Uncertainty, Citizenship & Migrant Saving Choices

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Abstract

In most Western countries, migrants hold significantly less wealth than natives. Migrants also face significantly more uncertainty about their future. This paper examines the central role of uncertainty over citizenship prospects and future location in explaining their saving choices. Exploiting quasi-experimental variation and panel data from Germany, I show that migrants with a right to citizenship save as much as comparable natives, while migrants without this right save 30% less. This unexplained gap is closed completely when migrants in the latter group gain access to citizenship. The effect is not driven by changes in resources, but rather willingness to save. While standard theory predicts that saving increases in uncertainty, I show that the effect can reverse if utility is state-dependent, malleable, or resources are not equally accessible across states. I build a life-cycle saving model with uncertain retirement location and heterogeneous country preferences. The model shows that agents can have a "preparatory saving motive" that decreases in uncertainty. I confirm the importance of this novel motive empirically, showing that migrants become significantly more likely to invest in illiquid assets if they gain certainty about their right to stay.

JEL: J14, J15, J18, J61, H55, D81
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1 Introduction

In most Western countries, migrants hold significantly less wealth and save at lower rates than natives. The migrant wealth gap is large, more than $100,000 at the median, and is particularly pronounced with regard to housing and pension wealth (e.g. Muckenhuber et al. [2022], Porpiglia et al. [2011], Cobb-Clark and Hildebrand [2006], Bertocchi et al. [2022]). While temporary migrants save at higher rates than natives (Albert and Monras [2022], Amuedo-Dorantes and Pozo [2002]), migrants planning to stay long term save at lower rates[1]. Low wealth puts migrants who stay in the immigration country at a greater risk of poverty in old age (e.g. Bárcena-Martín and Pérez-Moreno [2017], Muñoz de Bustillo and Antón [2011]). It also reduces the economic prospects of the next generation, lowering health and education outcomes for migrant children (e.g. Aronowitz [1984], Tienda and Haskins [2011], Perreira and Ornelas [2011]).

The existing literature has been unable to fully account for this gap in savings. Migrants, on average, face more challenges in the labour market (Borjas [1985, 1987], Brell et al. [2020]) and take care financially of a larger group of dependants (Amuedo-Dorantes and Pozo [2006], De Arcangelis and Joxhe [2015]). Both factors may lower the fraction of income they can set aside to save. Yet, even after controlling for age, years spent in Germany, labour market outcomes, income, remittances, household constellation, education and even time-invariant unobserved heterogeneity via individual fixed effects, over a quarter of the migrant wealth gap remains unexplained.

In this paper, I analyse the role of uncertainty about citizenship prospects and the right to permanently reside in a country as a key determinant affecting migrants' savings rates. While uncertainty is one of the largest and most obvious difference between many migrants and natives, this dimension has been previously overlooked in the literature. Many migrants face substantial uncertainty over their right to stay, especially long-term. In the United States, 51% of non-naturalised migrants do not have a permanent right to stay, and in Germany, 61.2% of non-EU migrants do not have such a right. Furthermore, unlike natives, international migrants often have only limited information about life in the immigration country when they first arrive (McKenzie et al. [2013]), and are uncertain about how much they will enjoy living there (Gibson and McKenzie [2011]).

Understanding migrants' saving behaviour requires moving beyond standard theory. In the presence of greater uncertainty, standard intertemporal models predict an increase in savings rates due to a precautionary saving motive. These models rely on three key assumptions: first, that resources carried into the next period are equally accessible whatever state of the world is realised, second, that utility is not state-dependent, and third that utility does not evolve over time in an unpredictable manner. In the context of understanding migrants' saving choices, all assumptions are unlikely to hold. Resources accrued in one country may not be accessible in another. Further, the utility of a given amount of consumption likely depends on where it is consumed. Finally,

[1] I find that in Germany migrants who plan to stay for a minimum of 10 years save at 50% the rate of natives.

the utility derived from consumption in the immigration country likely evolves with time spent there. I term the first channel the "accessibility channel". It arises because assets can be country specific, such as illiquid saving in pension plans or housing. Some of this illiquid saving may only be accessible after paying a transaction cost when changing countries. This lowers the return to saving when future location is uncertain. The second channel, I term the "state channel". It arises because the utility migrants derive from consumption can vary with a fixed effect that governs where they prefer to live. Whenever future location is uncertain and they may not be able to live in the state they prefer, this will lower the utility migrants expect to derive from any unit of future consumption. The third channel, I term the "preference channel". It arises due to uncertainty over state preferences that will only be revealed through experience and can lower expected utility even when one's future state is secure. I characterise the three channels as generating a preparatory motive for saving that is reduced by uncertainty, offsetting the precautionary motive. Access to citizenship lowers income uncertainty (Gathmann and Keller [2018]), uncertainty over preferences (Avitabile et al. [2014]) and uncertainty over future right to stay, affecting all three channels.

I formalise the intuitive link between citizenship uncertainty and wealth accumulation in a three period life-cycle model with uncertain retirement location and heterogeneous country preferences. In the first two periods, everyone works in the immigration country and chooses how much to save and to consume. In the third period, agents retire in either the immigration or their home country, depending on their location choice and right to stay. Where an agent lives determines both their level and enjoyment of consumption. Agents can save in liquid and illiquid assets. The latter yield higher returns, but incur liquidation costs when sold, varying the saving stock and level of consumption migrants expect to access in either country. Agents also differ in their country preferences. While some derive higher marginal utility from consuming in the immigration rather than their home country, for others the reverse is true. Agents are risk averse and have to consider different sources of uncertainty in their choices. They face idiosyncratic shocks to their income and country preference plus a risk to their right to stay. With probability θ they will have to leave the immigration country in retirement regardless of their choice. Access to citizenship reduces θ to zero and decreases the variance of the income and the country preference process.

The model yields several key predictions. First, it captures the ambiguous impact of uncertainty on the saving choices of risk-averse agents. Uncertainty over future income and consumption levels increases the expected value of any additional unit of future consumption, prompting higher precautionary savings. In contrast, uncertainty over future location, access to resources or preferences decreases the effective rate of return and marginal utility agents expect to derive from any unit of consumption. This prompts them to hold lower "preparatory" savings. How the overall saving rate responds to changes in uncertainty hinges on the relative importance of both saving motives. Furthermore, the two saving motives determine which saving technologies agents use. While uncertainty over future income prompts saving in liquid assets, uncertainty over future location reduces

saving in illiquid assets. The model yields these and further testable implications, plus generalises to other contexts where agents have to make forward looking choices while uncertain over future paths.

I test the predictions of the model and the relevance of the preparatory saving motive for wealth gaps by exploiting two German reforms under which some migrants unexpectedly gained access to citizenship. Historically, Germany had a particularly restrictive citizenship regime. Until 1990, migrants had no right to citizenship. In 1990, an unexpected reform established a formal pathway to citizenship for adults and adolescents who had legally resided in the country for 15 and 8 years respectively. A second reform in 1999 reduced the residency requirements to 8 years for all migrants[2]. These reforms thus radically altered, in an unexpected way, the uncertainty migrants faced over citizenship (Gathmann and Keller [2018]). This allows me to estimate the impact of citizenship on savings without bias from changing composition of the migrant pool in response to changing citizenship regimes.

I identify the causal impact of access to citizenship on migrants' level and type of saving by using a difference-in-difference analysis with multiple control groups around the 1999 reform. Using data from the German Socioeconomic Panel (GSOEP) allows me to follow individuals over time, and limit my sample to migrants who lived in Germany before the reforms. Pre-reform, migrants without access to citizenship save less than 3% of their net income — substantially less than migrants with that right or natives who save 7% and 11.5% respectively.[3] Controlling for differences in age, income, labour market outcomes, education, household constellation and time plus individual level fixed effects narrows, but does not close the gap. While migrants with the right to citizenship become indistinguishable from natives, those without still save 30% less. That gap is entirely driven by differences in access to citizenship: I show that gaining access to citizenship causally increases the saving rate of migrants by 2.5pp — completely and permanently[4] closing the unexplained gap. The saving measure includes saving in Germany as well as abroad. The effect thus represents an overall increase rather than a shift from one country to another[5].

Next, I analyse the impact of access to citizenship on migrants' long term investments. These investments might be differentially affected depending on whether migrants became eligible expectedly, within a given citizenship regime, or unexpectedly, through a reform. I leverage the time varying, exogenous shifts in expected and unexpected eligibility and compare the behaviour of earlier and later cohorts of migrants. I find that migrants become 6pp more likely to own their home,

[2]The first reform followed a supreme court ruling on electoral discrimination while the second came on the heels of an upset electoral victory. Both were unexpected and not on the parliamentary calendar a year before.

[3]I focus on a sample of households headed by either natives or migrants from outside the EU, where non of the partners has German citizenship (and thus access to an indefinite right to stay).

[4]I follow migrants up to 15 years in the GSOEP and see no drop off in their savings rates.

[5]Indeed, I find that the increase in saving is not financed out of a decrease in transfers sent abroad, which are unchanged by the reform. I find that eligibility for citizenship reduces remittances send for the purpose of saving by 1pp. That shift appears driven by the extensive margin and implies that migrants' saving rate in Germany actually increased by about than 3.5pp.

7pp more likely to own a mortgage saving plan and 12pp more likely to own a private pension plan. They also become more likely to invest in life insurance, firm capital, own a bank deposit. This change appears not driven by an increase in the resources migrants have at their disposal. I find no changes in migrants' employment and income in response to becoming eligible for citizenship.[6] I also find no impact on credit uptake. Instead, I find evidence that migrants, in the lead up to these investments, build up liquidity through their own savings.

The results show that gaining access to citizenship does not change migrants' resources but rather their willingness to save, providing strong evidence for a preparatory saving motive that is lowered by uncertainty. The fact that investments in country specific assets such as pension plans increase the most shows that accessibility of future resources is an important factor for migrants' saving choices. Yet, since investments in country-invariant illiquid assets such as firm shares and liquid savings increase as well, it is not the only factor. Instead, it appears that access to citizenship increases migrants' general valuation of future consumption by raising the marginal utility they expect to derive from any level of future consumption.

Access to citizenship can raise the marginal utility migrants expect to derive from future consumption in two ways . First, it eliminates the risk of being asked to leave the immigration country in retirement (the state channel). Second, it can increase the attachment migrants feel to the immigration country and make them more certain over the quality of life they can expect there (the preference channel). If the preference channel is the driving force, it should affect temporary and permanent migrants alike and intentions to stay should shift upwards along the entire distribution. However, I find that migrants who want to stay short term are unaffected. Migrants planning to stay long term become more intent on doing so.[7] Furthermore, I find that only migrants from outside the EU increase their saving and investments. EU migrants, who have a secure right to stay irrespective of German citizenship, are unaffected even though they could still see their preferences changed. This suggests that uncertainty over location induced by uncertainty over right to stay is the main driver behind the observable changes.

My findings have immediate policy implications. Most factors driving the wealth inequality between migrants and natives are systemic and hard for governments to shift (for example, labour market discrimination). In contrast, governments have direct control over citizenship legislation — giving them an instrument to increase migrants' saving choices. This insight is particularly important amidst demographic change. As Western countries grow older, they increasingly reduce state pensions and require constituents to prepare for retirement privately.[8] This makes private

[6]This is in line with findings by Gathmann and Keller [2018] who find that only female migrants benefited from access to citizenship in the labour market, and only to a limited degree.

[7]Migrants who report wanting to stay in Germany "for several years" become 8pp less likely to do so. This drop is matched almost exactly by an increase in migrants saying they want to stay "indefinitely".

[8]Most 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

wealth an increasingly strong predictor of economic security in retirement, and a lack of wealth a predictor of precarity (Poterba [2014]). At the same time, many governments try to counteract the effects of their ageing workforce by attracting skilled foreign professionals (Bonin et al. [2000]). Yet, the extent to which immigration can stabilise pension systems hinges on the ability of migrants to accumulate wealth and support themselves in old age (Gustafsson et al. [2019]).

This paper contributes to several strands of literature. First, it contributes to the migration literature, specifically the strand on migrant/native wealth inequality. There is robust evidence that migrants own significantly less wealth than natives across Western countries (e.g. Borjas [1987], Cobb-Clark and Hildebrand [2006], Gibson et al. [2007], Sinning [2007], Doiron and Guttmann [2009], Bauer et al. [2011], Porpiglia et al. [2011], Halbmeier [2019], Ferrari [2020]). To explain this gap, the literature has explored systemic differences in income and remittances. Migrants tend to have lower income levels than natives due to differential labour market outcomes (e.g. Chiswick [1978], Borjas [1985, 1994], Duleep and Regets [1996, 2002], Abramitzky et al. [2012], Brell et al. [2020]). They are also more likely to remit money to their country of origin, although this is driven by temporary migrants (e.g. Galor and Stark [1990], Dustmann [1997], Amuedo-Dorantes and Pozo [2006], Rapoport and Docquier [2006], De Arcangelis and Joxhe [2015]). Yet, even when accounting for these and other factors, about a third of the gap in wealth accumulation rates remains persistently unexplained. I contribute by identifying a novel factor that explains the residual saving rate gap, and a policy measure that can close it. Furthermore, I add to the growing literature that explores how expected duration of stay shapes migrants' choices (e.g. Kirdar [2012], Nakajima [2015], Dustmann and Görlach [2016], Kovak and Lessem [2020], Adda et al. [2022], Albert and Monras [2022]).

The paper also contributes to the literature on the impact of citizenship. Most of this literature finds positive effects on migrants' social integration (e.g. Avitabile et al. [2013, 2014], Hainmueller et al. [2016, 2017a], Felfe et al. [2020]. However, it finds more muted and heterogeneous effects on labour market outcomes (e.g. Steinhardt [2012], Gathmann and Keller [2018], Hainmueller et al. [2019]. I show that access to citizenship can yield large economic gains through saving effects. I further add to the literature by examining the drivers of the impact of access to citizenship. Hainmueller et al. [2017b], Dahl et al. [2022] show that access to citizenship can impact identity concerns and mental health of migrants. I show that uncertainty over future utilities determines its dynamic effects.

Third, the paper contributes to the household finance literature. The life-cycle saving literature has robustly established that in the presence of income uncertainty, individuals save at higher rates due to a precautionary motive (e.g. Zeldes [1989], Deaton [1992], Hubbard et al. [1995], Gourinchas and Parker [2002, 2001], Parker and Julliard [2005], Low [2005], Blundell et al. [2008], Low et al. [2010], Carroll et al. [2021]). I show that the unambiguously positive impact of uncertainty on saving

and have to be accompanied by private plans.

hinges on the assumption that marginal utility derived from consumption is state independent and resources are equally accessible across states. Whenever either of the two assumptions fails, uncertainty can have a negative impact on saving by reducing incentives to shift consumption into said future. The firm and business cycle literature has shown that high levels of uninsurable "disaster risk" can discourage firms from investing (e.g. Bloom et al. [2007], Bloom [2009], Gourio [2012], Koijen et al. [2016], Gourio [2013], Bachmann and Bayer [2013]). However, these dynamics are driven by the irreversibility of investments only and rely on aggregate uncertainty measures (e.g. Guiso et al. [1996], Guiso and Paiella [2008], Baker et al. [2016]). By tracing the impact of preference and location uncertainty I contribute to the growing literature exploring personal sources of uncertainty (e.g. Low and Pistaferri [2015], Caldwell et al. [2022]).

The paper also contributes to the literature on retirement preparedness which has found pronounced heterogeneity in pension wealth (e.g. Cutler et al. [1990], Dynan et al. [2004], Scholz et al. [2006], De Nardi and Fella [2017], Crawford and O'Dea [2020]) and shown that this stems in part from differential rates of return to wealth (e.g. Benhabib et al. [2015], Fagereng et al. [2016], Cioffi [2021]). I contribute to this literature by identifying a new driver of differential returns to wealth. I further show that the pension incentive scheme of the German government exacerbates existing inequalities due to the country specificity of pension benefits. This adds to the nascent literature on the negative distributional consequences of retirement policies (e.g. Choukhmane et al. [2022]).

The rest of the paper is organised as follows: Section 2 develops the theoretical framework and derives testable predictions. Section 3 describes the empirical setting. Section 4 presents evidence on the migrant/native saving rate gap and how it is shaped by access to citizenship. Section 5 explores the different channels through which the effect could operate. Section 6 discusses the aggregate implication of the results and Section 7 concludes.

2 Theoretical Framework

Migrants have to make saving choices while accounting for different, intersecting sources of uncertainty. In the following, I develop a stylised life-cycle model with uncertain retirement location, heterogeneous country preferences and variation in access to citizenship. The model captures documented saving patterns in the migration and household finance literature. Crucially, it further allows me to derive novel, testable predictions about the forces driving these patterns. First, I detail the model set up. Then I lay out the theoretical predictions and their empirical implications. In particular, I describe how the different types of uncertainty generate both a precautionary and a "preparatory" saving motive, and how the two affect saving choices in opposite directions. All formal proofs can be found in Section A in the Appendix.

2.1 Life Cycle Model with Uncertain Retirement Location

I specify a three period life-cycle saving model, to capture migrants' decision problem. In the first two periods, the working age, all agents live and work in the immigration country.[9] In the third period, agents retire and live off their savings, either in the immigration or their home country. Where agents spend their retirement depends on both their choice as well as their legal right to stay.

Agents maximise the expected discounted sum of utility from the remaining part of their life by choosing how much to consume and save for the future, in which saving technology to invest, and where to retire. I let $s = 1$ denote when migrants decide to stay in the immigration country in retirement, and $s = 0$ if they decide to return to their home country[10]. I allow for two different types of saving technology, liquid and illiquid assets. I let b_t for $t = \{1, 2, 3\}$ denote the amount migrants save in the liquid asset which can be thought of as bank deposits. I let a_t^J for $J = \{I, H\}$ denote the amounts migrants save in illiquid assets in the immigration and their home country respectively. Those can be thought of as government sponsored pension plans for example. Finally, I let c_t^J denote the consumption levels of migrants in either country.

Agents have to take into consideration a variety of exogenous state variables when making their choices. I denote agents' attachment to their home country by η_t and their income during their working age by y_t. r_t and q_t denote the rates of return on liquid and illiquid assets, and k_t denotes liquidation costs which can be incurred through the sale of an illiquid asset. Finally, I let θ denote the (perceived) risk to migrants' right to stay.

2.1.1 Preferences

Agents derive utility solely from consumption. How much utility exactly they derive from consumption in either country $J = \{I, H\}$ in a given period $t = \{1, 2, 3\}$ is given by:

$$u_t^I(c_t^I) = \frac{(1-\eta_t)^{1-\alpha}}{(1-\alpha)} * \frac{c_t^{I\,1-\rho} - 1}{(1-\rho)}; \qquad u_t^H(c_t^H) = \frac{\eta_t^{1-\alpha}}{(1-\alpha)} * \frac{c_t^{H\,1-\rho} - 1}{(1-\rho)}. \tag{1}$$

The second component in both expressions is a standard constant relative risk aversion (CRRA) value of consumption where $\rho \geq 0$ denotes the CRRA coefficient. The first component measures how much migrants enjoy consumption in the immigration or their home country and is determined by their attachment to the latter.

I assume that migrants differ in their preference for their home vis-à-vis the immigration country. For example, they can have a different appreciation for weather conditions, friends and family networks or a country's cuisine. At the beginning of their life, migrants' attachment to their home

[9] I do not model migrants' decision to migrate. For an analysis of how this decision varies with different, expected right to stay, see Adda et al. [2022].

[10] For simplicity, I only allow for two retirement locations, the immigration and migrants' home country in this version. However, the mechanisms laid out here easily generalise to a setting with more than two country options.

country is determined through a random draw $\eta_1 \in \mathrm{U}[0,1]$. Whenever migrants' attachment to their home country $\eta_t > 0.5$, they will derive more utility from consumption in their home country than they would from consumption in the immigration country. If $\eta_t < 0.5$ the reverse is true, and if $\eta = 0.5$ they are indifferent.

Since I assume that agents are risk averse with regard to consumption, I also allow them to be risk averse with regard to their country preference and thus the effective utility they will derive from consumption. I assume that $\alpha \geq 0$. This nests the specific case where agents are risk neutral with regard to preferences. Further, I allow risk aversion over preferences to differ from risk aversion over consumption: $\alpha \lesseqgtr \rho$.[11] This nests the specific case where $\alpha = \rho$ and relative changes in preferences or consumption have the same impact on experienced utility.

This attachment is not static, but subject to idiosyncratic shocks. Having moved to a new environment, migrants may not be sure how much they will enjoy living there. Hence, unforeseeable events such as forming a friendship or having a xenophobic interaction may impact how their preference for the immigration (as well as their home country) evolve:

$$\eta_t = \eta_{t-1} - \chi + \epsilon_t \tag{2}$$

where $\epsilon_t \sim U[-\iota\lambda, \iota\lambda]$ with $\lambda = \min\{\eta_{t-1}, (1-\eta_{t-1})\}$ and $\iota \in [0,1]$. λ denotes the maximum absolute value of the shock. ι is a scaling parameter. Generally, I assume $\iota = 1$. However, when access gain access to citizenship, I allow $\iota < 1$, reducing the variance of the shocks. In a given period t, migrants are equally likely to feel more or less attached to their home country than they did in the preceding one. As η_t is bound to the unit interval, λ and thus the size of the shocks decreases in the greater the strength of an individual's country preference.[12] While this process is in line with current evidence on identify formation (Bénabou and Tirole [2011], Bhugra and Becker [2005], Hogg [2003]), all theorems and proofs hold equally in the population if I allow for asymmetric preference shocks that do not decrease in strength of attachment. Adda et al. [2022] also model heterogeneous and time variant country preferences. Unlike them, I assume that preferences stabilise the more pronounced they are. Like in Adda et al. [2022], agents' preferences determine their return intentions. Hence, uncertainty over future preferences also implies uncertainty over future location.

χ denotes a level shift in attachment. In general, I assume that $\chi = 0$ and thus that preferences do not systematically move into a specific direction. However, if agents gain access to citizenship I allow χ ¡ 0. That is, I allow access to citizenship to decrease the attachment to their home country and increase their enjoyment of consumption in the immigration country.

[11] The only condition is that whenever $\rho \geq 1$, $\alpha \geq 1$ as well, and whenever $\rho < 1$, $\alpha < 1$. This is to ensure that agents who are more attached to their home than the immigration country, prefer consumption there over the immigration country (and vice versa).

[12] The variance collapses to zero if an individual is fully certain over their attachment.

