Uncertainty, Citizenship & Migrant Saving Choices

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Abstract

In most Western countries, migrants hold significantly less wealth than natives. They also face significantly more uncertainty about their future. This paper examines the central role of uncertainty about citizenship prospects and future location in explaining these saving choices. Exploiting quasi-experimental variation and panel data from Germany, I show that migrants who have a right to citizenship save as much as comparable natives, while migrants without this right save 30% less. The 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 saving to increase in uncertainty, I show that the effect can reverse when utility is state-dependent or resources are not equally accessible across states. I specify a life cycle saving model with uncertain retirement location and heterogeneous country preferences. It shows that migrants have a preparatory saving motive where they are more willing to save and invest long term once they have greater certainty over both. I substantiate the model predictions empirically and document that migrants become significantly more likely to invest in illiquid assets as they gain access to citizenship.

JEL: J14, J15, J18, J61, H55, D81
Keywords: Uncertainty, Saving, Household Finance, Immigration, Citizenship

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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, at more than $100,000 at the median, and is particularly pronounced with regard to housing and pension wealth (Muckenhuber et al. [2022], Porpiglia et al. [2011], Cobb-Clark and Hildebrand [2006], Bertocchi et al. [2022], Poterba et al. [2011]). 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 (Bárcena-Martín and Pérez-Moreno [2017], Muñoz de Bustillo and Antón [2011]). It also reduces the economic prospects of their children, who have more health problems and lower educational attainments as a result (Aronowitz [1984], Tienda and Haskins [2011], Perreira and Ornelas [2011]).

The existing literature has been unable to fully account for this gap. Migrants, on average, work at lower wages and are less likely to hold long term contracts than natives (Borjas [1985, 1987], Brell et al. [2020]). Furthermore, they often have to take care financially of a larger group of dependants — both in their household and abroad (Amuedo-Dorantes and Pozo [2006], De Arcangelis and Joxhe [2015]). Both factors may lower the fraction of income they can set aside for saving. However, 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 and the legal right to reside permanently in a host country as a key policy relevant mechanism affecting migrants' savings rates. While this 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, 50.8% of non-naturalised migrants do not have a permanent right to stay, and in Germany, 61.2% of non-EU migrants only have a temporary right to stay. Furthermore, international migrants also know much less about how much they will enjoy living in the host country when they first arrive compared to natives. Employment and wage expectations are often incorrect. For example, McKenzie et al. [2013] find that migrants to New Zealand expect to find employment with 55% probability, strongly underestimating the true 90.5% probability. Uncertainty is even greater with regard to social life or lifestyle, where unmet expectations most commonly lead to return migration Gibson and McKenzie [2011].

Standard intertemporal models predict an increase in savings rates in the presence of greater uncertainty due to a precautionary saving motive. These models rely on two key assumptions: first, that resources carried into the next period are equally accessible whatever state of the world

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

is realised and second, that utility is not state-dependent. In the context of understanding migrants' saving choices, both 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. 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 be accessible when changing countries only while paying a transactions cost. This lowers the return to saving whenever one's future location is uncertain. The second channel, I term the "preference channel" which in itself has two components. First, a fixed effect governing where migrants prefer to live. Whenever future location is uncertain and they may not be able to live in the country the prefer, this will lower the utility migrants expect to derive from any unit of future consumption. Second, uncertainty over these location preferences that will only be revealed through experience and can lower expected utility even when one's future location is secure. I characterise the two 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 host 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, and to varying degrees. Agents are risk averse and have to factor different sources of uncertainty into their choices. They face idiosyncratic shocks to their income and country preference and 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 and utility derived from consumption decreases the marginal utility agents expect to derive from each unit of consumption, prompting 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 specifically, uncertainty over future location reduces saving in illiquid assets specifically. The model is specific enough to yield these and further testable implications, but also parsimonious enough to generalise 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 everyone[2]. These reforms thus radically altered in an unexpected way the uncertainty migrants faced over citizenship, and did so in a differential way across different groups of migrants (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 derives in full from differences in access to citizenship: I show that gaining access to citizenship causally increases the saving rate of migrants who see their prospects changed by 3.2pp — *completely and permanently*[4] closing the unexplained gap. The saving measure in the GSOEP 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. As those

[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 4.2pp.

might be differentially affected by changes within a regime or regime changes, I leverage the time varying, exogenous shifts in individual eligibility introduced by the two reforms and compare the behaviour of earlier and later cohorts of migrants. I find that migrants become 6pp more likely to own their home, 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 (6pp), firm securities (3pp), and firm equity (1pp), as well as hold savings in a bank deposit (5pp). This change appears not driven by an increase in the resources migrants have available to save. 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 uncertainty lowering migrants' preparatory saving motive. The fact that country specific investments such as pension plans increase the most shows that accessibility of future resources is an important factor for migrants' saving choices. The fact that investments in country-invariant illiquid assets such as firm shares and liquid saving also increase shows that the preference channel too is influential.

Access to citizenship can lower uncertainty through the preference channel in two ways. First, it eliminates the risk of being asked to leave the immigration country in retirement. 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. If the latter 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, but could still see their preferences changed are unaffected. This suggests that uncertainty over location induced by uncertainty over right to stay in the main driver behind the observable changes.

My findings have important policy implications. First, migrant native wealth inequality is a persistent and prevalent challenge across countries. Most factors driving the inequality, such as labour market outcomes or remittances, are systemic and hard for governments to shift. In contrast, governments have direct control over citizenship legislation and thus an instrument to increase migrants' saving choices by lowering their uncertainty over the future. This insight is particularly pressing amidst demographic change. As Western countries grow older, they increasingly reduce

[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.

state pensions and require constituents to prepare for retirement privately[8]. This makes private wealth an increasingly strong predictor of economic security in retirement, and a lack of wealth a predictor of precarity (Poterba [2014]). Furthermore, 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 long term will hinge on the ability of migrants to accumulate wealth and support themselves in old age (Gustafsson et al. [2019]).

