e-06)
Education - Broad Categories	0.0137 (0.0198)	-0.0230** (0.0112)	0.0208 (0.0193)	-0.0617** (0.0314)
Years of Education	-0.00470 (0.00598)	0.00839* (0.00486)	-0.0146 (0.00923)	0.00613 (0.0125)
Married	-0.0122 (0.0133)	0.0215 (0.0137)	-0.00758 (0.0135)	-0.0295 (0.0310)
Num People in HH	0.000876 (0.00373)	-0.000994 (0.00224)	-0.00271 (0.00710)	0.00284 (0.00711)
Young Children in HH	-0.00815 (0.0122)	0.00760 (0.00505)	0.00779 (0.0134)	-0.00485 (0.0189)
Observations	15,157	15,157	9,620	15,157
R-squared	0.017	0.014	0.010	0.034
State, Year & Individual FE	YES	YES	YES	YES

Notes: OLS regressions. Standard errors in parentheses clustered at the HH level.*** p<0.01,** p<0.05,* p<0.1. Dependent variables are reported at the top of each column. Regressions include year, state and HH fixed effects.

Table 10 Effect of Becoming Eligible Expected or Unexpectedly on Home Ownership & Saving Devices

	Home	Bank Deposit	Mortgage SP	Life Insurance
Eligible Unexpectedly	0.0758*** (0.0287)	0.0720** (0.0295)	0.0536* (0.0322)	-0.0185 (0.0285)
Eligible Expectedly	0.0498** (0.0223)	0.0782*** (0.0282)	0.0153 (0.0293)	0.0312 (0.0287)
Years in Germany Squared	-0.000118 (7.46e-05)	-0.000107* (6.33e-05)	-0.000174** (7.07e-05)	-0.000174** (6.78e-05)
Age Squared	-0.000136*** (3.98e-05)	8.41e-06 (4.36e-05)	-7.23e-05 (5.38e-05)	-0.000123** (5.14e-05)
Employed FT, In LF	-0.0202* (0.0107)	0.0309* (0.0162)	0.0642*** (0.0169)	0.0411*** (0.0159)
Employed PT, In LF	0.00502 (0.0122)	0.0284 (0.0206)	0.0279 (0.0194)	0.0291 (0.0185)
Years Full Time Employment	0.0144*** (0.00329)	0.00439 (0.00327)	0.00258 (0.00396)	0.00801** (0.00341)
Years Part Time Employment	0.0105** (0.00466)	-0.000942 (0.00564)	0.00779 (0.00560)	0.00400 (0.00500)
HH Monthly Net Income	2.41e-05*** (5.73e-06)	3.99e-05*** (7.75e-06)	2.61e-05*** (7.99e-06)	2.95e-05*** (7.45e-06)
Education - Broad Categories	-0.00141 (0.0206)	0.00925 (0.0325)	0.0240 (0.0398)	0.0180 (0.0378)
Years of Education	-0.00558 (0.00700)	0.00767 (0.0122)	0.00724 (0.0150)	0.0128 (0.0124)
Married	0.0617*** (0.0202)	-0.0356 (0.0279)	0.0257 (0.0304)	0.0288 (0.0317)
Num People in HH	0.00916 (0.00712)	-0.00563 (0.00838)	0.00959 (0.00926)	0.0119 (0.00790)
Young Children in HH	0.00966 (0.0179)	0.00482 (0.0200)	-0.0253 (0.0215)	0.000843 (0.0203)
Observations	18,200	15,157	15,157	15,157
R-squared	0.173	0.024	0.028	0.031
State, Year & Individual FE	YES	YES	YES	YES

Notes: OLS regressions. Standard errors in parentheses clustered at the HH level.*** p<0.01,** p<0.05,* p<0.1. Dependent variables are reported at the top of each column. Regressions include year, state and HH fixed effects.