2.1.2 Resource Constraint

Migrants' choices must satisfy their intertemporal budget constraint:

$$\begin{aligned} c_1^I + a_1^I + a_1^H + b_1 &= y_1^I \\ c_2^I + a_2^I + a_2^H + b_2 &= y_2^I + (1+r)b_1 \\ c_3^I &= (1+r)b_2 + (1+q^I)(a_1^I + a_2^I) + [(1+q^H) - k^H](a_1^H + a_2^H) \\ c_3^H &= (1+r)b_2 + [(1+q^I) - k^I](a_1^I + a_2^I) + (1+q^H)(a_1^H + a_2^H) \end{aligned} \tag{3}$$

where c_t^I and c_3^H denote levels of consumption in period t in the immigration or the home country respectively. I denote by b_t, a_t^I, a_t^H the amounts held in the liquid as well as illiquid assets in the immigration and home country respectively. Finally, r and q^J for $J = \{I, H\}$ denote the rates of return to the liquid as well as the illiquid assets in either country, while k^J denotes the liquidation cost that is incurred when agents sell an illiquid asset in either country. For tractability, I do not allow agents to go into debt.[13]

Agents are able to access funds held in the liquid asset at any point during their working age or retirement. The rate of return for liquid savings is $r \geq 0$. In contrast, agents can only access the sum of their savings in the illiquid assets in retirement.[14] I assume that the rate of return is greater for illiquid savings in either country than the one on the liquid savings: $0 < r < q^J$ for $J = \{I, H\}$.

However, I also assume that illiquid assets are country specific and that they incur a transaction cost k^J when they are liquidated. The bulk of private wealth in retirement is made up of pension plans and housing wealth. Both of these asset categories require a long term commitment to be profitable. In many countries, pension plans are subsidised by the government, making them particularly profitable saving technologies. However, they also incur high liquidation penalties if individuals withdraw money prior to their retirement or draw the pension outside the subsidising country. Similarly, housing has high returns for a majority of investors (Fagereng et al. [2020]), but if the property is held for a sufficiently long time horizon. In the model, agents will only receive the full rate of return q^J on an illiquid asset if they retire in the same country where that asset is held. Whenever, upon retirement, they have illiquid savings outside of their country of residence, they have to liquidate these savings to access them. This incurs the liquidation cost k^J, meaning that their effective rate of return on these savings is not $(1 + q^J)$ but $((1 + q^J)\text{-}k^J)$[15].

In the main specification of the model, I assume that $q^I = q^H$ and $k^I = k^H$. This is to capture

[13] Empirically, access to credit does not appear to be a driver of migrants' and natives' differential saving trajectories. It is also not affected by migrants gaining access to citizenship. Hence, I capture variation in the resources migrants have at their disposal through variation in income only.

[14] This is akin to how (government sponsored) pension plans are set up in many countries where individuals are either not able to withdraw money before maturation at all (e.g. NEST pension scheme in the UK) or only under heavy monetary penalties (e.g. Riester pension scheme in Germany).

[15] Again, this is similar to the stipulations of many pension schemes. In Germany, individuals have to pay the government the sum of all tax breaks and subsidies that have received on their Riester pension savings if they move abroad in retirement and wish to access the funds.

the general case where migrants come from anywhere in the world, from sending countries which greatly vary in their financial systems and interest rates. In the general case, the differences will average out. Furthermore, since liquidation costs already introduce a wedge in effective rates of return by country, the main specification captures the primary mechanism of country specific rates of returns (and liquidation costs). The framework allows for $q^I \lesseqgtr q^H$ and $k^I \lesseqgtr k^H$ and all theorems and proofs follow. Only exact cut off values will vary.[16]

Finally, y_t^I denotes agents' income in period t. Migrants generally face higher levels of income uncertainty than natives do (Duleep and Regets [2002, 1996], Borjas [1994, 1985], Chiswick [1978]). They are more likely to be on short term contracts, earn lower wages and often have no access to secure public sector jobs. Hence, income is determined exogenously, but subject to shocks.

$$y_2^I = y_1^I + \nu_t \tag{4}$$

where $\nu_t \sim N(\mu, \sigma_y)$. In general, I assume that $\mu = 0$, and thus that there are no systematic trends in migrants income. Only if migrants gain access to citizenship, I allow income to be positively affected $\mu > 0$. This is in line with evidence from Gathmann and Keller [2018].

2.1.3 Optimisation Problem

Migrants maximise their expected lifetime utility given by the sum of discounted expected utilities in their working age and retirement:

$$\begin{aligned} \max V(c_1, c_2, c_3) \;=\; & \underbrace{u_1^I(c_1^I) \;+\; \beta\, E[u_2^I(c_2^I)]}_{\text{Working Age Utility}} \\ & +\; \beta^2 \Big(\underbrace{(1-\theta) * \max\{E[u_3^I(c_3^I; s=1)], E[u_3^H(c_3^H; s=0)]\}}_{\text{Retirement Utility in Country of Choice}} \\ & +\; \underbrace{\theta\, E[u_3^H(c_3^H; s=0/1)]}_{\text{Retirement Utility When Having to Leave}} \Big) \end{aligned} \tag{5}$$

where $0 \leq \beta \leq 1$ denotes agents' discount factor and $0 \leq \theta \leq 1$ denotes the risk to their right to stay in the immigration country in retirement. I assume that agents have rational expectations over their future income and attachment to their home country and that they observe the values of all state variables in a given period before making their choices.

With probability $(1-\theta)$ migrants are free to retire in the country of their choosing (the immigration country if they choose $s = 1$ to stay, and the home country if they choose $s = 0$ to leave). With probability θ they will have to leave the immigration country regardless of their location choice. Migrants often have only a temporary right to stay. Even if they have a permanent one, it

[16] Migrants may also face greater uncertainty over the rates of return to their investment. However, if macroeconomic shocks are uncorrelated, they may also be able to more effectively hedge against rate of return fluctuations than natives by investing in both the immigration and their home country (Dustmann [1997]).

is frequently tied to conditions such as not leaving the country for prolonged periods of time.[17] As a consequence, migrants who anticipate that in retirement they will want to stay in the immigration country due to $\mathrm{E}[\mathrm{u}_3^I(\mathrm{c}_3^I; \mathrm{s}=1)] > \mathrm{E}[\mathrm{u}_3^H(\mathrm{c}_3^H; \mathrm{s}=0)]$, have to factor into their working age saving choices in that with probability θ they will have to leave. Note, that θ can be interpreted as a perceived risk to right to stay and need not be an accurate belief.[18] In contrast, migrants intending to leave the immigration country are unaffected in their choice set.

2.1.4 Access to Citizenship

I assume that agents can gain access to citizenship at the beginning of period 1. This effects their decision problem in three ways. First, if agents gain access to citizenship, the risk they perceive to their right to stay θ reduces to 0. Second, I assume that gaining access to citizenship reduces variance in future income σ_y and can raise expectations over future income by shifting the expected value of the income shock from $\mu = 0$ to $\mu > 0$. This is in line with empirical findings that gaining access to citizenship can improve earnings prospects (Gathmann and Keller [2018], Hainmueller et al. [2019]). Third, I assume that access to citizenship reduces the variance of shocks to country preferences by reducing the scaling parameter ι. Finally, I allow for access to citizenship to increase expected attachment to the immigration country, which in this framework is equivalent to reducing attachment to the home country, lowering $\chi = 0$ to $\chi < 0$. This is in line with empirical evidence that gaining access to citizenship fosters interaction with natives and increases migrants' propensity to learn the language and engage with the culture of the immigration country (Avitabile et al. [2013], Hainmueller et al. [2017a], Gathmann and Monscheuer [2018]).

2.2 Implications

The model yields a variety of predictions about migrants' saving choices in a situation where their retirement location as well as their level and enjoyment of future consumption is uncertain. It further allows me to derive testable implications about the existence and relative importance of the different channels driving these choices. In the following, I lay out the theoretical predictions, the intuition behind them, and their empirical implications. First, I describe the model predictions with regard to the differential saving behaviour of temporary and permanent migrants, and the precautionary saving motive. These confirm findings in the migration and household finance literature respectively. Then, I describe the model predictions for the novel preparatory saving motive, as well as how to test them. All formal proofs can be found in Section A in the Appendix.

[17] The uncertainty is even more pronounced for undocumented migrants. In Germany, official statistics assume that in 2016 between 180,000 and 520,000 lived in the country without documents (Vogel [2016]). That is 0.9% - 2.8% of all direct migrants living in Germany in 2016. In the US, more than 11 million persons, almost a quarter off all direct migrants, live in the country without documents (Borjas [2017]), making this a more salient margin.

[18] May Khourshed and Méango [2021] document that refugees living in Germany overestimate the risk of having to leave Germany by 20pp.

2.2.1 Temporary and Permanent Migrants

Implication 1: *Migrants who want to stay in the immigration country only for a short period of time save at greater rates than migrants wanting to stay long term.*

In the model, there are no restrictions on migrants' ability to return to their home country.[19] Hence, every agent who derives greater utility from retiring in their home rather than the immigration country will be able to do so. All else equal, these will be agents who are relatively attached to their home country, $\eta_t > 0.5$. Absent any uncertainty, these agents will save in only the illiquid home country asset a_t^H, as this yields the highest returns for them. If there is income uncertainty, they will also save in the liquid asset in period 1 b_1 to smooth consumption in period 2. In retirement, they will always choose to follow through on their initial intention to leave as $u_3^H(c_3^H) > u_3^I(c_3^I)$ for them. For agents who are relatively more attached to the immigration country, $\eta_t < 0.5$ the same pattern holds, but they will invest in the illiquid asset in the immigration country a_t^I. For them, $u_3^H(c_3^H) < u_3^I(c_3^I)$, so they will try to stay.

Migrants with $\eta_t > 0.5$ always save more than migrants with $\eta_t < 0.5$. This is because for the former group $u_t'^H(\bullet) > u_t'^I(\bullet)$ which means that for them consumption in retirement will yield greater marginal utility than consumption during their working age — prompting them to move it into the future. The effect will be larger, the stronger migrants' attachment to their home over the immigration country is, i.e the larger $\frac{\eta_t}{(1-\eta)}$. This prediction is in line with and provides an explanation for empirical findings that temporary migrants save at higher rates than permanent ones (De Arcangelis and Joxhe [2015], Amuedo-Dorantes and Pozo [2006]).

Empirically, the model prediction holds if migrants who want to stay in the immigration country maximally for a few years save at higher rates than comparable migrants who want to stay for an indeterminate amount of time.

2.2.2 Precautionary Saving Motive

Implication 2 (Precautionary Saving Motive): *Uncertainty over future resources increases agents' propensity to save. The effect is particularly strong for liquid assets.*

Agents allocate resources to where they yield the greatest marginal utility. Under CRRA utility, marginal utility decreases in consumption levels. Consequently, uncertainty over future consumption levels increases the expected marginal utility of said consumption, prompting agents to increase saving and shift consumption into the future. Intuitively, they insure against future consumption fluctuations through saving. This is the precautionary saving motive (Carroll et al. [2021], Gourinchas and Parker [2002], Hubbard et al. [1995], Zeldes [1989]).

[19] Thus, the model does not capture the experience of displaced persons who would like to return to their home country but are unable to do so due to political persecution, conflict, or other reasons.

In this framework, uncertainty over future resources derives from uncertainty over future income y_2^I. Greater variance in income σ_y increases the propensity of agents to invest in both liquid and illiquid assets, although the positive effect is greater for liquid savings which agents can draw from in both the second and the third period. The effect is greater, the more risk averse and patient agents are, i.e. the greater γ and β. It is also greater if they intend to leave the immigration country in retirement and rises in η for this group. This is because migrants intending to leave derive higher levels of marginal utility from retirement relative to working age consumption.

Empirically, if the precautionary saving motive is the dominant one, migrants should save at higher rates than comparable natives[20]. They should hold a larger proportion of their savings in liquid assets than natives do. Controlling for differences in current and past employment should lower the (positive) gap. Finally, giving migrants access to citizenship should decrease their saving rate, with a particularly strong effect on their propensity to hold liquid assets.

2.2.3 Preparatory Saving Motive

The precautionary saving motive captures individuals' impetus to insure against undesirable fluctuations in future resources. However, individuals are commonly also motivated to save, because they want to prepare for a specific future they hope comes to be. Standard intertemporal models assume that agents' utility function is independent of state and remains the same over time. They further assume that resources saved in the present are equally accessible across future states. In such models, even if agents are uncertain over future states (e.g. over their future family status, health status, or location), this does not impact their saving choices. Yet, in reality we would expect that agents' enjoyment of consumption or their ability to draw on resources does vary with the state they find themselves in. And that they will only want to save for the future and give up present consumption, if they are reasonably certain they will be in a position to access and enjoy these savings. This is what I characterise as agents' "preparatory saving motive". Unlike the precautionary saving motive, the preparatory one decreases in uncertainty.

Empirically, migrants should save at *lower* levels than comparable natives if the preparatory saving motive exists and outweighs the precautionary one. The greater the negative residual gap, the stronger the impact of the preparatory saving motive. What is more, access to citizenship will *increase* migrants' saving rates whenever it reduces uncertainty over future utility and accessability of resources by more than it reduces uncertainty over resources. If access to citizenship strongly reduces or even closes a previously detrimental gap, this would be evidence of the preparatory saving motive being the dominant one in this context.

[20] That is, natives who differ neither in their resources (such as labour market outcomes or number of dependents), nor in their non-uncertainty related willingness to save (such as education or preferences captured through individual fixed effects).

The preparatory saving motive can arise from any of three distinct channels:

Implication 3 (State Channel): *When utility is country specific, uncertainty over future location lowers the marginal utility agents expect to derive from any level of consumption. This lowers their propensity to save across assets.*

As with the precautionary saving motive, this channel arises because agents want to shift consumption to the period and location where it yields the highest marginal utility. If agents are indifferent between countries, uncertainty over location has no bearing on the marginal utility they expect to derive from consumption in the future. However, whenever agents prefer one country over another, uncertainty over future location also means uncertainty over expected utility. Assuming that in the case without uncertainty agents will choose to retire in the location they prefer, uncertainty over location always lowers the marginal utility they expect to derive from future consumption — and thus their incentive to save. This is true even when agents are risk neutral.

In the model, the state channel derives from uncertainty over future right to stay θ. Greater uncertainty over future right to stay induced by a positive $\theta > 0$ reduces the propensity to save for agents intending to stay and does so even if $\alpha, \gamma = 0$. However, the effect is stronger, the greater α and the greater the country preference differential $\frac{(1-\eta_t)}{\eta_t}$. This is because the potential loss of future marginal utility when having to leave is more pronounced.

Empirically, if the state channel is a driving force, gaining access to citizenship should increase migrants' propensity to save across saving technologies as their overall valuation of future consumption increases. Hence, they should become more likely to save both in liquid assets such as bank deposits as well as illiquid assets such as life insurance. Furthermore, since the empirical focus of this paper is Germany, if uncertainty over future right to stay is an important factor in migrants' saving choices, then gaining access to citizenship should increase the saving rates of migrants from non-EU countries by more than it increases those of migrants from within the EU. This is because migrants in the latter group have an indefinite right to stay in Germany regardless of German citizenship.

Implication 4 (Preference Channel): *Uncertainty over the evolution of preferences, lowers the marginal utility agents expect to derive from any level of consumption. This lowers their propensity to save across assets.*

The state channel shows that whenever preferences are state dependent, undesirable uncertainty over future state reduces agents' propensity to save. However, even if future location is known to agents and shocks to their country preferences can also be positive, uncertainty over said preferences will decrease their incentives to save. When preferences evolve over time in an unpredictable manner and are only revealed with experience, the prospect of a negative preference looms larger for risk averse agents than the potential of a positive shock. Consequently, uncertainty over future

preferences lowers the marginal utility agents expect to derive from any level of level of consumption. This prompts them to shift consumption into the present.[21]

In this framework, the preference channel derives from uncertainty over future country preference η_t. Greater variance in η_t induced by a greater ι reduces the propensity to save for all agents whenever they are risk averse, $\alpha, \gamma > 0$. The effect is stronger, the greater α.

Empirically, just as for the state channel, if the preference channel is a crucial factor, gaining access to citizenship should increase migrants' propensity to save across saving technologies as their overall valuation of future consumption increases. However, unlike for the state channel, migrants from EU countries should increase their saving rates upon gaining access to citizenship if they previously saved less due to uncertainty over the evolution of their preferences. While migrants from EU countries should be unaffected in their right to stay, gaining access to citizenship should still increase their interactions with natives and experiences in the immigration country. Furthermore, if access to citizenship is seen as a sign of goodwill that increases migrants' attachment to the immigration country, this too should affect EU and non-EU migrants alike. Such a preference shock should also affect both temporary and permanent migrants, prompting an increase in the desired length of stay in the immigration country across the initial distribution of intended durations of stay.

Implication 5 (Accessibility Channel): *When assets are country specific, uncertainty over future location lowers the rates of return agents expect from investments. This lowers their propensity to save in these assets.*

If agents can access their entire savings equally regardless of the country they live in or the saving technology they use, location uncertainty has no bearing on expected rates of return or investment choices. Similarly, liquidation costs have no impact on agents' saving choices if agents are certain about their future location. However, as soon as agents are uncertain over their eventual location, liquidation costs make country specific investments partially irreversible. In expectation, this lowers their rates of return, making them a less attractive ex-ante investment.

In the model, it is optimal for agents to hold at least part of their savings in the illiquid asset of the country they intend to retire in, as this saving technology yields the highest rate of return $0 < \mathrm{r} < \mathrm{q}^J$ for $\mathrm{J} = \{\mathrm{I}, \mathrm{H}\}$. However, when future location is uncertain, the liquidation cost a move would incur lowers the rate of return agents expect on the illiquid asset. For small probabilities of switching country P(switch), agents still invest in the illiquid assest of their country of choice, albeit at lower levels. For $\mathrm{k} > \mathrm{q} - \mathrm{r}$ and medium level of P(switch), agents shift saving the liquid asset which has path independent rate of returns. For high P(switch), they shift to saving in the

[21] In that, it is also different from uncertainty over future rates of returns which can decrease saving if the substitution effect is dominant — but for a risk averse agent can also increase saving if the income outweighs the substitution effect.

illiquid asset of the country they did not initially intend to retire in.[22] For $k < q - r$, agents shift from illiquid saving in one country to that in the other as soon as they pass the probability cutoff. In general, the higher the liquidation cost k, the greater is the probability range for which agents choose to save only in the liquid asset. The exact values of P(switch) depend on agents' attachment to either country captured in η_t, their risk aversion captured in α and γ, and the ratio of the rates of return on the illiquid and the liquid asset $\frac{q}{r}$. In all cases, agents cumulative saving rate falls in uncertainty over future location, as attainable rates of return are reduced.

Empirically, if the accessibility channel is important, migrants should hold lower levels of their saving in illiquid assets such as pension plans or housing than natives do. Gaining access to citizenship should increase saving in these assets by more than it increases saving in either liquid (e.g. bank deposits) or transferable illiquid assets (e.g. firm shares). If uncertainty over future location impacts saving *only* through the accessibility channel, migrants will hold a much higher fraction of their savings in liquid rather than illiquid assets with the overall saving amount only slightly below that of natives. In this case, access to citizenship will increase saving in illiquid assets, while decreasing savings held in liquid assets.

Welfare Implications. In general, uncertainty over future income, preferences or right to stay can reduce the welfare of an individual agent by inducing an ex-ante consumption/saving allocation that will turn out to be suboptimal ex-post. If investments are partly country specific, uncertainty over right to stay can reduce individuals' welfare even more substantially. In the model, if an agent wants to retire in the immigration country, but believes that with a high probability P(switch) they will have to leave, they should invest in illiquid assets in their home country. Since these investments are partially irreversible, they lock agents into their country choice. At the beginning of their retirement in period 3, agents decide where they would like to retire by comparing the consumption utility they can attain in either country. At similar wealth levels, an agent with a strong attachment to their home country will want to return there, while an agent who prefers the immigration country will prefer to stay in the there. However, with liquidation costs there exists a cutoff wealth differential for illiquid assets held in either country $\Delta = (a_1^H + a_2^H) - (a_1^I + a_2^I)$ where if Δ is positive and large enough, even agents with a preference for the immigration country will choose to leave. In this case, the experienced utility that agents lose compared to a scenario where they had location certainty from the beginning substantially increases the ex-post welfare loss resulting from their ex-ante decisions. The exact Δ depends on agents' country preference at the time of the location decision η_3, the curvature parameters of their utility function α, γ, as well as their overall saving stock. Δ will be smaller, the larger the liquidation cost k is. The welfare loss of retiring in a less preferred country will be larger, the greater the preference differential $\frac{(1-\eta_3)}{\eta_3}$.

[22] Since shocks to country attachment η_t can be either positive or negative, the resulting P(switch) will only ever be small. In contrast, the perceived risk to right to stay θ can take any value and thus induce even a high P(switch).

3 Empirical Setting

The empirical part of this paper focuses on Germany. The country provides an ideal setting to study migrants' saving choices and how they are shaped by uncertainty about their future and the availability of a pathway to citizenship due to two intersecting natural experiments. I leverage the resulting exogenous variation to circumvent selection and composition challenges and identify the causal impact of access to citizenship on migrants' saving choices.

3.1 Institutional Context

Migration to Germany. 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%).[23] 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, compared to German born individuals, first generation migrants with foreign citizenship are less likely to have a professional or academic degree (43.2%, compared to 64.4%), are equally likely to be employed (though at lower income levels), less likely to draw a pension (9.8%, compared to 21.8%)[24] and more likely to depend on benefits (9.4%, compared to 3.0%)[25].

Germany's citizenship legislation is tied closely to the country's immigration experience. Since the second World War, the number of migrants living in Germany has continuously risen, albeit in waves. During the 1950s, millions of "Aussiedler" ("ethnic Germans" whose families were forced to flee the country during the 1930s and 1940s) returned from Eastern Europe. During the 1960s and 1970s, the German government recruited workers from Turkey, former Yugoslavia, Greece, Spain and Italy to fill low skilled labour vacancies via the so called "guest worker programme". During the 1990s, millions of individuals relocated to Germany from Eastern Europe following the disintegration of the Soviet Union and the Yugoslav war (Zimmermann [1995]). The EU enlargement in 2004[26], increased migration from new member states. Finally, since 2015, more than two million people from Syria, Iraq, Afghanistan, and Ukraine have resettled in Germany.

This illustrates two key points about the German migration experience. First, migrants differ greatly between their cohorts. For example, most "guest workers" moved from Southern Europe, towards a specific job. Most migrants who arrived during the 1990s fled a war and had no im-

[23] Table with the numbers provided by the German statistical office can be found here.

[24] This is likely in part a reflection of migrants being younger on average. However, given that migrants are on average only 5-10 years younger than natives, the observable gaps are sizeable.

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

[26] On 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.

mediate job prospects. It is crucial to carefully account for this heterogeneity in any empirical analysis. Second, while Germany has had a large migrant community for several decades, it has historically viewed the majority of these migrants as temporary ones — rather than individuals who want to permanently resettle. The guest worker programme was intended as a short term 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 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.

Legal Context. Even though Germany has had a large migrant community 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 20^{th} century and therefore did not include provisions for an individual seeking German citizenship out of their own wishes.

This changed in April 1990 when the German parliament passed the "Alien Act" ("Ausländergesetz"), which came into effect on 1^{st} January 1991. The law followed a Federal Constitutional Court ruling on immigrant voting rights[27] and established a formal naturalisation process for migrants seeking German citizenship. This meant that, for the first time, 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. 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. Adolescent migrants needed to have spend a minimum of 6 years in a German school. All migrants applying for citizenship had to demonstrate a clean criminal record, declare their loyalty to the democratic constitution of Germany and renounce their previous citizenship[28]. Finally, and crucially, the new law established age dependent residency requirements. While adult migrants aged

[27]The 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.

[28]Usually, individuals have to give up their original citizenship upon naturalisation in Germany. However, there are many exceptions to this rule. Migrants can retain several passports if their home country does not or only under exceptionally difficult circumstances allow citizens to give up their citizenship. Migrants from countries that have bilateral agreements about passport recognition such as Brazil can retain both citizenships. And migrants from EU countries can always retain their initial citizenship as long as their home country allows for multiple citizenships.

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 passed the Citizenship Act ("Staatsangehörigkeitsgesetz") which came into effect on 1^{st} January 2000. The law represented another drastic overhaul of the existing naturalisation framework: First, it reduced the residency requirements for adult migrants from 15 to 8 years. Second, 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[29]. Finally, the law granted "ethnic Germans" ("Aussiedlern") automatic citizenship upon them settling in Germany. These comparatively restrictive regulations[30] have been in place until today.

The legal changes affected several dimensions of the immigration and integration process: First, they brought about a rise in naturalisations. Prior to 1991, only about 34,000 individuals naturalised in a given year, usually following marriage to a German citizen. After the reforms, that number rose to an annual 230,000 naturalisations (Gathmann and Keller [2018]). Second, the reforms impacted migrants' labour market outcomes, albeit modestly. Gathmann and Keller [2018] find that becoming eligible for citizenship after 8 rather than 15 years improved women's employment and earning prospects, rendering them 5.6pp more likely to be employed and earn a 0.112 log point higher income. In contrast, men's employment and earnings were unaffected. Third, the reforms affected family formation, with women delaying both marriage and the birth of their first child (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]).

3.2 Identification

In general, it is difficult to identify the causal impact of citizenship or even access to citizenship due to issues of composition and strategic selection. When a country changes it's citizenship regime, this changes the attractiveness of the country for different groups of migrants. Consequently, such legal

[29]Parents 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.

[30]For 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.

changes affect both in- and out-migration and thus the composition of migrants living in a given country (Adda et al. [2022], Sajons and Clots-Figueras [2014]). Furthermore, naturalisation is not something that happens to an individual. Instead, individuals choose whether or not to seek out citizenship, meaning that those who naturalise can be systematically different from those who do not, even after accounting for observable differences. This can be true even for access to citizenship, as prospective migrants can strategically select into easier or harder access to citizenship through their choice of immigration country.

I circumvent both of these empirical challenges by combining the panel structure of my data with the unexpected, quasi-experimental variation in access to citizenship introduced by the two reforms in German citizenship law. I use data from the German Socioeconomic Panel (details in the next section). The panel structure of this dataset allows me to trace individuals and households over time and isolate within unit changes in behaviour. To shut down any compositional effects, I limit my sample to migrants who had been living in Germany prior to the legal changes. Since both reforms were unexpected — the first was brought about by a surprise court ruling and the second followed an upset electoral win — this sample restriction also means that migrants were not able to strategically select into citizenship. Migrants who moved to Germany before 2000, before their move could neither correctly predict when they would become eligible, nor how their immigration date would affect their eventual eligibility date.

To illustrate this point, think about three migrants who arrived in Germany at different points in time and at different ages: Antonio who is born in 1963 and moves to Germany in 1975, Blanca who is also born in 1963, but only moved to Germany in 1980, and Claudette who is born in 1970 and also moved to Germany in 1980. Antonio, Blanca and Claudette all moved to Germany under the assumption that they would not be able to attain German citizenship, i.e. they were not able to strategically select into citizenship. What is more, when the Alien Act passes in 1991, Antonio is 28 and has been living in Germany for 16 years, immediately becoming eligible for citizenship. Blanca is 28 years old as well, but has only been in Germany for 11 years when the law changes. Hence, she can only apply for citizenship in 1995, when her 15 years of residence are complete. Finally, while Claudette too has only lived in Germany for 11 years, she does become immediately eligible in 1991 since she is 21 when the Alien Act passes and thus falls under the adolescent scheme. Due to differences in their immigration and birth cohort, the three become eligible for citizenship at different, equally unpredictable points in time. The exact same logic applies to migrants who migrated to Germany during the 1990s, before the second reform passed. The only difference is that for them, their eligibility came unexpectedly early rather than was introduced at all. For more sample biographies, see Section B in the Appendix.

The cross variation in birth and immigration cohorts determining access to citizenship means that it is unlikely that earlier and later cohorts of migrants systematically differ — something that could be a concern in the case where eligibility is determined solely through immigration or

birth cohort. However, to ensure that changes in eligibility only capture exactly this, I also control for a rich set of observables and leverage the panel structure of the data to control for even unobservable differences with individual level fixed effects. Thus, I account for both differential cohort characteristics and the economic conditions they encountered upon arrival. 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 can be found in Section **??** in the Appendix. Consequently, conditional on a set of variables accounting for differences in observable and unobservable household characteristics, migrants who became eligible early are not systematically different from cohorts who became eligible for citizenship later. Thus, estimates of the impact of changes in eligibility for citizenship capture the causal impact of access to citizenship.

3.3 Data

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 isolate the causal impact of access to citizenship on saving choices, I need detailed information on households' financial choices 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 (i) which migrants see their right to stay significantly changed through becoming eligible and (ii) when exactly their status changes. Migrants from EU15 countries and migrants who already naturalised prior to the eligibility scheme being established (most commonly following marriage to a native) should not see their prospects of staying in Germany swayed drastically through getting access to citizenship. 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 household saving behaviour. Moreover, it collects information on both the individual and the household level[31] 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. A full description of how I construct my variables can be found in Section C in the Appendix.

[31] Every 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.

4 Causal Impact of Access to Citizenship on Migrants' Saving Rate

4.1 Empirical Strategy

I examine the impact of access to citizenship on migrants' saving choices by using a difference-in-difference analysis around the passage of the Citizenship Act in 1999. Looking at the impact of the second reform has the advantage that I can document differences in saving behaviour by access to citizenship in the pre-reform period, as well as quantify the causal impact of *gaining* access to citizenship through the difference-in-difference coefficient.

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. 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, migrants and natives might have different motivations to transfer money abroad, as well as be subject to different shocks. Hence, I also use migrants who had been in Germany for more than 15 years (or fell under the adolescent regime) and thus could apply for citizenship even before the Citizenship Act passed as a second control group. I detail the assignment to treatment and control group of the different migrants along with the identifying variation in Section D in the Appendix.

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

$$\begin{aligned} \mathrm{Y}_{it} &= \alpha + \beta * \mathrm{TreatedMig}_i * \mathrm{PostCitAct}_t + \gamma * \mathrm{ControlMig}_i * \mathrm{PostRef}_t + \theta * \mathrm{X}_{it} + \mathrm{Year}_t + \mathrm{State}_s + \mathrm{HH}_i + \epsilon_{it} \\ &= \alpha + \beta * \mathrm{TreatedMig}_i * \mathrm{PostCitAct}_t + \theta * \mathrm{X}_{it} + \mathrm{Year}_t + \mathrm{State}_s + \mathrm{HH}_i + \epsilon_{it} \end{aligned} \tag{6}$$

In the first specification, natives form the hidden category and migrants are sorted into treatment ($\mathrm{TreatedMig}_i$) and control group ($\mathrm{ControlMig}_i$) 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. The post-reform variable $\mathrm{PostCitAct}_t$ is a binary variable which goes to 1 in 1999 when the Citizenship Act passed parliament.[32] β and γ denote the difference-in-difference coefficients on the interaction of the two categories. Specifically, β is the difference-in-difference coefficient of interest which measures the effect of access to citizenship on the treated opposite the two control groups. I control for a variety of individual and household characteristics (X_{it}). First, I control for age and years spent in Germany in quadratic

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

terms. This is in addition to the household and year fixed effects, which control for birth and immigration cohort as well as the progression of time and thus the linear effect of age and and years in Germany. Second, 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. 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 and a continuous variable reflecting years of education. Fifth, I control for the marital status of the household head through a dummy variable; and the household's constellation by including variables recording the number of people and underage children living in the household. Finally, I include fixed effects for the survey year, the state a household resides 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 (saving & remittance amounts and rates) and standard errors are clustered at the household level.

While the saving and remittance measures I have available after 1992 and 1996 respectively allow me to trace the impact of access to citizenship on saving across countries and transfers sent to individuals living abroad by both migrants and natives, it does not allow me to separately examine saving abroad. However, the allocation of savings in Germany or abroad is important both in terms of political implication and shedding light onto the determinants of migrants' saving choices. Hence, I exploit a second measure of remittances that distinguishes remittances sent for different reasons: to support relatives or friends, to save and invest, or for other reasons. This measure is only available for the period from 1984 to 1995, and only for migrants. Hence, to examine whether access to citizenship had any bearing on the allocation of saving across countries, I use a second difference in difference analysis around the passage of the Alien Act in 1990. I compare migrants who became immediately eligible through the passage of the Act to those who only learned that they would become eligible at some point in the future. Specifically, I estimate the following specification:

$$\mathrm{Y}_{it} = \alpha + \beta * \mathrm{TreatedMig}_i * \mathrm{PostAlAct}_t + \theta * \mathrm{X}_{it} + \mathrm{Year}_t + \mathrm{State}_s + \mathrm{HH}_i + \epsilon_{it} \tag{7}$$

where $\mathrm{PostAlAct}_t$ denotes a binary variable that goes to 1 in the period after the Alien Act passed parliament. The set of outcomes now denoted by Y_{it} includes the set of binary variables indicating whether a migrant sent money abroad for any of the reasons laid out above, as well as the associated amounts. All other denotations retain their interpretation.

4.2 Sample

Table 1 Pre-Reform Characteristics of the Sample

	Natives	Eligible Migrants	Non-Eligible Migrants
Age	40.377	43.914	34.253
	(10.909)	(11.098)	(8.339)
Years in Germany	40.377	22.661	6.259
	(10.909)	(4.847)	(2.814)
Employed Full Time	0.794	0.827	0.631
	(0.404)	(0.378)	(0.484)
Employed Part Time	0.086	0.016	0.083
	(0.280)	(0.124)	(0.277)
Years FT Employment	16.981	21.546	8.585
	(11.430)	(11.004)	(7.178)
Years PT Employment	1.082	0.546	0.795
	(3.273)	(1.906)	(2.923)
HH Net Income	2573.878	2384.651	1636.421
	(1365.792)	(1116.160)	(629.928)
Education Category	2.084	1.362	1.802
	(0.587)	(0.761)	(0.879)
Years of Education	12.125	9.631	11.410
	(2.494)	(1.774)	(2.832)
Married	0.664	0.885	0.767
	(0.472)	(0.319)	(0.424)
Num People in HH	2.717	3.570	3.107
	(1.272)	(1.680)	(1.597)
Young Children in HH	0.423	0.526	0.678
	(0.494)	(0.499)	(0.468)
Observations	29,708	2,839	396

Notes: This table summarises the average sample characteristics during the period 1992 - 1998 taken from the GSOEP. The first column uses a sample of German natives. The second column uses a sample of migrants who are eligible for citizenship. The third column uses a sample of migrants who are not eligible for citizenship.

The sample I focus on 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, i.e. who have at least five years before reaching their legal retirement age. Furthermore, in

the main analysis, I drop households headed by migrants from EU-15 countries as individuals from these countries have a right to stay indefinitely in Germany regardless of German citizenship . 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.

Table **??** 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. Immediately, we see that the two groups differ in terms of their economic situation. Households headed by migrants not eligible for citizenship have a monthly net income that, on average, is about 1,000€ less than that of native households. The associated household heads 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. They do however have about two more years of education than migrant household heads with access to citizenship. Additionally, migrants without access to citizenship are more likely to have larger households with a greater number of underage children. This could be due at least partly to the fact that, on average, household heads without access to citizenship 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.

4.3 The Saving Rate Gap

Result 1 *Migrants save 30% less than comparable natives if they do not have access to citizenship. If they do have access to citizenship, they save on par with them.*

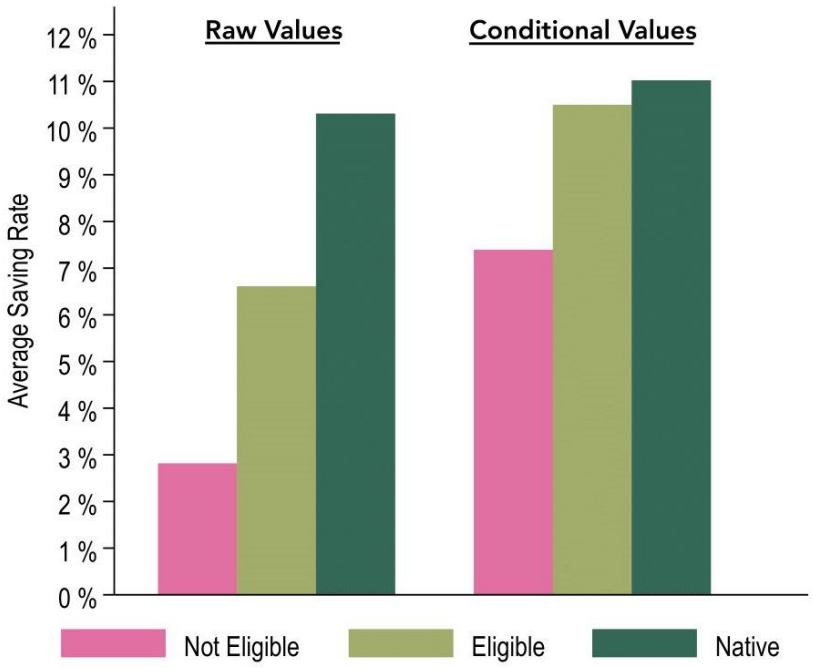
Recalling the theoretical predictions from Section 2, the first thing we need to establish about migrants' saving choices under uncertainty, is whether their choices are predominantly driven by the precautionary or the preparatory saving motive. If migrants are particularly uncertain about their future consumption levels compared to natives, they should save at higher rates. If instead uncertainty over their future location and quality of life is particularly consequential for their saving choices, they should save at lower rates. Both effects should be stronger for migrants without access to citizenship who face higher levels of uncertainty across dimensions.

Figure 1 plots saving rates of migrants with and without access to citizenship as well as natives. On the left hand side, it plots the raw saving rates, while on the right hand side, it plots the values conditional on the full set of controls. Comparing first the raw differences in saving, households headed by migrants without access to citizenship save a substantially 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. Note that the saving rate includes savings not only in Germany, but anywhere in the world.

Of course, these raw differences reflect not only differences in legal status, but other characteristics as well. Conditioning on the full set of control variables described in the preceding section, we see that migrants with access to citizenship are no longer distinguishable from natives. Similarly, the gap between migrants without access to citizenship and the other two groups shrinks. However, even conditional on differential income levels, employment in full or part time, education, marital status, age, years worked in Germany, individuals living in the household and the set of fixed effects, migrants without citizenship *still* save about 30% less than comparable natives or migrants with the right to citizenship. This provides evidence not only for the existence of the preparatory saving motive in this context, but also for it outweighing any precautionary saving concerns. Uncertainty over their future appears to stifle rather than prompt migrants to save.

Figure 1 Saving Rate Gap Pre-Reform



Notes: This figure shows the saving rate gap between three groups. The saving rate of migrants not eligible for citizenship is captured in the pink bars, that of eligible migrants is shown in the light green bars, and that of natives in depicted in the dark green bars. The first three bars on the left-hand side show raw values. The second three bars on the right-hand side show residualised values. These are calculated by regressing the saving rate onto the full set of controls as well as fixed effects described in Section **??**. All calculations use data from the GSEOP pre-1999.

4.4 Closing the Gap

Result 2 *Gaining access to citizenship causally increases the saving rate of affected migrants by 2.5pp. This fully and permanently closes the previously detrimental saving rate gap.*

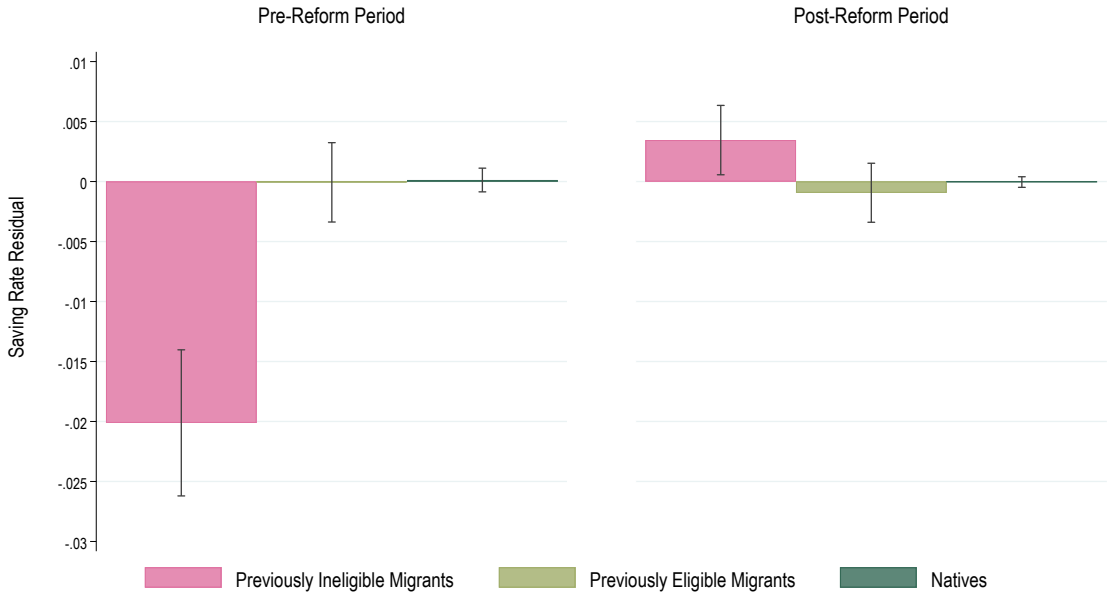
Table 2 Effect of the Citizenship Act on Saving & Remittances

	Saving Amount GER	Saving Rate GER	Remittance Amount	Remittance Rate
Migrant Treatment * Post Reform	59.35***	0.0248***	27.00*	0.00967
	(17.37)	(0.00577)	(15.19)	(0.00694)
Migrant Control * Post Reform	21.36	-0.00111	25.45**	0.0110**
	(19.84)	(0.00568)	(13.235)	(0.00614)
Years in Germany Squared	0.0632***	1.10e-05	-0.0160	-5.27e-06
	(0.0219)	(7.56e-06)	(0.0113)	(4.40e-06)
Age Squared	-0.0175	4.99e-06	0.0132	3.76e-06
	(0.0232)	(7.88e-06)	(0.0113)	(4.33e-06)
Employed Full Time	25.80**	0.0242***	1.878	0.000778*
	(10.84)	(0.00159)	(1.377)	(0.000444)
Employed Part Time	-3.255	0.00729***	1.101	0.000558
	(5.844)	(0.00161)	(1.123)	(0.000424)
Years FT Employment	-1.900	-0.000485	0.166	9.56e-05
	(1.369)	(0.000297)	(0.174)	(6.42e-05)
Years PT Employment	-1.333	3.55e-05	-0.345	-2.63e-05
	(1.738)	(0.000474)	(0.395)	(0.000136)
HH Net Income	0.140***	8.30e-06***	0.00218	-2.27e-07*
	(0.0213)	(1.43e-06)	(0.00198)	(1.23e-07)
Education Category	-7.533	0.00488*	-0.885	0.000245
	(10.94)	(0.00287)	(2.252)	(0.000854)
Years of Education	12.49***	0.00278**	0.821	0.000148
	(4.575)	(0.00109)	(0.733)	(0.000226)
Married	3.593	0.000855	1.454	0.00167
	(8.808)	(0.00190)	(2.157)	(0.00105)
Num People in HH	-46.59***	-0.00881***	-2.086	-0.000542**
	(9.766)	(0.000992)	(1.425)	(0.000230)
Young Children in HH	11.97	-0.00113	-1.908	-0.000797
	(7.820)	(0.00152)	(1.627)	(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: This table shows the effects of citizenship eligibility on saving and remittance rates using quasi-experimental variation due to the 1999 citizenship act passing the German parliament. Natives form the omitted category. Column one shows results on the level of savings, column two on the saving rate, column three on remittances levels, and column four on the remittance rate. Regressions all include state, year and household fixed effects, and are estimated by OLS. Standard errors are given in parentheses and are clustered at the household level. Stars indicate significance at standard levels: *** p<0.01,** p<0.05,* p<0.1.

Table 2 shows the results of the difference-in-difference estimation. In the post reform period, migrant households in the treatment group increase their saving rate by 2.48pp vis-à-vis natives — while the saving rate of migrant households in the control group does not change significantly. 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. Appendix section H additionally shows that these results are robust to all possible combinations of control variables and fixed effects.