Table 11 Effect of Becoming Eligible Expected or Unexpectedly on Saving Devices

	Fixed Int Sec	Firm Equity	Firm Sec	Zero Assets
Eligible Unexpectedly	0.00848 (0.0167)	0.0228** (0.0109)	-0.0224 (0.0392)	-0.0355 (0.0261)
Eligible Expectedly	0.0221** (0.0108)	0.00646 (0.00406)	0.0107 (0.0132)	-0.0523** (0.0263)
Years in Germany Squared	-2.98e-05 (3.71e-05)	1.80e-05 (2.58e-05)	7.86e-06 (4.74e-05)	0.000136** (5.30e-05)
Age Squared	2.45e-06 (2.22e-05)	-2.04e-05 (1.55e-05)	-6.18e-07 (3.28e-05)	1.53e-05 (4.38e-05)
Employed FT, In LF	0.00430 (0.00691)	0.000719 (0.00338)	0.00403 (0.00828)	-0.0782*** (0.0167)
Employed PT, In LF	-0.00504 (0.00935)	0.00192 (0.00630)	0.00781 (0.0111)	-0.0617*** (0.0218)
Years Full Time Employment	0.000801 (0.00120)	6.30e-05 (0.000663)	-0.000885 (0.00230)	-0.00588* (0.00339)
Years Part Time Employment	-0.00205 (0.00254)	-0.000993 (0.000963)	-0.00202 (0.00377)	-0.00538 (0.00592)
HH Monthly Net Income	1.34e-05*** (4.58e-06)	9.26e-06** (4.68e-06)	7.86e-06 (5.38e-06)	-3.47e-05*** (7.03e-06)
Education - Broad Categories	0.0136 (0.0197)	-0.0229** (0.0111)	0.0210 (0.0189)	-0.0616* (0.0315)
Years of Education	-0.00483 (0.00607)	0.00856* (0.00488)	-0.0151* (0.00905)	0.00630 (0.0125)
Married	-0.0117 (0.0133)	0.0210 (0.0136)	-0.00703 (0.0135)	-0.0300 (0.0311)
Num People in HH	0.000659 (0.00381)	-0.000735 (0.00226)	-0.00271 (0.00709)	0.00311 (0.00713)
Young Children in HH	-0.00818 (0.0122)	0.00764 (0.00503)	0.00760 (0.0134)	-0.00482 (0.0189)
Observations	15,157	15,157	9,620	15,157
R-squared	0.017	0.015	0.010	0.034
State, Year & Individual FE	YES	YES	YES	YES

Notes: OLS regressions. Standard errors in parentheses clustered at the HH level.*** p<0.01,** p<0.05,* p<0.1. Dependent variables are reported at the top of each column. Regressions include year, state and HH fixed effects.

Table 12 Effect of Becoming Eligible on Propensity to Own a Private Pension Plan

	Effect of Eligibility	Effect of Years of Eligibility
Eligible	0.0871** (0.0356)	
Eligible 1 - 5 Years		0.0930** (0.0382)
Eligible 6 - 10 Years		0.0956* (0.0573)
Eligible 11 - 15 Years		0.106* (0.0620)
Eligible 16 - 20 Years		0.0580 (0.0787)
Eligible 21 - 25 Years		0.00656 (0.0950)
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Years in Germany	0.00193 (0.00504)	-3.26e-05 (0.00689)
Years in Germany Squared	-1.07e-05 (0.000104)	6.57e-05 (0.000130)
Age	0.00996* (0.00562)	0.0112** (0.00568)
Age Squared	-0.000126* (7.12e-05)	-0.000141* (7.20e-05)
Employed Full Time	0.0439** (0.0173)	0.0438** (0.0173)
Employed Part Time	0.0716*** (0.0230)	0.0712*** (0.0230)
Years FT Employment	0.000253 (0.00136)	0.000125 (0.00137)
Years PT Employment	0.00674* (0.00370)	0.00644* (0.00374)
HH Net Income	1.05e-05 (8.58e-06)	1.11e-05 (8.42e-06)
Education Category	0.0322 (0.0202)	0.0332 (0.0202)
Years of Education	-0.000991 (0.00731)	-0.00131 (0.00728)
Married	-0.00908 (0.0207)	-0.00881 (0.0207)
Num People in HH	0.00409 (0.00728)	0.00446 (0.00728)
Young Children in HH	0.0103 (0.0211)	0.0108 (0.0210)
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Observations	2,558	2,558
R-squared	0.093	0.095
State & Year FE	YES	YES

Notes: OLS regressions. Standard errors in parentheses clustered at the HH level. *** p<0.01, ** p<0.05, * p<0.1. Dependent variables are reported at the top of each column. Regressions include year & state fixed effects.