Figure 2 DID Pre/Post Residual Saving Rate



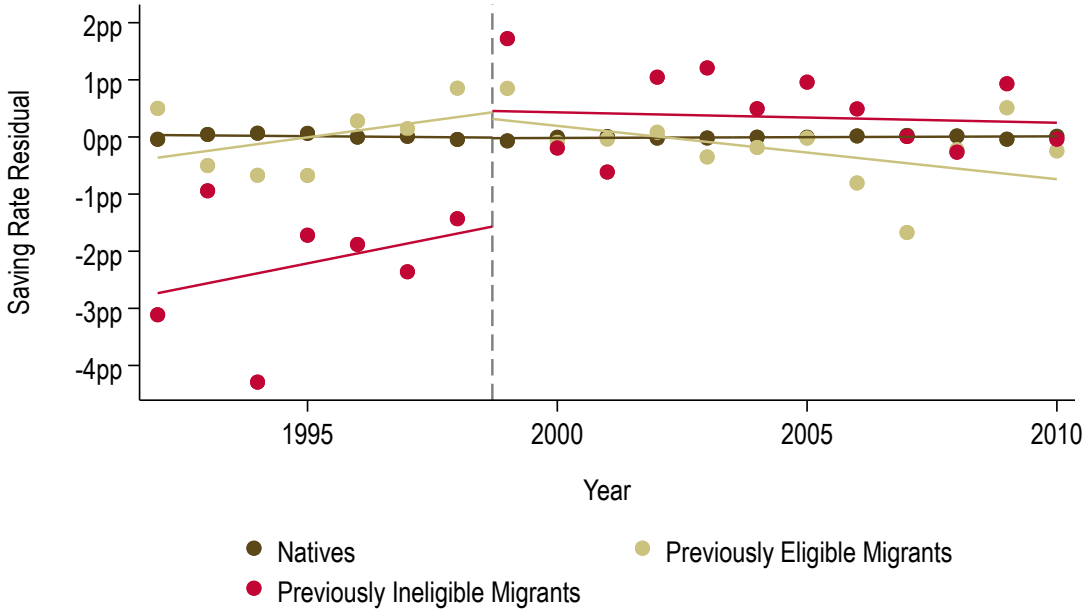
Notes: This figure shows the residualised saving rate of migrants who were not eligible for citizenship before the reform(pink), migrants who were eligible before the reform (light green), and natives (dark green) in the pre-reform (left-hand side) and post-reform (right-hand side) periods. The saving 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. Caps represent 95% confidence intervals where standard errors are calculated by clustering at the household level.

The increase in the saving rate fully closes the previously detrimental gap between migrants without access to citizenship and natives, migrants with previous access. Figure 2 illustrates this point by plotting the residual saving rate of all three groups[33] in both the pre and the post reform period. Furthermore, the increase in the saving rate represents not only a temporary spike, but rather a permanent adjustment. Figure 3 plots the development of the saving rate residual of all three groups over time. Specifically, it plots the mean saving rate residual in each year by group and

[33]To obtain the residual saving rate I regress the raw saving rate onto the full set of control variables and fixed effects laid out in section 4.1.

indicates trend lines. The graph illustrates several points. First, it highlights the parallel trends in the development of the saving rate residual in the lead up to the reform between migrants in the treatment and in the control group[34]. Second, it documents the stability of the impact of access to citizenship on saving rates. The residual saving rate of migrants who gained access to citizenship through the reform remains on par with that of natives and migrants who had access to citizenship before the reform even ten years after the reform.

Figure 3 Progression of the Mean Residual Saving Rate Over Time



Notes: This figure shows the evolution over time of the saving rate residual for migrants who were ineligible for citizenship in the pre-reform period (pink), migrants who were eligible for citizenship pre-reform (light green), and natives (green). Dots represent mean values for each group within a given year. Linear regression lines of best fit are plotted for each group allowing a break in 1999. The 1999 reform passing parliament is represented by a grey dashed vertical line. The 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.

Thinking back to the theoretical predictions, this sizeable effect has several key implications. First, it provides further evidence for the crucial role of the preparatory saving motive in this context. Access to citizenship increases migrants' saving rate even when controlling for concurrent changes in labour market outcomes and income — the two likeliest drivers of potential changes in migrants' capacity to save. In the next section, I document in further detail how neither labour market outcomes, nor credit usage are changed by migrants' gaining access to citizenship. Absent

[34]Natives' saving rate is completely flat while migrants of both groups see a slight upwards trend in their saving rate residuals — highlighting the importance of using two control groups and not merely comparing migrants to natives. The uptick could derive from the anticipation of the introduction of the Euro from 1999 to 2000. It could also reflect 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.

any changes in capacity to save brought about by gaining access to citizenship, the only way in which it can lead to a sizeable *increase* in migrants' saving rates that closes a previously negative gap, is if it lowers migrants' uncertainty over their future right to stay and the enjoyment they will derive from future consumption. The fact that gaining access to citizenship does not just decrease the residual gap but fully closes it suggests that uncertainty over future location and enjoyment derived from consumption is one of the most important channels in this setting, comparable in size to the impact of the entire income differential between migrants and natives. Furthermore, the effect shows that the impact of uncertainty is *malleable*. Providing migrants with access to citizenship appears to fully eliminate the uncertainty they feel about their future location and experienced utility — at least to the degree this uncertainty disincentives saving. That finding has important policy implications that I discuss in detail in Section 6.

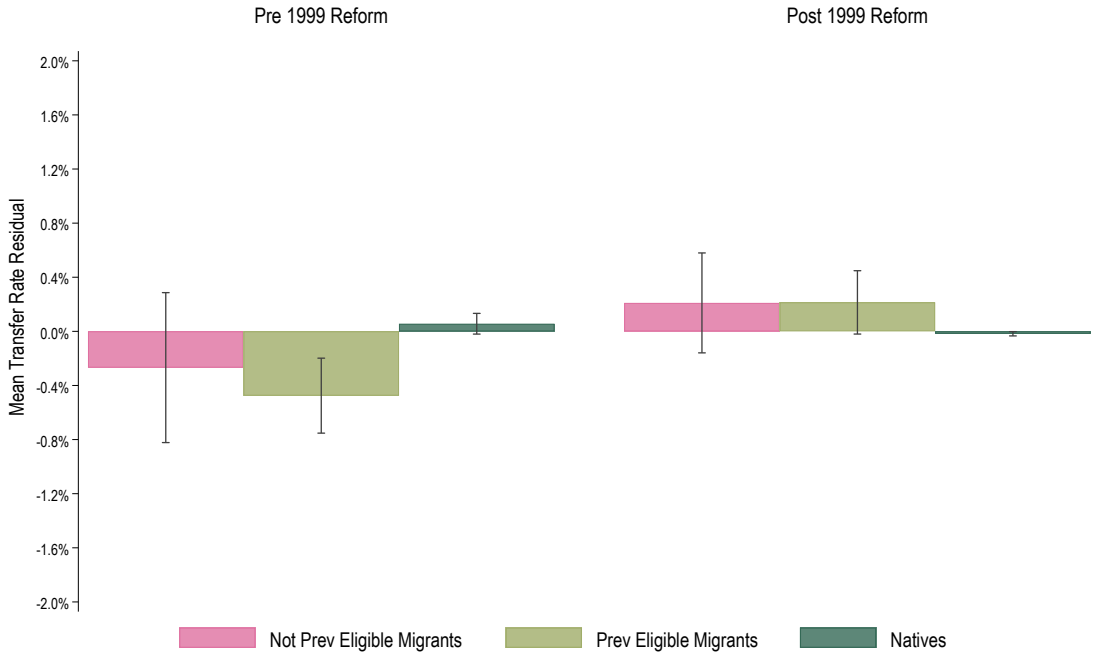
4.5 Impact on Transfers Abroad

Result 3 *Gaining access to citizenship does not affect transfers sent to individuals still residing in their country of origin.*

Table 2 as well as Figure 4 show that the transfers migrants send to individuals living abroad are not causally changed by gaining access to citizenship. While compared to natives, treated migrants increase their transfer amounts and rate slightly, the same is true for migrants in the control group. Thus, it appears that the increase opposite natives does not derive from changes in access to citizenship, but rather aggregate trends affecting migrants living in Germany regardless of their eligibility for citizenship. One likely explanation is that the introduction of the Euro changed migrants' economic calculus with transfers becoming relatively more or less expensive depending on preexisting currency differentials. This also highlights again the importance of having multiple control groups and not merely comparing migrants without access to citizenship to natives.

To test whether migrants shift their allocation of savings in the immigration country and abroad, I turn to the outcomes of the difference-in-difference analysis around the 1990 reform. Figure 9 in the Appendix plots the point estimates as well as the 95% confidence bands of the impact of gaining immediate access to citizenship relative to gaining the mere prospect of becoming eligible eventually. As before, migrants do not change their transfers to relatives, friends or other individuals living abroad. However, I do find some evidence of a slight shift from saving in the country of origin to saving in Germany. Migrants who gain immediate access to citizenship reduce their saving rate in their country of origin by about 1pp. As this variable is only available for a subset of migrants, the sample size is smaller than in the main analysis and thus the confidence bands larger. Yet this effect is still significant at the 10% level. As the main analysis identifies the impact on savings held in any country, the fact that migrants seem to reduce saving abroad by 1pp suggests that saving in Germany increased by not just 2.5pp but actually 3.5pp.

Figure 4 DID Pre/Post Residual Remittance Rate



Notes: This figure shows the residualised remittance rate for migrants who were ineligible for citizenship in the pre-reform period (pink), migrants who were eligible in the pre-reform period (light green), and natives (dark green) in the pre-reform (left-hand side) and post-reform (right-hand side) periods. The remittance 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. Caps represent 95% confidence intervals where standard errors are calculated by clustering at the household level.

As shown in Figure 10 in the Appendix, the shift is driven by the extensive margin with migrants becoming 8pp less likely to save abroad at all. Thinking back to the theoretical predictions, this suggests that migrants are not only uncertain about their future location without access to citizenship, but also that investments are, at least to a degree, country specific. I investigate this and other channels further in the next section.

5 Mechanisms

5.1 Empirical Specification

In this section, I continue testing the different theoretical predictions of the life-cycle saving model by exploring which channels explain the large impact of access to citizenship on migrants' saving rates. To this end, 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 without German citizenship who are not married to a German citizen and did not become eligible to naturalise before 1992. The main sample consists of only migrants from non-EU countries, however I also test for differential effects of EU and non-EU migrants by repeating the main analyses for a sample of households headed by EU migrants. I regress the main outcomes on a binary variable indicating eligibility as well as the full set of controls and fixed effects detailed earlier. In a second specification, I split the eligibility dummy into two binary variables indicating whether an individual 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 increase power 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. I describe the identifying variation in detail in Section E in the Appendix.

I estimate the following empirical specifications :

$$
\begin{aligned}
&\mathrm{Y}_{it} = \alpha + \omega * \mathrm{Eligible}_{it} + \theta * \mathrm{X}_{it} + \mathrm{Year}_t + \mathrm{State}_s + \mathrm{HH}_i + \epsilon_{it} \\
&\mathrm{Y}_{it} = \alpha + \delta_1 * \mathrm{EligibleExp}_{it} + \delta_2 * \mathrm{EligibleUnexp}_{it} + \theta * \mathrm{X}_{it} + \mathrm{Year}_t + \mathrm{State}_s + \mathrm{HH}_i + \epsilon_{it} \\
&\mathrm{Y}_{it} = \alpha + \eta_1 * \mathrm{Yearseli_1_5}_{it} + \eta_2 * \mathrm{Yearseli_6_10}_{it} + \eta_3 * \mathrm{Yearseli_11_15}_{it} \\
&\quad + \eta_4 * \mathrm{Yearseli_16_20}_{it} + \eta_5 * \mathrm{Yearseli_21_25}_{it} + \theta * \mathrm{X}_{it} + \mathrm{Year}_t + \mathrm{State}_s + \mathrm{HH}_i + \epsilon_{it}
\end{aligned}
\tag{8}
$$

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 becoming eligible to naturalise. δ_1 and δ_2 measure the impact of becoming eligible either expectedly or unexpectedly, and η_1, η_2, η_3, η_4 & η_5 measure the impact of

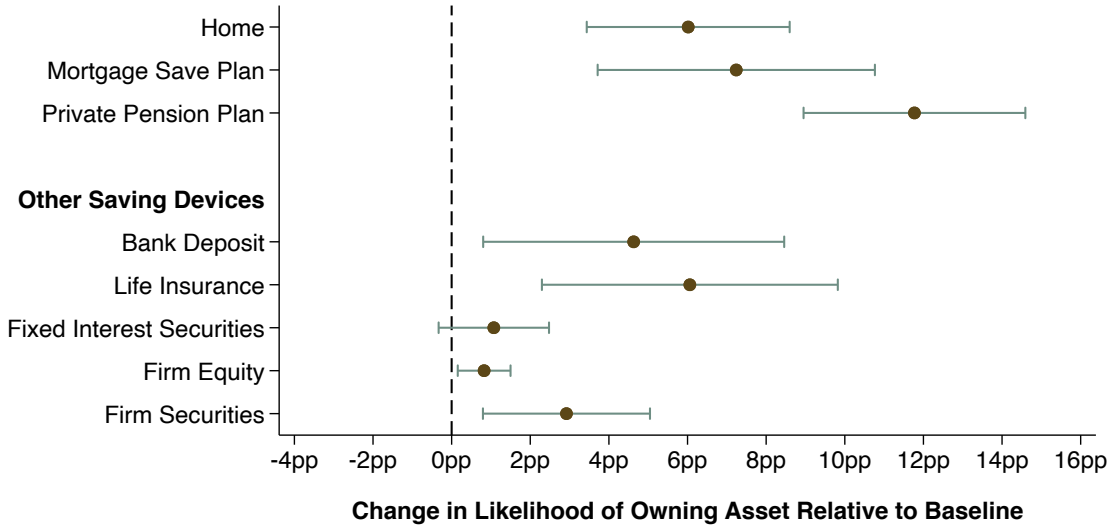
having been eligible for 1-5, 6-10, 11-15, 16-20 or 21-25 years respectively.

5.2 Long Term Investments

Result 4 *Gaining access to citizenship increases migrants' propensity to invest long term. The effect is particularly strong for illiquid, country specific assets with migrants becoming 6.5pp more likely to own their home, 7.8pp more likely to own a mortgage save plan and 12pp more likely to own a private pension plan. However, migrants also become 5pp more likely to open a bank deposit, that is to hold liquid assets.*

The increase in the saving rate following access to citizenship suggests that uncertainty over future location and utility derived from consumption is of greater consequence here than uncertainty over future consumption. If the preparatory indeed outweighs the precautionary saving motive in this context, the theory suggests that we should see not only a change in migrants' saving rate, but their means of saving as well. Specifically, migrants should increase their investments in both liquid and illiquid assets but with a greater impact on illiquid saving technologies[35].

Figure 5 Effect of Becoming Eligible on Propensity to Own Different Assets



Notes: This figure shows the causal effect of citizenship eligibility on the likelihood of owning various saving technologies. Markers represent point estimates and caps indicate 95% confidence intervals. Standard errors are clustered at the household level.

This is exactly what I find empirically. Figure 5 plots the point estimates and confidence bands of the impact of eligibility for citizenship on the propensity of migrant households to tie up capital in various devices. In response to becoming eligible to naturalise, migrant households become 6.5pp

[35]In contrast, if the precautionary saving motive were the dominant one in this context, we should see access to citizenship lead to a decrease in liquid and illiquid saving with a more pronounced impact on liquid savings

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, they become 7.8pp more likely to invest in a mortgage save plan, 12pp more likely to own a private pension plan[36], 5.2pp more likely to hold bank deposits, 6pp more likely to own life insurance, 0.8pp more likely to own firm equity, and 3.1pp more likely to own firm securities.

The fact that investments in illiquid and in particular that investments in country specific investments increase most strongly adds further evidence that the preparatory saving motive is the dominant one in this context. However, it also suggests that liquidation costs play a significant role in explaining existent saving differentials. If no assets had liquidation costs attached to them and access to citizenship would reduce uncertainty over future preferences only, the change should affect all asset classes equally. Similarly, if profitable assets were country specific with liquidation costs attached to them and uncertainty over the future would derive solely from uncertainty over future location with no bearing on preferences, we should see an increase in country specific investments financed out of a decrease in liquid savings. Only if migrants differ in their country preferences *and* saving technology is partly country specific do we see the empirical pattern we do. It also suggests that the welfare consequences of sustained uncertainty over future location can go even beyond inefficiently low saving rates. As laid out in Section 2, if liquidation costs and risk perceptions are high enough, migrants might invest in a country where they derive lower levels of enjoyment from consumption. These investment, if they are country specific, lock them into a specific path so that even if they gain certainty over their future right to stay, they would no longer be able to adjust paths without incurring prohibitive adjustment costs.

5.3 Resource Constraint

Result 5 *The increase in migrants' long term investments does not derive from an increase in resources they have at their disposal. Neither their household income, nor their labour market prospects or their credit uptake change in shift in response to becoming eligible for citizenship. Instead, access to citizenship prompts migrants to increase their savings in the lead up to investments.*

Migrants' increased propensity to invest long term after getting access to citizenship could reflect both changes in their willingness to save brought about by changes in uncertainty they encounter in their environment — or it could derive from changes in their capacity to save. Long

[36] In 2002, the German government introduced a private pension scheme (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. 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.

term investments, especially investments in housing, usually require high initial payments. If access to citizenship increases either migrants' income, most likely through improved labour market outcomes, or their access to credit, this could relax liquidity constraints they may have faced before and drive the increase in their propensity to invest. However, this is not what I find empirically. Table 4 in the Appendix Section F reports the full results of regressing credit amounts being owed by a household in a given month, an indicator of having taken out any credit, household income, and an indicator for being in full time employment on the full set of controls. I find that becoming eligible for citizenship has no significant impact on either outcome.

Instead, it appears that migrants build up liquidity through increased saving in the lead up to lumpy investments once they gain a reasonably secure pathway to citizenship. Figures 11 and 12 in the Appendix Section G plot migrants' saving and investment choices in response to becoming eligible for citizenship separately by expected and unexpected access to citizenship. We see that while the increase in saving rate is driven almost exclusively by unexpected changes in access to citizenship, the impact on long term investments appears most pronounced for expected changes. This combination, in combination with the fact that eligible migrants do save higher fractions of their income in Germany, suggests anticipatory effects. Specifically, it seems as though migrants increase their saving rate not just once they become eligible, but as they approach eligibility. These anticipatory effects appear to only be of consequence close to the actual eligibility date, which is why an unexpected reduction in residency requirements can still have such a consequential effect. If more predictable changes in eligibility would allow migrants to build up more liquidity in anticipation, this would explain why the impact of eligibility on investments with high initial fixed costs such as housing are more pronounced for expected eligibility — in a situation where their capacity to save does not appear to be shifted by better income or credit access. However, the impact of expected eligibility on long term investments also highlights that migrants, even if they have built up sufficient liquidity, still hold off on consequential investments until they are *actually* certain about their future prospects.

Finally, the importance of building up liquidity over time is captured in Figure 13 in the Appendix Section G , which plots the impact of having been eligibility for different length of time on the probability of migrant households' owning their home. I find that the impact is strongest 6-10 years after gaining access to citizenship.

All of these findings underline the importance of the preparatory saving motive in this context. Gaining access to citizenship does not change the resources migrants have at their disposal. Instead, the empirical changes in their saving behaviour are in line with what theory predicts for the case where migrants face high levels of uncertainty about their future enjoyment of consumption in the immigration country as well as their right to stay and this uncertainty is lowered by giving them access to citizenship. The only remaining question is which of the two sources of uncertainty is driving the results.

5.4 Uncertainty over Preferences or Right to Stay

Result 6 *Neither EU migrants, nor temporary migrants are affected in their saving behaviour when gaining access to citizenship. Thus, the observable changes are driven by changes in uncertainty over future right to stay, rather than preferences.*

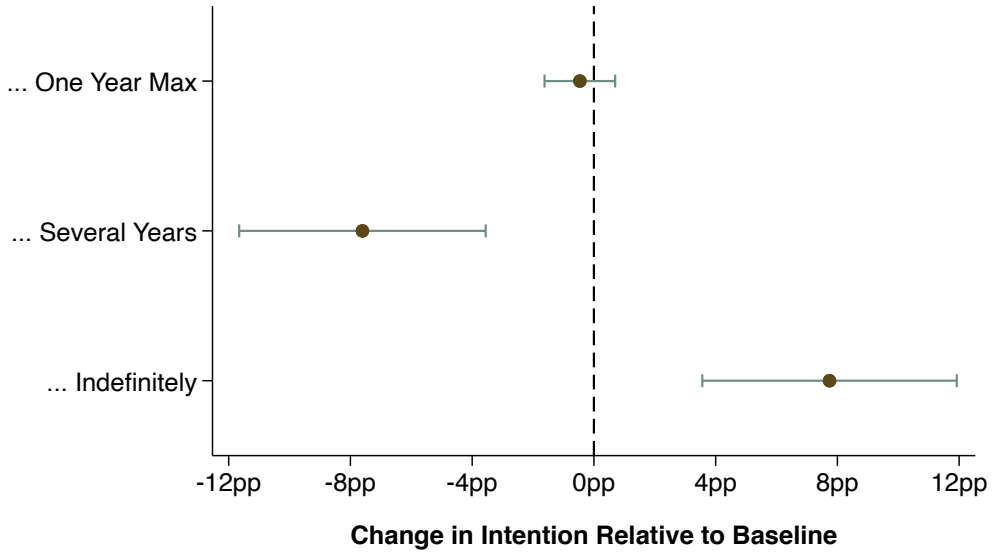
The evidence suggests that migrants increase their saving and long term investments in response to gaining access to citizenship because it lowers their uncertainty over the utility they will derive from consumption in the future, prompting risk averse agents to shift consumption forward. However, this change in uncertainty over future utility could derive from one of two sources. For one, it could be that migrants are uncertain about their future attachment to and preference for either country, and that access to citizenship lower this uncertainty through providing them with information about the quality of life they can expect in the immigration country. It could even be that access to citizenship is seen as a sign of goodwill that increases attachment to the immigration country. Both would lower uncertainty over future location by rendering migrants more certain over where they would *like* to retire. Or, it could be that migrants are uncertain over their future right to stay. Since the country migrants live in determines their enjoyment of consumption this too would translate into uncertainty over future utility. However, in this case the effect of uncertainty would work through reducing uncertainty over where migrants will be *allowed* to retire.

If the first channel is the decisive one, we should see migrants who have a secure right to stay be as affected by gaining access to citizenship as those who do not. That is, we should see a similar effect of access to citizenship on migrants who moved to Germany from an EU country and thus have a secure right to stay regardless of German citizenship, and migrants who moved there from outside the EU. This is not what I find empirically. Figure 15 in the Appendix Section G plots the results of the same regression of long term investments on eligibility as before, only for the sample of EU migrants. None of the investments are significantly affected. The same is true for their saving choices, which are plotted in Figure 14 in the Appendix Section G, although the small sample size in that particular case makes it hard to gauge exact effect sizes.

The non-effect of access to citizenship on EU migrants suggests that neither uncertainty over future country preference, nor a shift in preferences is driving the saving result, and that instead the results are driven by uncertainty over future location due to right to stay. An additional test, is to analyse the impact of access to citizenship on the intentions to stay of migrants. If access to citizenship brought about a shift in migrants' preferences, this should affect temporary and permanent migrants alike. That is, we should see intentions to stay shift upwards along the entire distribution. Yet again this is not what I find in the data. Figure 6 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. 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). It seems as though migrants adjust their plans to stay in Germany only if they were already planning to stay long term.

Figure 6 Effect of Becoming Eligible on Intention to Stay



Notes: This figure shows the effects of citizenship eligibility on migrants' intention to stay. Graph shows treatment effects from specification 1 detailed in Section 5.1. Markers represent point estimates and caps represent 95% confidence intervals. Standard errors are calculated by clustering at the household level.

Finally, table 5 in the Appendix Section F shows the impact of becoming eligible for citizenship on measures of feeling German and disadvantaged due to one's origin. Neither of the two dimensions are affected. Furthermore, worries about employment or one's future economic situation at large also do not change. This adds further credence to the interpretation that access to citizenship does not operate through shifts in income uncertainty and thus precautionary saving. Instead, the evidence suggests that the positive impact of access to citizenship on migrants' saving choices derives from a decrease in uncertainty about their future right to stay which translates into uncertainty over their location and thus both the marginal utility they can expect to derive from consumption in retirement as well as the extent to which they will be able to access resources. Gaining that certainty makes them more willing to give up consumption in the present to prepare for the future they now have good reason to hope will come to pass.

5.5 Direct Evidence from Interviews

The reduced form findings provide strong evidence for the existence and importance of the preparatory saving motive in the context of migrant saving choices. However, as for all revealed preference analyses, the interpretation relies on a correct grasp on all the constraints guiding migrants' saving choices. To make sure that I account for all relevant dimensions of their decision problem, I have conducted semi-structured focus group interviews with 26 migrants living in different parts of Germany. The interviews provide me with direct information on migrants' economic situation, beliefs, preferences and subsequent plans for the future. In the following, I briefly sketch the characteristics of the interviewees, the recruitment strategy and the main themes that emerged in the interviews. A detailed description of the set of questions, the recruitment procedure and interview summaries are available from the author.

The migrants I interviewed all had a direct migration experience and moved to Germany at different points in between 1997 and 2022. They were aged between 23 and 54 years at the time of the interview. The countries of origin included Afghanistan, Bulgaria, Brazil, Egypt, India, Iraq, Kazakhstan, Lebanon, Macedonia, Peru, Russia, Syria, Taiwan, Thailand, Ukraine and Vietnam. 9 out of the 26 interviewees arrived in Germany as refugees. 18 of the interviewees were married, and 14 had children under the age of 18 living with them. 14 interviewees were employed full time, 5 were employed part time, 1 was studying full time, and 6 were not in the labour force with 5 of them working in the house and taking care of children full time. I recruited the interviewees by cooperating with the network of adult learning centres ("Volkshochschulen", VHS) that administer the official German language and integration courses. Schools across Northrhine-Westphalia and Berlin sent out invitations to participate in the interviews to migrants who were enrolled in any of their courses. German language as well as integration courses are mandatory for most migrants living in Germany, decreasing selection bias.

There were three main themes that emerged from the interviews. First, uncertainty over their future right to stay and location loomed large in individuals' minds. 20 out of 26 interviewees told me a that they had held off on or were still holding off on long term investments either in Germany or their home country because they did not know for certain where they would live long term. 14 individuals said that this uncertainty derived at least in part from them not having a permanent right to stay or access to citizenship. 8 out of 11 interviewees who had invested in a house or a pension plan in Germany by the time of the interview said they had waited until at least one person in their household had obtained German citizenship.

Second, entrepreneurship is an important dimension when analysing the saving choices of displaced individuals in particular. 6 out of the 9 individuals with refugee experience I interviewed reported challenges in having their degrees recognised in Germany and finding employment. Hence, a majority of them tried to become self employed and open their own businesses. The subsequent

investments they described were as country specific as any investment in housing or pension plans. However, they were also seen as non-optional by the interviewees who wanted to work and independently support their families financially. Hence, even though 5 of the interviewees in this group said they held off on other country specific investments due to uncertainty over the future, they still invested in overwhelmingly specific business capital. Refugees only make up a small minority of migrants in my GSOEP sample. Therefore, this dimension has little bearing on observable saving patterns in the reduced form. However, even there I find an increase in investments in firm capital as migrants gain access to citizenship.

Finally, access to credit is an important constraint on migrants' investments if they do not have a right to stay long term. 13 interviewees described challenges in making investments in assets such as vehicles, business capital or housing, due to an inability to obtain a loan on acceptable terms. In all cases, this was due to these interviewees not having a right to stay in Germany for more than 6 years when they applied for a loan. In Germany, the duration of a loan agreement is capped by the number of years, migrants have a right to stay in the country for by the time of their application. This means that migrants with an initially temporary right to stay will have to pay much higher rates of return on any loan they apply for than comparable natives. However, this effect is tied to the length of a migrants' right to stay, *not* their access to citizenship. In my main analysis, a majority of migrants have resided in the Germany long enough to have secured a long term right to stay, albeit one that is usually tied to employment and does not extend into retirement. Hence, in the reduced form analysis, credit uptake is not sigificantly affected by gaining access to citizenship. However, it does highlight an important dimension to examine going forward.

6 Aggregate Implications

This paper shows that migrants without access to citizenship save significantly less than natives and migrants *with* the right to citizenship. This residual gap can be closed completely by granting migrants easier access to citizenship, a change that is accompanied by a higher propensity to invest in housing as well as private pension plans in Germany specifically. These assets tend to make up the majority of individuals' retirement wealth (Poterba et al. [2011]) and have particularly high rates of return, granted that individuals can keep them to maturity (Choukhmane et al. [2022]). Thus, the observable changes imply that migrants will accumulate higher levels of retirement wealth when given access to citizenship. This effect is a particularly important amidst demographic change.

In Germany, more than 20% of the population are currently 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%. Other Western countries face similar prospects. The impact of this process is expected to be so pronounced that Angela Merkel

has declared demographic change to be one of the greatest force for "change in our social life as well as the personal lives of each individual in the first half of the 21. century".[37] In response, Germany, like many other Western countries, increasingly requires citizens to prepare for retirement privately, transitioning out of a fully funded and into a three pillar pension system. As a result, private wealth becomes an increasingly important predictor of precarity in old age. The substantial positive impact of access to citizenship on migrants' wealth accumulation rates, therefore significantly reduces their personal risk of poverty in old age. However, do these individual gains have aggregate implications for public spending as well?

If migrants choosing to stay in Germany will have a higher wealth stock by the time they retire, they are 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 a non-German 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 2011, 12.7% of foreign citizens over the age of 65 living in Germany received "basic security in old age" transfer payments, compared to only 2% among German senior citizens Seils [2013]. That is 268,000 individuals. Amidst demographic and pension changes, this number has been steadily rising. In 2019, 33.14% of foreign citzens over the retirement age were at the risk of poverty in Germany, compared to 13.2% of senior citizens with a German passport.[38]. This hints at the potentially large gains that can be made from granting migrants access to citizenship more swiftly.

From the perspective of the host society, another take away from the findings could be that migration should be limited to temporary migration. This is something the German government tried during the 1950s and 1960s with the "guest worker programme" where they recruited workers from Southern European states to come work in Germany for a set period of time. However, even though the programme was intended to be temporary, many migrants decided to stay in the Germany and over time moved their families over as well. Even though the German government stopped the

[37] Original transcript of the speech given at the "Demograhic Summit can be found here.
[38] Numbers taken from the German statistical office.

programme in the 1970s and in the 1980s began to financially incentivise return migration, the number of migrants from Southern Europe working in Germany remained stagnant or, in the case of Turkish migrants for example, increased (Bundesanstalt für Arbeit [1990]). The historical experience suggests that it is difficult to limit the duration of stay of migrants once they settle in a country. Furthermore, 36.5% of all direct migrants living in Germany have an EU passport. Thus, they have a permanent right to stay regardless of national legislation.

Finally, Germany, where in 2022 about 850,000 positions on average could not be filled due to a lack of workers[39], *needs* more migration to stabilise its workforce. And restrictive right to stay legislation makes a country a less attractive destination. Hence, it becomes ever more important to design immigration policy in a way that both makes a country an attractive destination for skilled foreign professionals — and enables long term economic and social integration. In recognition of this, the German government under Angela Merkel passed the "Skilled Immigration Act" in March 2020 which speeds up the recognition of foreign degrees as well as German language lessons among other things. And the current government under Olaf Scholz is planning to reduce residency requirements for naturalisation from 8 to 5 years within this legislative cycle.

7 Conclusion

In this paper, I show that uncertainty over their future right to stay depresses migrants' saving rates, and that this effect can be remedied by giving them access to citizenship. Migrants without access to citizenship save 30% less than comparable natives and migrants with a right to citizenship. This residual gap is closed completely when migrants gain access to citizenship which increases their saving rate across countries by 2.5pp. Ten years out, treated migrants still save on par with natives and other migrants. They do not decrease the transfers they send to family and friends living abroad, but some treated migrants shift savings from their home to the immigration country.

The increase in migrants' saving rates derives from the greater level of certainty they have over their future location. While standard economic theory predicts that saving increases in uncertainty over the future, I show that this prediction hinges on three implicit assumptions: that utility is state-independent, does not change over time in an unpredictable manner, and that resources are equally accessible in any future state of the world. These assumption are unlikely to hold for migrants. I specify a life cycle saving model with uncertain retirement location and heterogeneous country preferences. The model predicts that uncertainty can decrease migrants' propensity to save whenever (i) they are uncertain about their future location and investments are partly country specific, (ii) they are uncertain about their future location and prefer living in one country over another, or (iii) they are uncertain about the evolution of their country preferences. I characterise these three channels as generating a "preparatory saving motive" which decreases in uncertainty.

[39] Number taken from the German statistical office.

I then take the model to the data and test its predictions empirically. I find that migrants become more likely to invest in both liquid and illiquid assets upon gaining access to citizenship with a particularly strong effect on country specific investments in housing and pension plans. This increase does not stem from an increase in the resources migrants have at their disposal as neither their income nor their credit uptake rises. Instead, migrants save up to make these investments. Finally, the results are driven by migrants from non-EU countries and those who plan to stay long term. These results show that out of the three possible channels, the first two are empirically important in this context.

The findings of this paper have important conceptual implications. There are many situations in which individuals have to make forward looking choices without knowing either in which future state they will find themselves in or to which degree they will be able to access resources or enjoy consumption in this state. For example, this will be true whenever individuals are uncertain about their future family status, health status or the location they will live in. In all of these situations, individuals may have less incentive to save or even work due to a lower preparatory saving motive. This is an important insight for understanding dynamic choice under uncertainty.

Finally, the findings have immediate policy implications. Migrants hold substantially less wealth than natives in most Western countries and are at a greater risk of poverty in old age than natives. This inequality is set to increase amidst demographic change as private saving becomes an ever more important predictor of economic security in old age. Most factors shaping the wealth gap are systemic and hard for policy makers to change, for example labour market challenges or differential household constellations. In citizenship legislation, this paper identifies a novel factor under direct government control which can decrease differences in migrants and natives wealth accumulation rates. This is an important insight for governments trying to organise immigration in a way that allows migrants as well as the host society to thrive long term.

References

Ran Abramitzky, Leah Platt Boustan, and Katherine Eriksson. Europe's Tired, Poor, Huddled Masses: Self-Selection and Economic Outcomes in the Age of Mass Migration. *American Economic Review*, 102(5):1832–56, 2012.

Jérôme Adda, Christian Dustmann, and S Görlach. The Dynamics of Return Migration, Human Capital Accumulation, and Wage Assimilation. *The Review of Economic Studies*, 2022.

Christoph Albert and Joan Monras. Immigration and Spatial Equilibrium: The Role of Expenditures in the Country of Origin. *American Economic Review*, 112(11):3763–3802, 2022.

Catalina Amuedo-Dorantes and Susan Pozo. Precautionary Saving by Young Immigrants and Young Natives. *Southern Economic Journal*, pages 48–71, 2002.

Catalina Amuedo-Dorantes and Susan Pozo. Remittances as Insurance: Evidence from Mexican Immigrants. *Journal of Population Economics*, 19(2):227–254, 2006.

Michael Aronowitz. The Social and Emotional Adjustment of Immigrant Children: A Review of the Literature. *International Migration Review*, 18(2):237–257, 1984.

Ciro Avitabile, Irma Clots-Figueras, and Paolo Masella. The Effect of Birthright Citizenship on Parental Integration Outcomes. *The Journal of Law and Economics*, 56(3):777–810, 2013.

Ciro Avitabile, Irma Clots-Figueras, and Paolo Masella. Citizenship, Fertility, and Parental Investments. *American Economic Journal: Applied Economics*, 6(4):35–65, 2014.

Rüdiger Bachmann and Christian Bayer. 'Wait-and-See' Business Cycles? *Journal of Monetary Economics*, 60(6):704–719, 2013.

Scott R Baker, Nicholas Bloom, and Steven J Davis. Measuring economic policy uncertainty. *The Quarterly Journal of Economics*, 131(4):1593–1636, 2016.

E Bárcena-Martín and S Pérez-Moreno. Immigrant – Native Gap in Poverty: A Cross-National European Perspective. *Review of Economics of the Household*, 15(4):1105–1136, 2017.

Thomas K Bauer, Deborah A Cobb-Clark, Vincent A Hildebrand, and Mathias G Sinning. A Comparative Analysis of the Nativity Wealth Gap. *Economic Inquiry*, 49(4):989–1007, 2011.

Roland Bénabou and Jean Tirole. Identity, Morals, and Taboos: Beliefs as Assets. *The Quarterly Journal of Economics*, 126(2):805–855, 2011.

Jess Benhabib, Alberto Bisin, and Shenghao Zhu. The Wealth Distribution in Bewley Economies with Capital Income Risk. *Journal of Economic Theory*, 159:489–515, 2015.

Graziella Bertocchi, Marianna Brunetti, and Anzelika Zaiceva. The Financial Decisions of Immigrant and Native Households: Evidence from Italy. *Italian Economic Journal*, pages 1–58, 2022.

Dinesh Bhugra and Matthew A Becker. Migration, Cultural Bereavement and Cultural Identity. *World Psychiatry*, 4(1):18, 2005.

Nicholas Bloom. The Impact of Uncertainty Shocks. *Econometrica: Journal of the Econometric Society*, 77(3):623–685, 2009.

Nick Bloom, Stephen Bond, and John Van Reenen. Uncertainty and Investment Dynamics. *The Review of Economic Studies*, 74(2):391–415, 2007.

Richard Blundell, Luigi Pistaferri, and Ian Preston. Consumption Inequality and Partial Insurance. *American Economic Review*, 98(5):1887–1921, 2008.

Holger Bonin, Bernd Raffelhüschen, and Jan Walliser. Can Immigration Alleviate the Demographic Burden? *FinanzArchiv/Public Finance Analysis*, pages 1–21, 2000.

George J Borjas. Assimilation, Changes in Cohort Quality, and the Earnings of Immigrants. *Journal of Labor Economics*, 3(4):463–489, 1985.

George J Borjas. Self-Selection and the Earnings of Immigrants, 1987.

George J Borjas. The Economics of Immigration. *Journal of Economic Literature*, (32):1667–717, 1994.

George J Borjas. The Earnings of Undocumented Immigrants. Technical report, WSI-Mitteilungen 5/2013, 2017.

Courtney Brell, Christian Dustmann, and Ian Preston. The Labor Market Integration of Refugee Migrants in High-Income Countries. *Journal of Economic Perspectives*, 34(1):94–121, 2020.

. Bundesanstalt für Arbeit. Sozialversicherungspflichtig beschäftigte Ausländer nach ausgewählten Staatsangehörigkeiten (ohne Beitrittsgebiet) 1954 bis 1990 im Bundesgebiet. Technical report, Amtliche Nachrichten der Bundesanstalt für Arbeit, 1990.

Sydnee Caldwell, Scott Nelson, and Daniel C Waldinger. Tax Refund Uncertainty: Evidence and Welfare Implications. *Chicago Booth Research Paper*, (21-06):2021–18, 2022.

Christopher D Carroll, Martin B Holm, and Miles S Kimball. Liquidity Constraints and Precautionary Saving. *Journal of Economic Theory*, 195:105276, 2021.

Barry R Chiswick. The Effect of Americanization on the Earnings of Foreign-Born Men. *Journal of Political Economy*, 86(5):897–921, 1978.

Taha Choukhmane, Jorge Colmenares, Cormac O'Dea, Jonathan Rothbaum, and Lawrence Schmidt. Who Benefits from Retirement Saving Incentives in the US? Evidence on Racial Gaps in Retirement Wealth Accumulation. *Working Paper*, 2022.

Riccardo A Cioffi. Heterogeneous Risk Exposure and the Dynamics of Wealth Inequality. 2021.

Deborah A Cobb-Clark and Vincent A Hildebrand. The Wealth of Mexican Americans. *Journal of Human Resources*, 41(4):841–868, 2006.

Rowena Crawford and Cormac O'Dea. Household Portfolios and Financial Preparedness for Retirement. *Quantitative Economics*, 11(2):637–670, 2020.

David M Cutler, James M Poterba, Louise M Sheiner, Lawrence H Summers, and George A Akerlof. An Aging Society: Opportunity or Challenge? *Brookings Papers on Economic Activity*, 1990(1): 1–73, 1990.

Gordon B Dahl, Christina Felfe, Paul Frijters, and Helmut Rainer. Caught Between Cultures: Unintended Consequences of Improving Opportunity for Immigrant Girls. *The Review of Economic Studies*, 89(5):2491–2528, 2022.

Giuseppe De Arcangelis and Majlinda Joxhe. How do Migrants Save? Evidence from the British Household Panel Survey on Temporary and Permanent Migrants Versus Natives. *IZA Journal of Development and Migration*, 4(1):11, 2015.

Mariacristina De Nardi and Giulio Fella. Saving and Wealth Inequality. *Review of Economic Dynamics*, 26:280–300, 2017.

Angus Deaton. *Understanding Consumption*. Oxford University Press, 1992.

Denise Doiron and Rochelle Guttmann. Wealth Distributions of Migrant and Australian-Born Households. *Economic Record*, 85(268):32–45, 2009.

Harriet Orcutt Duleep and Mark C Regets. Earnings Convergence: Does It Matter Where Immigrants Come From Or Why? *The Canadian Journal of Economics/Revue Canadienne d'Economique*, 29:S130–S134, 1996.

Harriet Orcutt Duleep and Mark C Regets. The elusive concept of immigrant quality: Evidence from 1970-1990. *Available at SSRN 003129*, 2002.

Christian Dustmann. Return Migration, Uncertainty and Precautionary Savings. *Journal of Development Economics*, 52(2):295–316, 1997.

Christian Dustmann and Joseph-Simon Görlach. The Economics of Temporary Migrations. *Journal of Economic Literature*, 54(1):98–136, 2016.

Karen E Dynan, Jonathan Skinner, and Stephen P Zeldes. Do the Rich Save More? *Journal of Political Economy*, 112(2):397–444, 2004.

Andreas Fagereng, Luigi Guiso, Davide Malacrino, and Luigi Pistaferri. Heterogeneity in Returns to Wealth and the Measurement of Wealth Inequality. *American Economic Review*, 106(5):651–55, 2016.

Andreas Fagereng, Luigi Guiso, Davide Malacrino, and Luigi Pistaferri. Heterogeneity and Persistence in Returns to Wealth. *Econometrica: Journal of the Econometric Society*, 88(1):115–170, 2020.

Christina Felfe, Helmut Rainer, and Judith Saurer. Why Birthright Citizenship Matters for Immigrant Children: Short- and Long-Run Impacts on Educational Integration. *Journal of Labor Economics*, 38(1):143–182, 2020.

Irene Ferrari. The Nativity Wealth Gap in Europe: a Matching Approach. *Journal of Population Economics*, 33(1):33–77, 2020.

Oded Galor and Oded Stark. Migrants' Savings, the Probability of Return Migration and Migrants' Performance. *International Economic Review*, pages 463–467, 1990.

Christina Gathmann and Nicolas Keller. Access to Citizenship and the Economic Assimilation of Immigrants. *The Economic Journal*, 128(616):3141–3181, 2018.

Keller Nicholas Gathmann, Christina and Ole Monscheuer. Citizenship and Social Integration. 2018.

John Gibson and David McKenzie. The Microeconomic Determinants of Emigration and Return Migration of the Best and Brightest: Evidence from the Pacific. *Journal of Development Economics*, 95(1):18–29, 2011.

John Gibson, Trinh Le, and Steven Stillman. What Explains the Wealth Gap Between Immigrants and the New Zealand Born? *New Zealand Economic Papers*, 41(2):131–162, 2007.

Pierre-Olivier Gourinchas and Jonathan A Parker. The Empirical Importance of Precautionary Saving. *American Economic Review*, 91(2):406–412, 2001.

Pierre-Olivier Gourinchas and Jonathan A Parker. Consumption Over the Life Cycle. *Econometrica: The Journal of the Econometric Society*, 70(1):47–89, 2002.

Francois Gourio. Disaster Risk and Business Cycles. *American Economic Review*, 102(6):2734–66, 2012.

Francois Gourio. Credit Risk and Disaster Risk. *American Economic Journal: Macroeconomics*, 5 (3):1–34, 2013.

Luigi Guiso and Monica Paiella. Risk Aversion, Wealth, and Background Risk. *Journal of the European Economic Association*, 6(6):1109–1150, 2008.

Luigi Guiso, Tullio Jappelli, and Daniele Terlizzese. Income Risk, Borrowing Constraints, and Portfolio Choice. *American Economic Review*, pages 158–172, 1996.

Björn Gustafsson, Hanna Mac Innes, and Torun Österberg. Older People in Sweden Without Means: On the Importance of Age at Immigration for Being 'Twice Poor'. *Ageing & Society*, 39 (6):1172–1199, 2019.

K. Hailbronner and G. Renner. *Staatsangehörigkeitsrecht, Texte*. Munich: C.H. Beck, 1992.

Jens Hainmueller, Dominik Hangartner, and Giuseppe Pietrantuono. Catalyst or Crown: Does Naturalization Promote the Long-Term Social Integration of Immigrants? *American Political Science Review*, pages 16–37, 2016.

Jens Hainmueller, Dominik Hangartner, and Giuseppe Pietrantuono. Catalyst or Crown: Does Naturalization Promote the Long-Term Social Integration of Immigrants? *American Political Science Review*, 111(2):256–276, 2017a.

Jens Hainmueller, Duncan Lawrence, Linna Martén, Bernard Black, Lucila Figueroa, Michael Hotard, Tomás R Jiménez, Fernando Mendoza, Maria I Rodriguez, Jonas J Swartz, et al. Protecting Unauthorized Immigrant Mothers Improves their Children's Mental Health. *Science*, 357(6355): 1041–1044, 2017b.

Jens Hainmueller, Dominik Hangartner, and Dalston Ward. The Effect of Citizenship on the Long-Term Earnings of Marginalized Immigrants: Quasi-Experimental Evidence from Switzerland. *Science Advances*, 5(12):eaay1610, 2019.

Christoph Halbmeier. Wealth and Savings of Migrants and Natives in Germany. *Available at SSRN 3315528*, 2019.

Michael A Hogg. Social Identity. 2003.

R Glenn Hubbard, Jonathan Skinner, and Stephen P Zeldes. Precautionary Saving and Social Insurance. *Journal of Political Economy*, 103(2):360–399, 1995.

Murat G Kirdar. Estimating the Impact of Immigrants on the Host Country Social Security System when Return Migration Is an Endogenous Choice. *International Economic Review*, 53(2):453–486, 2012.

Ralph SJ Koijen, Tomas J Philipson, and Harald Uhlig. Financial Health Economics. *Econometrica: Journal of the Econometric Society*, 84(1):195–242, 2016.

Brian K Kovak and Rebecca Lessem. How Do US Visa Policies Affect Unauthorized Immigration? *Journal of Monetary Economics*, 113:92–108, 2020.

Hamish Low and Luigi Pistaferri. Disability Insurance and the Dynamics of the Incentive Insurance Trade-Off. *American Economic Review*, 105(10):2986–3029, 2015.

Hamish Low, Costas Meghir, and Luigi Pistaferri. Wage Risk and Employment Risk Over the Life Cycle. *American Economic Review*, 100(4):1432–67, 2010.

Hamish W Low. Self-Insurance in a Life-cycle Model of Labour Supply and Savings. *Review of Economic Dynamics*, 8(4):945–975, 2005.

Diana May Khourshed and Romuald Méango. From Asylum Seekers to Illegal Migrants: The Intention to Overstay of Afghan Asylum Seekers in Germany. 2021.

David McKenzie, John Gibson, and Steven Stillman. A Land of Milk and Honey with Streets Paved with Gold: Do Emigrants Have Over-Optimistic Expectations About Incomes Abroad? *Journal of Development Economics*, 102:116–127, 2013.

Mattias Muckenhuber, Miriam Rehm, and Matthias Schnetzer. A Tale of Integration? The Migrant Wealth Gap in Austria. *European Journal of Population*, pages 1–28, 2022.

Rafael Muñoz de Bustillo and José-Ignacio Antón. From Rags to Riches? Immigration and Poverty in Spain. *Population Research and Policy Review*, 30(5):661–676, 2011.

Kayuna Nakajima. *Essays on Immigration*. PhD thesis, The University of Wisconsin-Madison, 2015.

Jonathan A Parker and Christian Julliard. Consumption Risk and the Cross Section of Expected Returns. *Journal of Political Economy*, 113(1):185–222, 2005.

Krista M Perreira and India J Ornelas. The Physical and Psychological Well-Being of Immigrant Children. *The Future of Children*, pages 195–218, 2011.

Alessandro Porpiglia, Eva Sierminska, and Thomas Y Mathä. The Immigrant/Native Wealth Gap in Germany, Italy and Luxembourg. 2011.

James Poterba, Steven Venti, and David Wise. The Composition and Drawdown of Wealth in Retirement. *Journal of Economic Perspectives*, 25(4):95–118, 2011.

James M Poterba. Retirement Security in an Aging Population. *American Economic Review*, 104 (5):1–30, 2014.

Hillel Rapoport and Frédéric Docquier. The Economics of Migrants' Remittances. *Handbook of the Economics of Giving, Altruism and Reciprocity*, 2:1135–1198, 2006.

Christoph Sajons and Irma Clots-Figueras. Birthright Citizenship and Education – Do Immigrant Children Need a Passport to Thrive? 2014.

John Karl Scholz, Ananth Seshadri, and Surachai Khitatrakun. Are Americans Saving "Optimally" for Retirement? *Journal of Political Economy*, 114(4):607–643, 2006.

Eric Seils. Armut im Alter – aktuelle Daten und Entwicklungen. Technical report, National Bureau of Economic Research, 2013.

Mathias Sinning. Wealth and Asset Holdings of Immigrants in Germany. 2007.

SOEP. Socio-Economic Panel (SOEP), Data for Years 1984-201, Version 33. doi:10.5684/soep.v33., 2017.

Max Friedrich Steinhardt. Does Citizenship Matter? The Economic Impact of Naturalizations in Germany. *Labour Economics*, 19(6):813–823, 2012.

Marta Tienda and Ron Haskins. Immigrant Children: Introducing the Issue. *The Future of Children*, pages 3–18, 2011.

Dita Vogel. Umfang und Entwicklung der Zahl der Papierlosen in Deutschland. *AbIB-Arbeitspapier Fachbereich 12. Arbeitsbereich Interkulturelle Bildung.*, 2016.

Stephen P Zeldes. Consumption and Liquidity Constraints: An Empirical Investigation. *Journal of Political Economy*, 97(2):305–346, 1989.

Klaus F Zimmermann. Tackling the European Migration Problems. *Journal of Economic Perspectives*, 9(2):45–62, 1995.

A Formal Proofs

This section formally proves the key result: that uncertainy over future location reduces the saving rate of migrants who intend to stay in the immigration country. For brevity, I use a simplified two period version of the model. This does not affect the proof, but simplifies notation. Formal proofs for all results and for the complete three period model available from the author.

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 $\mathrm{q}_2^I = \mathrm{q}_2^H$. In this case, migrants can consume the same stock of wealth in either country in retirement: $\mathrm{c}_2^I = \mathrm{c}_2^H = \mathrm{c}_2$. 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:

$$\begin{aligned} \mathrm{u}^I(\mathrm{c}_2) > \mathrm{u}^H(\mathrm{c}_2) \quad \text{if } \gamma < 1 \\ \mathrm{u}^H(\mathrm{c}_2) > \mathrm{u}^I(\mathrm{c}_2) \quad \text{if } \gamma > 1 \end{aligned} \tag{9}$$

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:

$$\begin{aligned} (1-\theta)\mathrm{u}^I(\mathrm{c}_2) + \theta\mathrm{u}^H(\mathrm{c}_2) > \mathrm{u}^H(\mathrm{c}_2) \quad \text{if } \gamma < 1 \\ \mathrm{u}^H(\mathrm{c}_2) > (1-\theta)\mathrm{u}^I(\mathrm{c}_2) + \theta\mathrm{u}^H(\mathrm{c}_2) \quad \text{if } \gamma > 1. \end{aligned} \tag{10}$$

Now, let us turn to the situation where $\mathrm{q}_2^I > \mathrm{q}_2^H$. Migrants can now consume *more* in the immigration than in their home country during retirement: $\mathrm{c}_2^I = \mathrm{q}_2^I\mathrm{a}_1 > \mathrm{c}_2^H = \mathrm{q}_2^H\mathrm{a}_1$ 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:

$$\begin{aligned} \text{stay if:} \quad & \mathrm{u}^I(\mathrm{c}_2^I) \geq \mathrm{u}^H(\mathrm{c}_2^H) \\ \Leftrightarrow \quad & (2-\xi)\ \mathrm{u}(\mathrm{q}_2^I \mathrm{a}_1) \geq \xi\ \mathrm{u}(\mathrm{q}_2^H \mathrm{a}_1) \\ \Leftrightarrow \quad & \gamma = \frac{\xi}{(2-\xi)} \leq \frac{\mathrm{u}^{'}(\mathrm{q}_2^I \mathrm{a}_1)}{\mathrm{u}^{'}(\mathrm{q}_2^H \mathrm{a}_1).} \end{aligned} \tag{11}$$

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 $\mathrm{u}(\mathrm{c}) = \mathrm{c}^\alpha$ where $0 < \alpha < 1$, the inequality simplifies to:

$$\text{stay if:} \quad \gamma = \frac{\xi}{(2-\xi)} < \frac{\mathrm{u}^{'}(\mathrm{q}_2^I \mathrm{a}_1)}{\mathrm{u}^{'}(\mathrm{q}_2^H \mathrm{a}_1)} \quad \Leftrightarrow \quad \gamma < (\frac{\mathrm{q}_2^I}{\mathrm{q}_2^H}). \tag{12}$$

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

$$\begin{aligned} \text{stay if:} \quad & (1-\theta)\mathrm{u}^I(\mathrm{c}_2^I) + \theta \mathrm{u}^H(\mathrm{c}_2^H) \geq \mathrm{u}^H(\mathrm{c}_2^H) \\ \Leftrightarrow \quad & (1-\theta)\ (2-\xi)\mathrm{u}(\mathrm{q}_2^I \mathrm{a}_1)\ +\ \theta\ \xi \mathrm{u}(\mathrm{q}_2^H \mathrm{a}_1) \geq \xi \mathrm{u}(\mathrm{q}_2^H \mathrm{a}_1) \\ \Leftrightarrow \quad & (1-\theta)\ (2-\xi)\mathrm{u}(\mathrm{q}_2^I \mathrm{a}_1) \geq (1-\theta)\ \xi \mathrm{u}(\mathrm{q}_2^H \mathrm{a}_1) \\ \Leftrightarrow \quad & \gamma = \frac{\xi}{(2-\xi)} \leq \frac{\mathrm{u}^{'}(\mathrm{q}_2^I \mathrm{a}_1)}{\mathrm{u}^{'}(\mathrm{q}_2^H \mathrm{a}_1).} \end{aligned} \tag{13}$$

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, $\mathrm{u}(\mathrm{c}) = \ln(\mathrm{c})$, the inequality becomes:

$$\text{stay if:} \quad \gamma = \frac{\xi}{(2-\xi)} < \frac{\mathrm{u}(\mathrm{q}_2^I \mathrm{a}_1)}{\mathrm{u}(\mathrm{q}_2^H \mathrm{a}_1)} \quad \Leftrightarrow \quad \gamma < \frac{\ln(\mathrm{q}_2^I \mathrm{a}_1)}{\ln(\mathrm{q}_2^H \mathrm{a}_1)} \tag{14}$$

in the case without risk in right to stay. $\frac{\mathrm{u}(\mathrm{q}_2^I \mathrm{a}_1)}{\mathrm{u}(\mathrm{q}_2^H \mathrm{a}_1)}$ increases in a_1. So, if migrants own more than cutoff wealth $\bar{\mathrm{a}}_1$, defined by $\gamma = \frac{\mathrm{u}(\mathrm{q}_2^I \bar{\mathrm{a}}_1)}{\mathrm{u}(\mathrm{q}_2^H \bar{\mathrm{a}}_1)}$, they want to stay in the immigration country, even if they have a (weak) relative preference for their home country. $\bar{\mathrm{a}}_1$ 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 $\bar{\mathrm{a}}_1$. 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. $\tilde{\mathrm{a}}_1 \geq \bar{\mathrm{a}}_1$ 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:

$$\begin{aligned} \max \mathrm{V}(\mathrm{c}_1, \mathrm{c}_2) &= \mathrm{u}^I(\mathrm{c}_1^I) + \beta\, \mathrm{u}^I(\mathrm{c}_2^I) \\ &= \mathrm{u}^I(\mathrm{y} - \mathrm{a}_1) + \beta\, \mathrm{u}^I(\mathrm{q}_2^I \mathrm{a}_1). \end{aligned} \tag{15}$$

$\mathrm{a}_1 < \bar{\mathrm{a}}_1$ 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:

$$\begin{aligned} \max \mathrm{V}(\mathrm{c}_1, \mathrm{c}_2) &= \mathrm{u}^I(\mathrm{c}_1^I) + \beta\, \mathrm{u}^H(\mathrm{c}_2^H) \\ &= \mathrm{u}^I(\mathrm{y} - \mathrm{a}_1) + \beta\, \mathrm{u}^H(\mathrm{q}_2^H \mathrm{a}_1). \end{aligned} \tag{16}$$

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*:

$$\begin{aligned} & \mathrm{u}^I(\mathrm{y} - \tilde{\mathrm{a}}_1) + \beta\, \mathrm{u}^I(\mathrm{q}_2^I \tilde{\mathrm{a}}_1) \geq \mathrm{u}^I(\mathrm{y} - \mathrm{a}_1) + \beta\, \mathrm{u}^H(\mathrm{q}_2^H \mathrm{a}_1) \\ \Leftrightarrow \quad & \underbrace{\mathrm{u}(\mathrm{y} - \mathrm{a}_1) - \mathrm{u}(\mathrm{y} - \tilde{\mathrm{a}}_1)}_{\text{Cons utility in working age}} \leq \underbrace{\beta\, [\mathrm{u}(\mathrm{q}_2^I \tilde{\mathrm{a}}_1) - \gamma\, \mathrm{u}(\mathrm{q}_2^H \mathrm{a}_1)]}_{\text{Cons utility in retirement}} \end{aligned} \tag{17}$$

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 $\frac{\mathrm{q}_2^I}{\mathrm{q}_2^H}$, the cutoff value of γ beyond which migrants choose to return decreases:

$$\begin{aligned} & \mathrm{u}^I(\mathrm{y} - \tilde{\mathrm{a}}_1) + \beta\, [(1-\theta)\, \mathrm{u}^I(\mathrm{q}_2^I \tilde{\mathrm{a}}_1) + \theta\, \mathrm{u}^H(\mathrm{q}_2^H \tilde{\mathrm{a}}_1)] \geq \mathrm{u}^I(\mathrm{y} - \mathrm{a}_1) + \beta\, \mathrm{u}^H(\mathrm{q}_2^H \mathrm{a}_1) \\ \Leftrightarrow \quad & \underbrace{\mathrm{u}(\mathrm{y} - \mathrm{a}_1) - \mathrm{u}(\mathrm{y} - \tilde{\mathrm{a}}_1)}_{\text{Cons utility in working age}} \leq \underbrace{\beta\, [(1-\theta)\, \mathrm{u}(\mathrm{q}_2^I \tilde{\mathrm{a}}_1) + \theta\, \gamma\, \mathrm{u}(\mathrm{q}_2^H \tilde{\mathrm{a}}_1) - \gamma\, \mathrm{u}(\mathrm{q}_2^H \mathrm{a}_1)]}_{\text{Cons utility in retirement}} \end{aligned} \tag{18}$$

and:

$$\mathrm{u}(\mathrm{q}_2^I \tilde{\mathrm{a}}_1) - \gamma\, \mathrm{u}(\mathrm{q}_2^H \mathrm{a}_1) \geq (1-\theta)\, \mathrm{u}(\mathrm{q}_2^I \tilde{\mathrm{a}}_1) + \theta\, \gamma\, \mathrm{u}(\mathrm{q}_2^H \tilde{\mathrm{a}}_1) - \gamma\, \mathrm{u}(\mathrm{q}_2^H \mathrm{a}_1). \tag{19}$$

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:

$$\begin{aligned} & \frac{\delta V(\cdot)}{\delta a_1^I} = -u'^I(c_1^I) + \beta\ q_2^I u'^I(c_2^I) \stackrel{!}{=} 0 \\ \Leftrightarrow \quad & \frac{u'^I(c_2^I)}{u'^I(c_1^I)} = \frac{1}{\beta q_2^I} \quad \Leftrightarrow \quad \frac{u'(c_2^I)}{u'(c_1^I)} = \frac{1}{\beta q_2^I} \end{aligned} \tag{20}$$

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:

$$\begin{aligned} & \frac{\delta V(\cdot)}{\delta a_1^H} = -u'^I(c_1^I) + \beta\ q_2^H u'^H(c_2^H) \stackrel{!}{=} 0 \\ \Leftrightarrow \quad & \frac{u'^H(c_2^H)}{u'^I(c_1^I)} = \frac{1}{\beta q_2^H} \quad \Leftrightarrow \quad \frac{u'(c_2^H)}{u'(c_1^I)} = \frac{1}{\gamma\beta q_2^H} \end{aligned} \tag{21}$$

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

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

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

$$\frac{u'(q_2 a_1^I)}{u'(y - a_1^I)} > \frac{u'(q_2 a_1^H)}{u'(y - a_1^H)} \quad \Rightarrow \quad a_1^H > a_1^I. \tag{23}$$

By the same logic, if $q_2^I > q_2^H$, only those migrants who plan to leave *and* for whom $\gamma > \frac{u(q_I^2 a_1^I)}{u(q_H^2 a_H^I)}$, 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:

$$\frac{\delta V(\cdot)}{\delta a_1^I} = -u'^I(c_1^I) + \beta\ [(1-\theta) q_2^H u'^H(c_2^H) + \theta q_2^H u'^H(c_2^H)] \stackrel{!}{=} 0 \quad \Leftrightarrow \quad \frac{u'^H(c_2^H)}{u'^I(c_1^I)} = \frac{1}{\beta q_2^H}. \tag{24}$$

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

$$\begin{aligned} & \frac{\delta V(\cdot)}{\delta a_1^I} = -u'^I(c_1^I) + \beta\ [(1-\theta) q_2^I u'^I(c_2^I) + \theta q_2^H u'^H(c_2^H)] \stackrel{!}{=} 0 \\ \Leftrightarrow \qquad & \frac{u'^I(c_2^I)}{u'^I(c_1^I)} = \underbrace{\frac{1}{(1-\theta)} \frac{1}{\beta q_2^I}}_{\text{A}} - \underbrace{\frac{\theta}{(1-\theta)} \frac{q_2^H}{q_2^I} \frac{u'^H(c_2^H)}{u'^I(c_1^I).}}_{\text{B}} \end{aligned} \tag{25}$$

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:

$$\frac{u'^I(c_2^{\star I})}{u'^I(c_1^{\star I})} = \frac{u'^I(q_2^I a_1^{\star I})}{u'^I(y - a_1^{\star I})} = \frac{1}{\beta q_2^I} \tag{26}$$

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

$$\begin{aligned} \frac{u'^I(c_2^I)}{u'^I(c_1^I)} = \frac{u'^I(q_2^I a_1^I)}{u'^I(y - a_1^I)} &= \frac{1}{(1-\theta)} \frac{1}{\beta q_2^I} - \frac{\theta}{(1-\theta)} \frac{q_2^H}{q_2^I} \frac{u'^H(c_2^H)}{u'^I(c_1^I)} \\ &= \frac{1}{(1-\theta)} \frac{1}{\beta q_2^I} - \frac{\theta}{(1-\theta)} \frac{q_2^H}{q_2^I} \frac{u'^H(q_2^H a_1^I)}{u'^I(y - a_1^I)} \end{aligned} \tag{27}$$

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 $a_1^I < a_1^{\star I}$. 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:

$$\frac{1}{\beta q_2^I} = (1-\theta)\ \frac{u'^I(q_2^I a_1^I)}{u'^I(y - a_1^I)} + \theta\ \frac{q_2^H}{q_2^I}\ \frac{u'^H(q_2^H a_1^I)}{u'^I(y - a_1^I)} \tag{28}$$

Now, we can equate terms 26 and 28, and rearrange to isolate the difference in utility differentials on the left hand side:

$$\begin{aligned} & \frac{u'^I(q_2^I a_1^{\star I})}{u'^I(y - a_1^{\star I})} = (1-\theta)\ \frac{u'^I(q_2^I a_1^I)}{u'^I(y - a_1^I)} + \theta\ \frac{q_2^H}{q_2^I}\ \frac{u'^H(q_2^H a_1^I)}{u'^I(y - a_1^I)} \\ \Leftrightarrow \qquad & \frac{u'^I(q_2^I a_1^{\star I})}{u'^I(y - a_1^{\star I})} - \frac{u'^I(q_2^I a_1^I)}{u'^I(y - a_1^I)} = \underbrace{\theta \left[\frac{q_2^H}{q_2^I}\ \frac{u'^H(q_2^H a_1^I)}{u'^I(y - a_1^I)} - \frac{u'^I(q_2^I a_1^I)}{u'^I(y - a_1^I)} \right]}_{m(\theta)}. \end{aligned} \tag{29}$$

$a_1^I < a_1^{\star I}$ 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

$q_2^I = q_2^H$):

$$u'^H(q_2^H a_1^I) < u'^I(q_2^I a_1^I) \quad \Leftrightarrow \quad \xi u'(q_2 a_1^I) < (2-\xi) u'(q_2 a_1^I) \quad \Leftrightarrow \quad \gamma < 1. \tag{30}$$

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):

$$\begin{aligned} & \frac{q_2^H}{q_2^I} u'^H(q_2^H a_1^I) < u'^I(q_2^I a_1^I) \quad \Leftrightarrow \quad \frac{q_2^H}{q_2^I}\, \xi\, u'(q_2^H a_1^I) < (2-\xi)\, u'(q_2^I a_1^I) \\ \Leftrightarrow \quad & \frac{q_2^H}{q_2^I}\, \gamma\, u'(q_2^H a_1^I) < u'(q_2^I a_1^I) \quad \Leftrightarrow \quad \gamma \; < \underbrace{\frac{q_2^I}{q_2^H}\, \frac{u'(q_2^I a_1^I)}{u'(q_2^H a_1^I).}}_{>1} \end{aligned} \tag{31}$$

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.

B Further Identification Examples

Think about 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.

C Variable Definitions

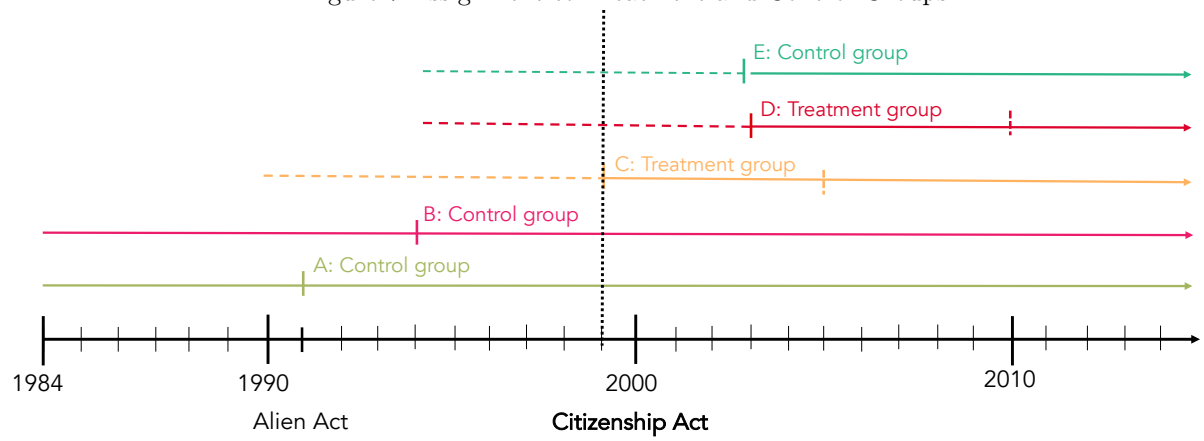
My main outcome variables are the amounts households save in Germany as well as remit abroad — in absolute terms and as a fraction of the net household income available to them. The amounts are measured in euros per month adjusted for inflation while the saving and remittance rates reflect the fraction 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 by professionally trained surveyors. 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.

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"). 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.

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 occured 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 **??**.

D Details on Treatment And Control Group Assignment in the Difference-in-Difference Analysis around 1999

Figure 7 Assignment to Treatment and Control Groups

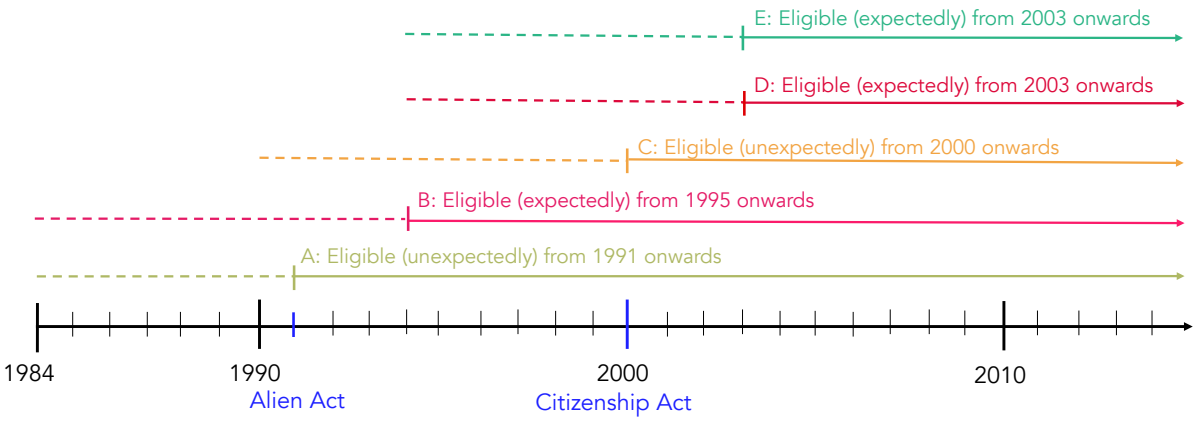


Notes: This graph depicts the core intuition behind the first identification strategy. Each line represents the changing location and legal status of a given migrant. Dashed horizontal lines denote a migrant who has moved to Germany but does not yet have access to citizenship. Solid lines denote migrants living in Germany with access to citizenship. On each line, the vertical tick denotes the point in time at which a migrant became eligible for citizenship. The black dashed vertical line indicates the passage of the Citizenship Act in the German parliament.

Figure 7 illustrates how migrants are categorised into either treatment or control group. Adult migrants who arrived in Germany before 1985 (such as migrants A & B) were eligible for citizenship before the reform passed and thus unaffected by the reduction in residency requirements. Similarly, adolescent migrants who became eligible for citizenship after 8 years of residency under the stipulations of the Alien Act (such as migrant E), were unaffected by the Citizenship reducing the requirements to 8 years for everyone. Thus, these migrants are classified as the control group. In contrast, adult migrants who arrived in Germany after 1985 would only become eligible after 2000 under the old regime and thus saw their citizenship prospects changed. Migrants who arrived before 1992 (such as migrant C) became immediately eligible for citizenship through the reform. Migrants who arrived after 1992 (such as migrant D) did not immediately become eligible, but saw their timeline of doing so drastically sped up. Both groups see the uncertainty over their future changed and are consequently classified as the treatment group. In Section 5, I analyse the impact of changes in actual legal status as a second step.

E Details on Treatment And Control Group Assignment Using Variation in Eligibility Over Time

Figure 8 Changes in Eligibility Over Time



Notes: This graph depicts the core intuition behind the second identification strategy. Each line represents the changing location and legal status of a given migrant. Dashed horizontal lines denote a migrant who has moved to Germany but does not yet have access to citizenship. Solid lines denote migrants living in Germany with access to citizenship. On each line, the vertical tick denotes the point in time at which a migrant became eligible for citizenship. The blue vertical ticks indicate the passage of the Alien and the Citizenship Act.

Figure 8 illustrates the identifying variation. Adult migrants who arrived in Germany before 1976 or adolescent migrants who arrived before 1983 become eligible immediately and unexpectedly through the passage of the Alien Act (such as migrant A). For these migrants, the dummy variables indicating eligibility and unexpected eligibility will switch to 1 thereafter while the dummy on expected eligibility will remain 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. Adult migrants who arrived in between 1976 and 1985 become eligible expectedly, within the 1990s citizenship regime (such as migrant B). In this case the binary variables for eligibility and expected eligibility will equal 1 from 1995 onwards. The same dynamic applies thereafter. Adult migrants who arrived between 1985 and 1992 became eligible unexpectedly through the passage of the Citizenship Act (such as migrant C). Adult migrants who arrived after 1992 became eligible unexpectedly under the new citizenship regime (such as migrant D, although many saw their expected lead up time drastically sped up in 2000). And adolescent migrants who arrived after 1983 always become eligible expectedly after 8 years (such as migrant E).

F Additional Result Tables

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**	0.0194***	1.697	0.000354
	(16.74)	(0.00627)	(14.42)	(0.00651)
Years in Germany Squared	0.0326	-5.95e-06	-0.0874***	-3.22e-05***
	(0.0651)	(1.94e-05)	(0.0274)	(1.16e-05)
Age Squared	-0.0318	-4.60e-06	0.000926	-1.99e-07
	(0.0314)	(1.05e-05)	(0.0179)	(6.65e-06)
Employed Full Time	-1.799	0.0224***	29.69***	0.0122***
	(27.28)	(0.00417)	(6.460)	(0.00317)
Employed Part Time	3.444	0.0136***	11.74*	0.00770*
	(17.85)	(0.00452)	(6.054)	(0.00421)
Years FT Employment	1.033	0.000251	1.861	0.000976*
	(2.936)	(0.000822)	(1.499)	(0.000536)
Years PT Employment	2.082	-0.00117	-0.775	0.000928
	(5.630)	(0.00225)	(4.048)	(0.00135)
HH Net Income	0.155***	1.69e-05***	-0.00356	-6.68e-06***
	(0.0442)	(3.00e-06)	(0.00331)	(1.73e-06)
Education Category	12.04	0.0106	2.105	-0.000874
	(22.72)	(0.00881)	(9.946)	(0.00431)
Years of Education	-1.588	-0.00186	-0.0153	-0.000504
	(8.243)	(0.00364)	(4.565)	(0.00176)
Married	-26.01	-0.00450	33.22**	0.0140**
	(24.63)	(0.00934)	(15.98)	(0.00706)
Num People in HH	-47.53***	-0.00974***	-0.498	-0.000404
	(17.64)	(0.00286)	(3.703)	(0.00157)
Young Children in HH	13.65	-0.000338	-15.84*	-0.00679*
	(20.76)	(0.00609)	(8.569)	(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: This table shows the effects of citizenship eligibility on saving and remittance rates using quasi-experimental variation due to the 1999 citizenship act passing the German parliament. Migrants with access to citizenship form the omitted category. Column one shows results on the level of savings, column two on the saving rate, column three on remittances levels, and column four on the remittance rate. Regressions all include state, year and household fixed effects, and are estimated by OLS. Standard errors are given in parentheses and are clustered at the household level. Stars indicate significance at standard levels: *** p<0.01,** p<0.05,* p<0.1.

Table 4 Effect of Eligibility for Citizenship on Migrants' Resources

	Credit Amount	Credit At All	Net HH Income	Employed FT
Eligible	1.725	0.00895	-17.51	0.00582
	(2.845)	(0.0604)	(68.12)	(0.0377)
Years in GER Squared	-0.00275	-0.0000467	0.322	-0.000136
	(0.00785)	(0.000184)	(0.319)	(0.000132)
Age Squared	-0.00294	-0.000119	-0.363	-0.000466***
	(0.00960)	(0.000175)	(0.235)	(0.000104)
Employed Full Time	1.137	0.0766***	624.0***	
	(1.296)	(0.0266)	(41.65)	
Employed Part Time	0.724	0.0840**	308.8***	
	(1.471)	(0.0381)	(85.45)	
Years FT Employment	0.416	0.0142**	16.75	0.0444***
	(0.311)	(0.00696)	(11.91)	(0.00655)
Years PT Employment	0.149	0.0217**	-35.67	0.0525***
	(0.528)	(0.0109)	(23.97)	(0.0172)
HH Net Income	0.00208**	7.67e-08		
	(0.000993)	(0.0000111)		
Education Category	2.152	0.0782*	123.8	0.0572
	(2.172)	(0.0409)	(109.6)	(0.0486)
Years of Education	-0.0462	-0.0138	30.75	0.0132
	(0.880)	(0.0153)	(45.17)	(0.0197)
Married	2.445	0.0222	145.2**	-0.0298
	(2.596)	(0.0591)	(68.18)	(0.0487)
Num People in HH	0.202	-0.00347	329.4***	-0.00588
	(0.930)	(0.0147)	(26.58)	(0.0105)
Young Children in HH	-1.305	-0.0314	-247.9***	-0.0281
	(1.686)	(0.0376)	(63.84)	(0.0231)
State, Year & Individual FE	YES	YES	YES	YES
R2	0.501	0.507	0.661	0.578
N	3921	4071	7285	7511

Notes: The table shows the causal effect of citizenship eligibility on a household's resources. Column one shows results on total credit, column two an indicator for any credit, column three net household income, and column four an indicator of whether an individual within the household is employed full time. All columns include state, year, and household fixed effects. Standard errors in parentheses clustered at the household. Stars indicate significance level: *** p<0.01,** p<0.05,* p<0.1.

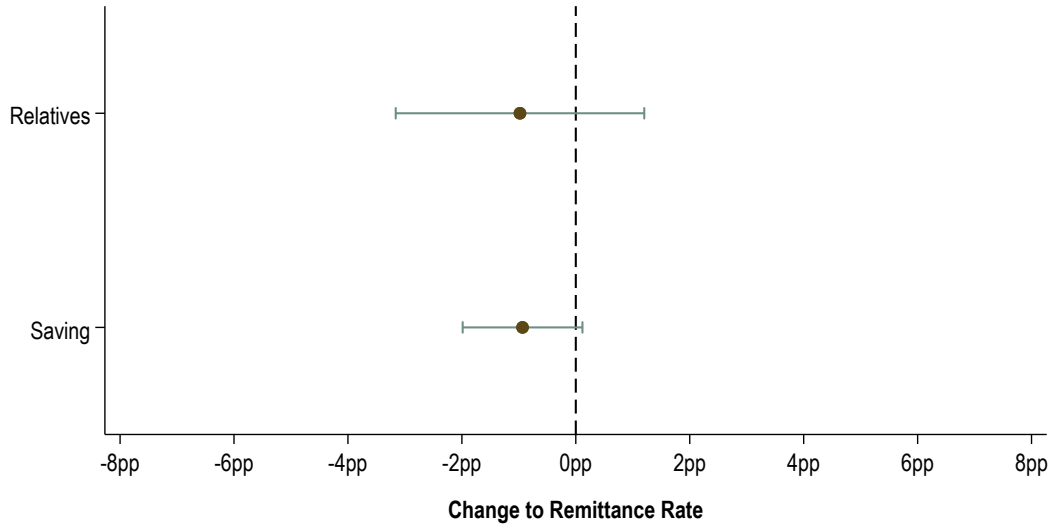
Table 5 Effect of Eligibility for Citizenship on Identity & Worries

	Disadv Origin	Worry Econ Sit	Worry Empl	Feel Ger
Eligible	0.0813	0.0936	0.0942	0.0487
	(0.110)	(0.0625)	(0.0825)	(0.104)
Years in GER Squared	0.000201	-0.0000593	-0.000146	-0.000361
	(0.000333)	(0.000209)	(0.000256)	(0.000513)
Age Squared	0.000328	-0.000145	-0.000426**	-0.000427
	(0.000247)	(0.000158)	(0.000215)	(0.000284)
Years FT Employment	0.00386	-0.00155	-0.0153	0.0229
	(0.00981)	(0.00822)	(0.0135)	(0.0152)
Years PT Employment	-0.00744	-0.00160	-0.00708	0.0183
	(0.0192)	(0.0152)	(0.0260)	(0.0339)
Education Category	-0.142**	0.00976	0.0170	0.288*
	(0.0667)	(0.0572)	(0.0759)	(0.155)
Years of Education	0.0514*	-0.0131	-0.0561**	0.00393
	(0.0284)	(0.0236)	(0.0272)	(0.0548)
Married	-0.0690	-0.131*	-0.149	-0.140
	(0.0760)	(0.0709)	(0.117)	(0.171)
Num People in HH	0.0243	0.00961	0.00652	0.0268
	(0.0188)	(0.0125)	(0.0185)	(0.0215)
Young Children in HH	0.0126	-0.00659	-0.0248	-0.161**
	(0.0484)	(0.0352)	(0.0464)	(0.0790)
State, Year & Individual FE	YES	YES	YES	YES
R2	0.475	0.438	0.397	0.600
N	3048	6199	5173	2840

Notes: This table shows the effect of citizenship eligibility on identity variables, and variables indicating the worries an individual has. Column one shows results on feeling disadvantaged due to one's origin. Column two shows results on whether individuals are worried about their economic situation. Column three shows results on whether individuals are worried about their employment situation. Column four shows results on whether an individual feels German. All regressions include state, year, and individual fixed effects. Standard errors are clustered at the household level.

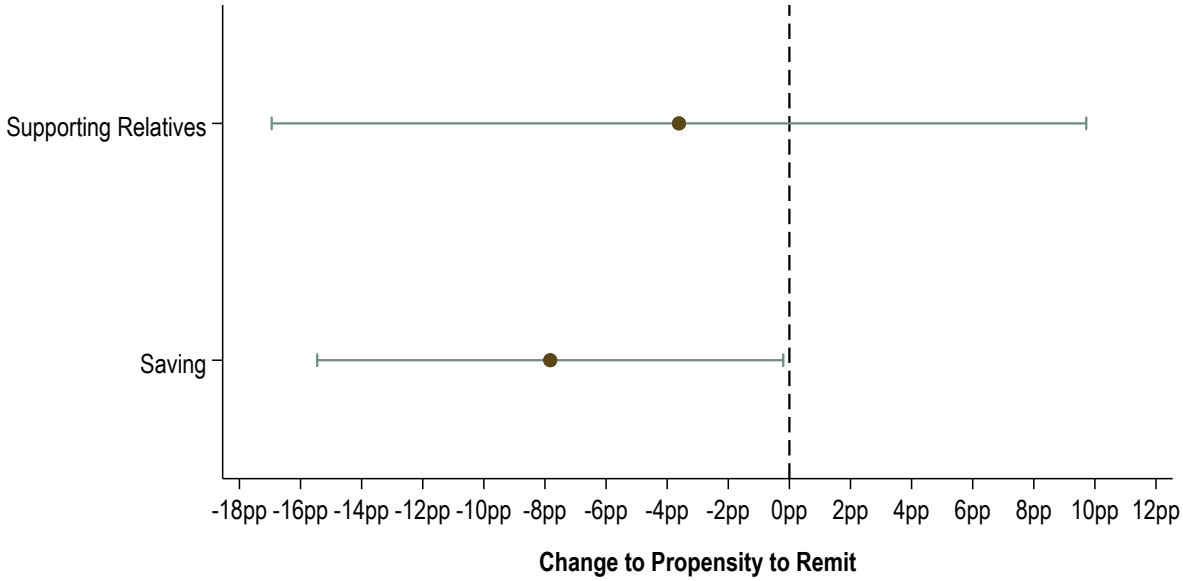
G Additional Result Figures

Figure 9 1990 DID, Residual Remittance Rate



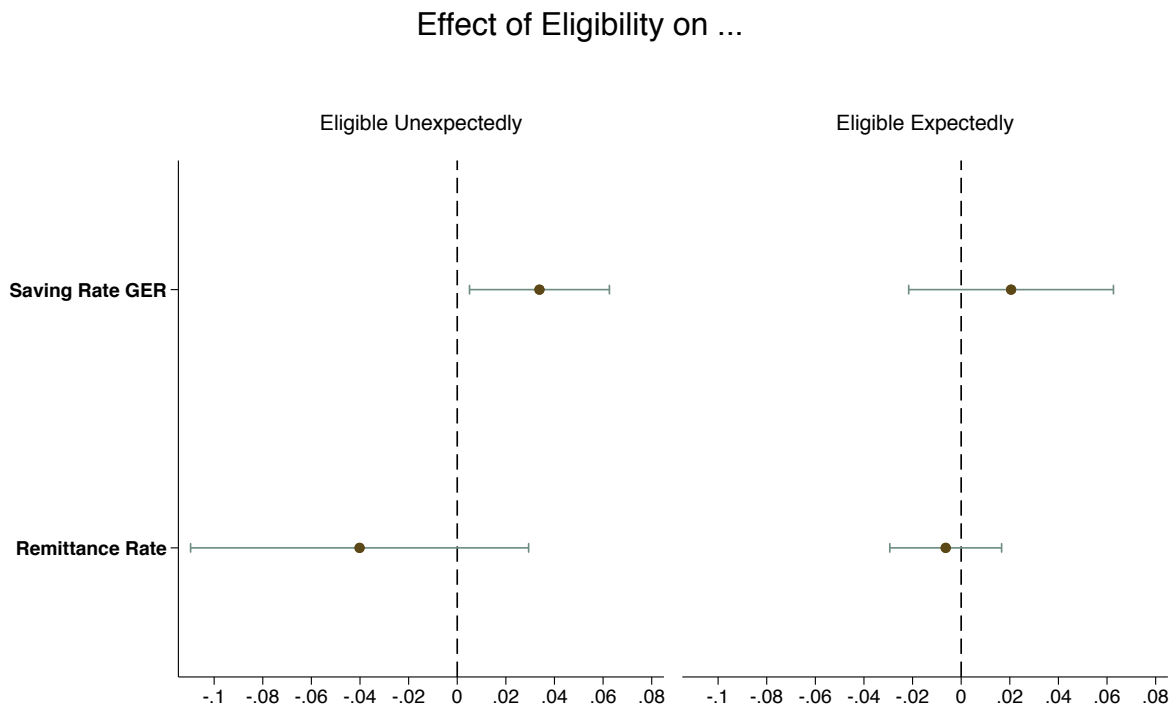
Notes: This graph shows the effects of eligibility due to the citizenship act reform on remittance rates of affected migrants. The first marker and corresponding 95% confidence interval shows the effects on remittances sent as transfers to relatives. The second marker and corresponding 95% confidence interval shows the effect on remittances sent as means of saving. Standard errors are calculated by clustering at the household level.

Figure 10 1990 DID, Propensity to Remit



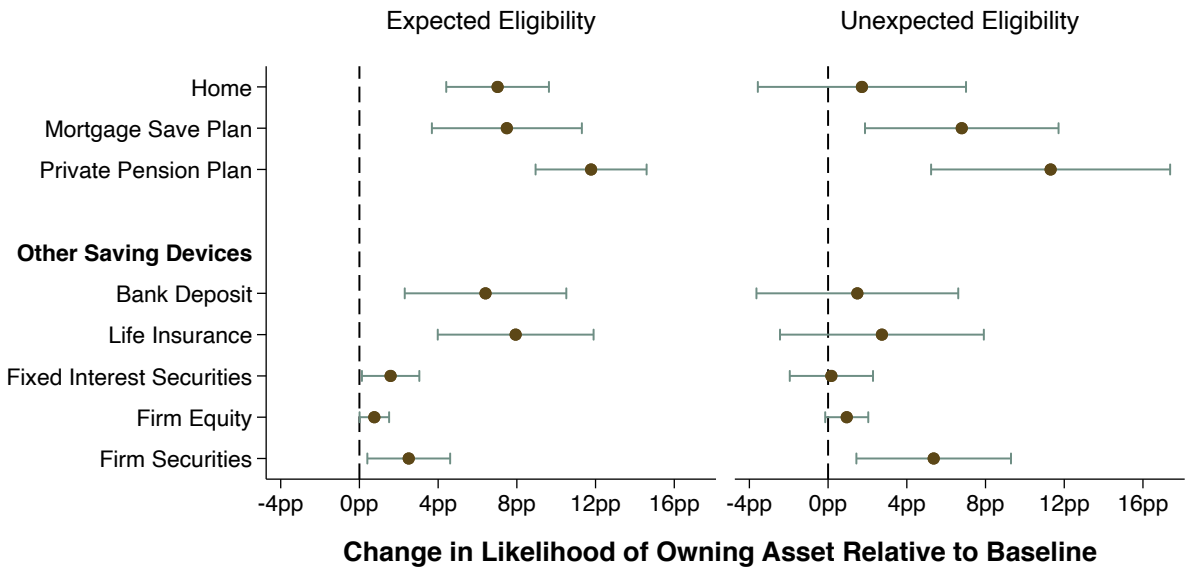
Notes: This figure depicts the effect of becoming eligible for citizenship relative to merely gaining the prospect of future eligibility on households' propensity to remit money for the purpose of supporting relatives and saving respectively. The variation stems from the Alien Act passing parliament in 1990. Markers indicate point estimates and caps represent 95% confidence intervals. Standard errors are clustered at the household level.

Figure 11 Effect of Becoming Eligible Expected or Unexpectedly On Saving and Remittances



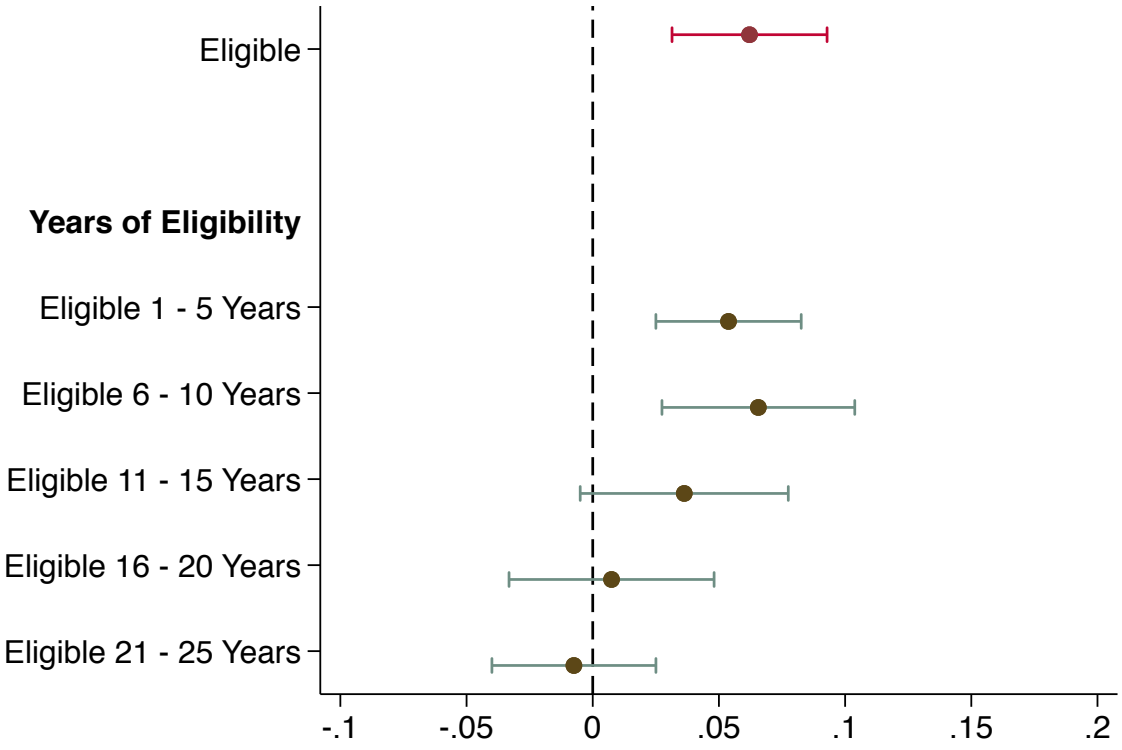
Notes: This figure shows the effect of citizenship eligibility on household saving and remittance rates separately for households that become eligible expectedly (right-hand side) and unexpectedly (left-hand side). Markers indicate point estimates and caps represent 95% confidence intervals. Standard errors are clustered at the household level.

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



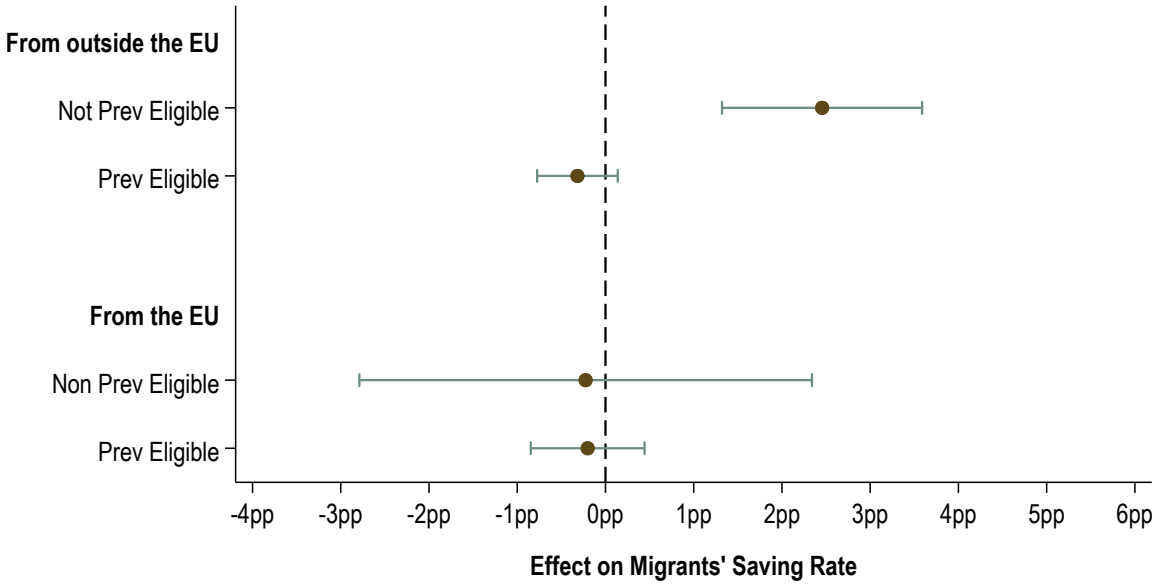
Notes: This figure shows the effect of citizenship eligibility on households' likelihood to own different saving technologies separately for households that become eligible expectedly (right-hand side) and unexpectedly (left-hand side). Markers indicate point estimates and caps represent 95% confidence intervals. Standard errors are clustered at the household level.

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



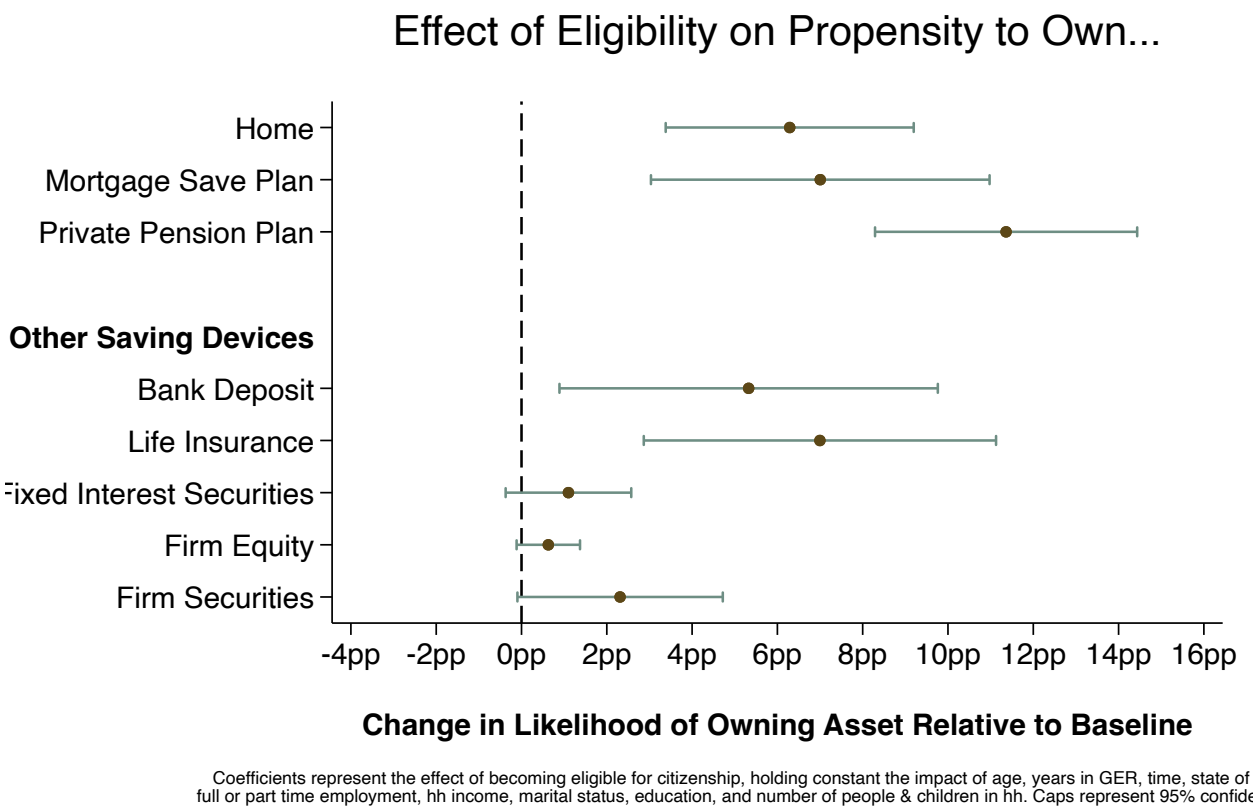
Notes: This figure shows the effect of eligibility and years of eligibility on the propensity to own one's own home. Markers represent point estimates and caps represent 95% confidence intervals. Standard errors are calculated by clustering at the household level.

Figure 14 Effect of Becoming Eligible on Saving Rates of EU Migrants



Notes: This figure is replicating Figure **??** for migrants from EU15 countries. Markers represent point estimates and caps represent 95% confidence intervals. Standard errors are calculated by clustering at the household level.

Figure 15 Effect of Becoming Eligible on Investment Choices of EU Migrants

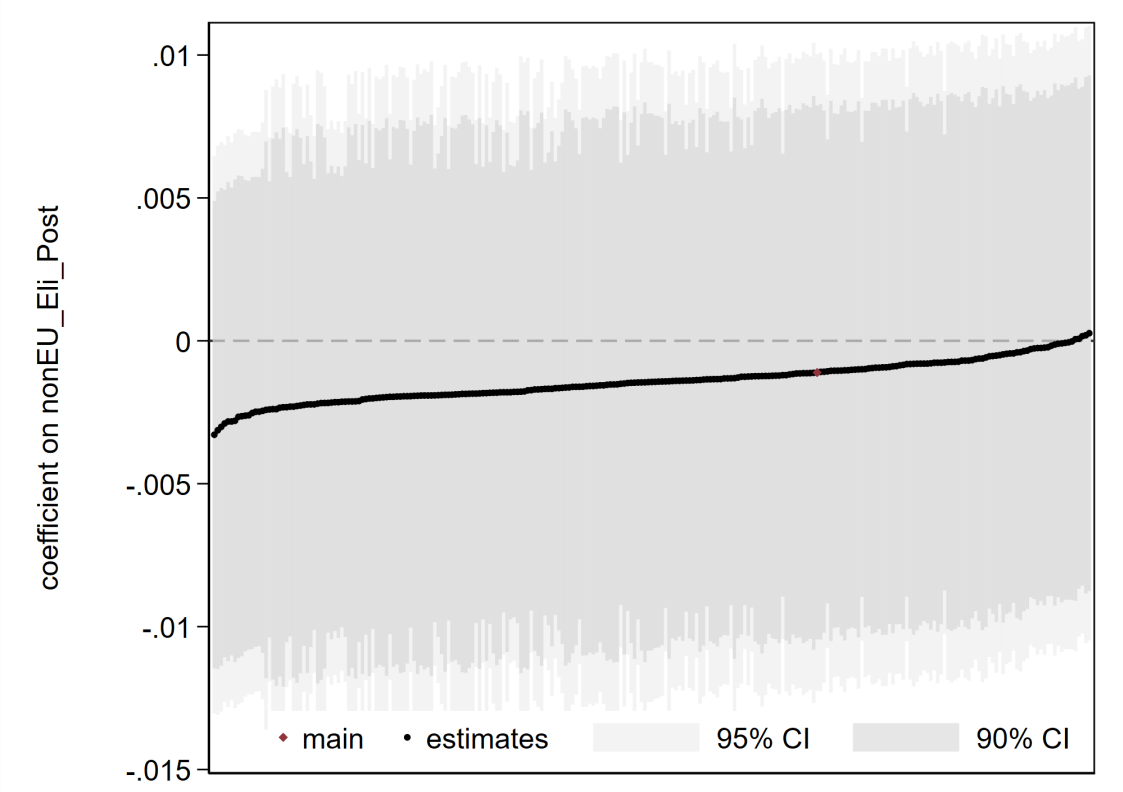


Notes: This figure is replicating Figure 5 for migrants from EU15 countries. Markers represent point estimates and caps represent 95% confidence intervals. Standard errors are calculated by clustering at the household level.

H Robustness of Main results

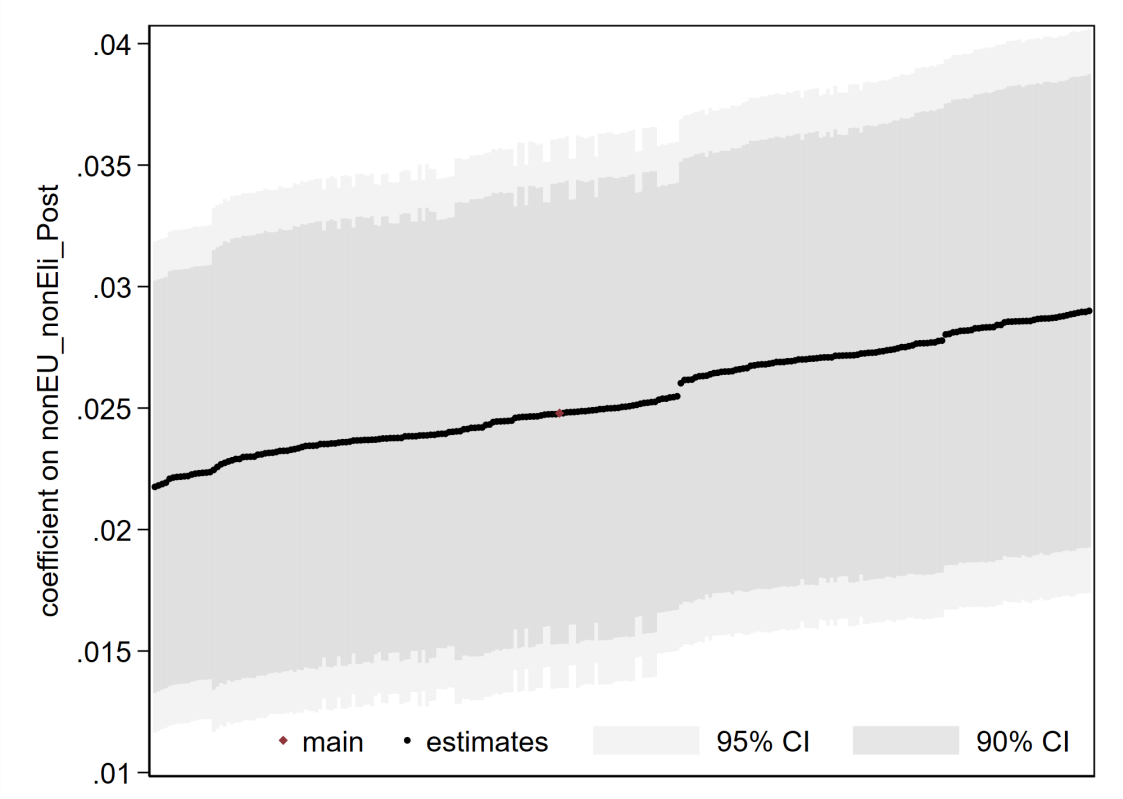
Figures in this section show the robustness of the main results in table 2 to permuting over all possible combinations of control variables (figures 16 and 19) and fixed effects (Figures **??** and 18). To retain computational tractability these two sets of permutations are presented separately. In all cases, the placebo group presents no effect of citizenship on saving, and the treatment group a positive effect. This gives strong evidence to suggest that effects are not driven by the specific combination of control variables used. I additionally show that results are robust to removing outliers.

Figure 16 Controls Robustness: Effect of citizenship on already eligible migrants savings rate



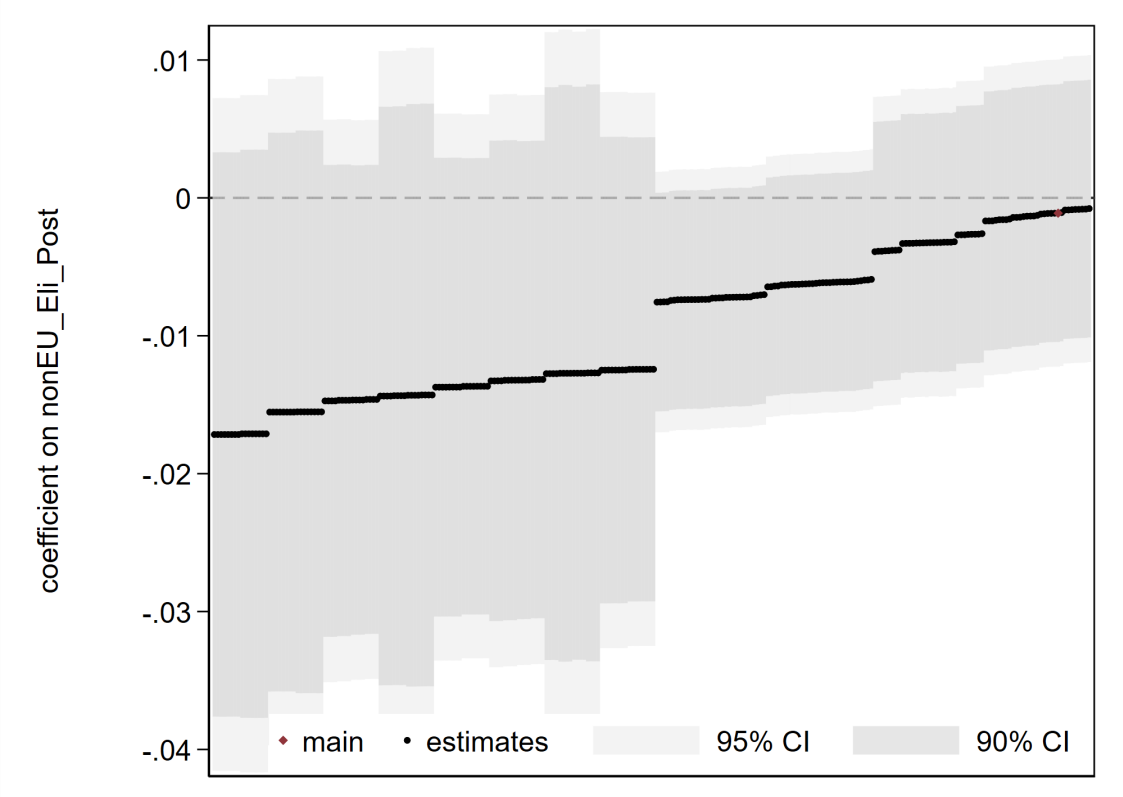
Notes: This figure shows the robustness of the main citizenship on savings rates results shown in column two of table 2 in the main paper. This figure focuses on the effect on the control group, migrants who were previously eligible. Each marker corresponds to a regression with a different set of controls, 95% and 90% confidence intervals are given in light and dark grey. The coefficient used in the main text is given in red. Each regression uses a different permutation over possible controls. These controls are: employed full time, employed part time, years full time employed, years part time employed, education level, years of education, marriage status, presence of children in the household. Each possible combination of these controls corresponds to one regression on the figure. All regressions also include household, year, and state fixed effects. All regressions include controls for years in Germany, age (squared), household income, and the number of people in the household.

Figure 17 Controls Robustness: Effect of citizenship on not already eligible migrants savings rate



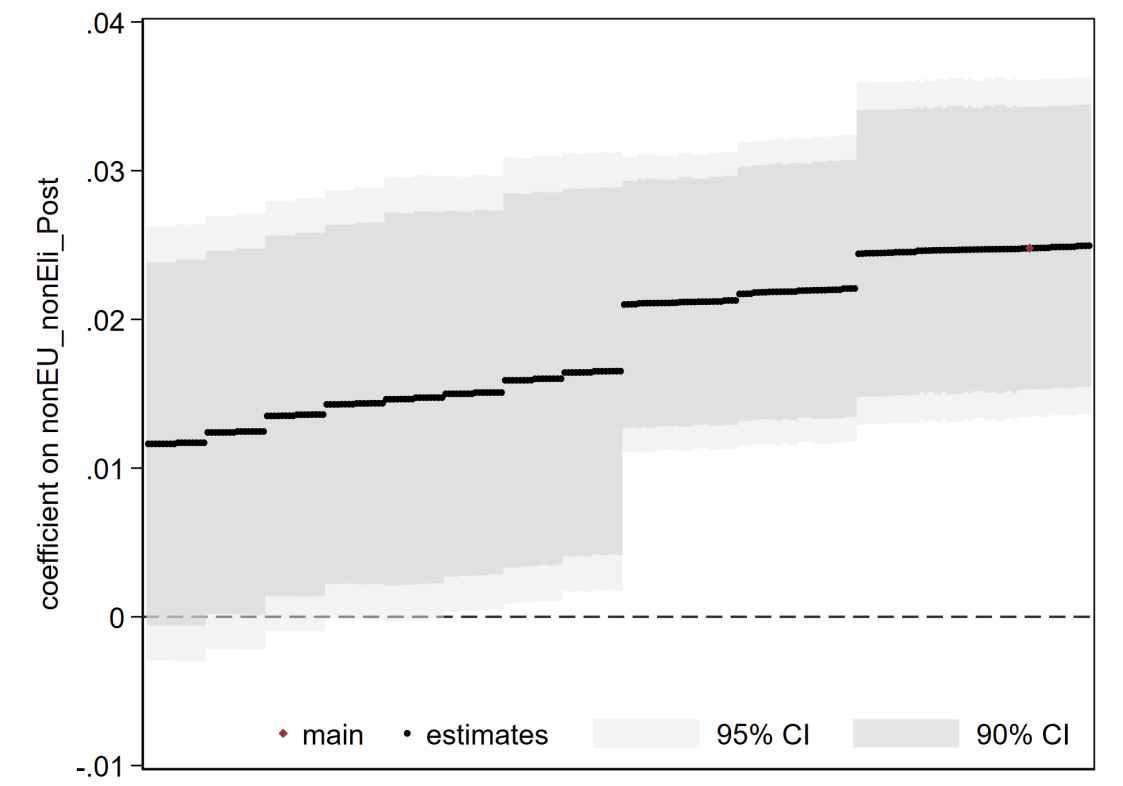
Notes: This figure shows the robustness of the main citizenship on savings rates results shown in column two of table 2 in the main paper. This figure focuses on the effect on the treatment group, migrants who were not previously eligible. Each marker corresponds to a regression with a different set of controls, 95% and 90% confidence intervals are given in light and dark grey. The coefficient used in the main text is given in red. Each regression uses a different permutation over possible controls. These controls are: employed full time, employed part time, years full time employed, years part time employed, education level, years of education, marriage status, presence of children in the household. Each possible combination of these controls corresponds to one regression on the figure. All regressions also include household, year, and state fixed effects. All regressions include controls for years in Germany, age (squared), household income, and the number of people in the household.

Figure 18 Controls Robustness: Effect of citizenship on not already eligible migrants savings rate



Notes: This figure shows the robustness of the main citizenship on savings rates results shown in column two of table 2 in the main paper. This figure focuses on the effect on the control group, migrants who were previously eligible. Each marker corresponds to a regression with a different set of controls, 95% and 90% confidence intervals are given in light and dark grey. The coefficient used in the main text is given in red. Each regression uses a different permutation over possible fixed effects. These fixed effects are: year of immigrants, state, age, origin country, location in 1989, birth region, and an east/west dummy. Each possible combination of these fixed effects corresponds to one regression on the figure. All regressions also include all controls in the baseline regression as well as household and year fixed effects.

Figure 19 Controls Robustness: Effect of citizenship on not already eligible migrants savings rate



Notes: This figure shows the robustness of the main citizenship on savings rates results shown in column two of table 2 in the main paper. This figure focuses on the effect on the treatment group, migrants who were not previously eligible. Each marker corresponds to a regression with a different set of controls, 95% and 90% confidence intervals are given in light and dark grey. The coefficient used in the main text is given in red. Each regression uses a different permutation over possible fixed effects. These fixed effects are: year of immigrants, state, age, origin country, location in 1989, birth region, and an east/west dummy. Each possible combination of these fixed effects corresponds to one regression on the figure. All regressions also include all controls in the baseline regression as well as household and year fixed effects.