This paper contributes to several active 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 (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 (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 (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 (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 (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 (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 (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],

[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 and have to be accompanied by private plans.

Carroll et al. [2021]). I show that the unambiguously positive impact of uncertainty on saving 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 (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 (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 (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 (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 (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 (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 implication of the results and Section 7 concludes.

2 Theoretical Framework

Migrants have to make saving choices under different, intersecting sources of uncertainty. First, they face uncertainty over their future level of consumption. 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. Additionally, they may also face greater uncertainty over the rates of return to their investment due to, for example, greater administration costs in the immigration country[9]. Both income and rate of return uncertainty should induce migrants to save at higher rates than they would in a more certain environment due to a precautionary motive (Dustmann [1997]).

[9]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]).

Individuals want to shift consumption to where it generates the highest marginal utility. Under the standard assumption of decreasing marginal returns to consumption a risk averse migrant will therefore increase her saving to insure against future fluctuation in consumption levels.

However, migrants also face uncertainty over their future *utility* of consumption. Migrants will derive different levels of utility from consumption in their home and the immigration country depending on their preference for either. This could derive for example from different weather conditions, friends and family networks or country cuisine and individuals' appreciation thereof. These preferences are likely open to change. Having moved to a new environment, migrants may not be sure how much they will enjoy living there. And 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. In turn, the eventual preferences determine how long migrants will want to stay in the immigration country and if they want to return at all (Adda et al. [2022]). Furthermore, migrants may not only be uncertain over whether or not they want to stay in the immigration country — they may also be uncertain over whether they will be allowed to do so. Migrants often have only a temporary right to stay. And even if they have a permanent one, it is frequently tied to conditions such as not leaving the country for prolonged periods of time. This external uncertainty over future location, like the internal one laid out above, translates into uncertainty over marginal utility derived from future consumption. Unlike uncertainty over future consumption levels, this uncertainty prompts risk averse migrants to shift consumption to the present where marginal utilities are known (and higher than the future expectation). I will refer to this channel as the *preparatory saving motive*. Individuals save in preparation for a future they hope comes to pass. If that future becomes more uncertain, they consume in the present instead.

While the precautionary saving motive has been well explored and documented in the literature (Low and Pistaferri [2015], Low et al. [2010], Gourinchas and Parker [2002, 2001], Hubbard et al. [1995], Deaton [1992], Zeldes [1989]), the preparatory saving motive arising from uncertain marginal utilities is a conceptual innovation of this paper. And while it is particularly pertinent in the context of migrants, who face high levels of uncertainty over future utility, making saving choices — it is not limited to it. Whenever individuals have a preference over different paths their life could take but there is uncertainty attached to which path will eventually play out, this uncertainty will lower their willingness to forego utility in the present for the benefit of the future. The effect will be stronger, the more path specific the long term investments are.

Location uncertainty particularly depresses incentives for migrants to save, if the most profitable saving technologies are not only long term but also country specific. 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 usually also incur high liquidation penalties if individuals withdraw money prior to their retirement or draw

the pension outside the subsidising country. This makes them a potentially bad investment for liquidity constrained individuals (Choukhmane et al. [2022] or those who may (have to) leave the country. Similarly, housing has high returns for large proportions of the population (Fagereng et al. [2020]), but commonly requires high initial investments and thus a long time horizon to reap the full benefits. The prospect of having to sell preemptively or on short notice, at a potentially sub-optimal market price, thus substantially reduces the expected returns to housing for migrants who may not be sure about their long term location. The deterrence effect will be stronger, the greater the liquidation costs.

Finally, migrants also have to account for different constraints in their capacity to save than natives might. The challenges they face on the labour market compared to natives can translate into lower levels of disposable income to be saved. Also, they may have less access to credit or only at worse conditions. For example, credit duration is often tied to length of right to stay. Hence, migrants with only a temporary right to stay might struggle to obtain a long term loan. This is important particularly for investments in housing or to start a business as those tend to be lumpy and require high levels of initial payments.

In the following, I specify a stylised life cycle saving model with uncertain retirement location that formalises the different dimensions of migrants' saving choices and draws out the key mechanisms. I use the model to derive general theorems on saving under uncertainty over future paths in a setting where profitable investments are partially irreversible. From the theorems, I derive testable implications leveraging heterogeneous effects of gaining access to citizenship. Access to citizenship eliminates uncertainty over future right to stay and plausibly lowers uncertainty over future income as well as preferences. It also lowers liquidation costs of long term investments by lowering administrative burdens in the immigration country. Exploiting the differential impact of these channels on different migrant groups and saving technologies, allows me to tease out their empirical relevance. As the credit channel does not shape migrants' saving choices significantly, I exclude it from the model.

2.1 Set Up

I specify a three period life cycle saving model to capture the decision problem of migrants living abroad[10] and choosing how much and by which means to save. In the first two periods, the working age, all agents live and work in the immigration country. 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,

[10]The model does not incorporate the decision to migrate. It focuses on the saving choices after having migrated.

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[11]. 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. Migrants' income during their working age, I denote 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 and η_t their attachment to their home country.

Preferences. Migrants derive utility solely from consumption in this model. However, how much utility they derive from it depends on both their attachment to their home country and the location they consume in. I assume that migrants differ in their preference for their home vis-à-vis the immigration country and that while migrants who are more attached to their home than the immigration country always prefer consumption there: $u_t^H > u_t^I, u_t'^H > u_t'^I$, for migrants who are more attached to the immigration country the reverse is true: $u_t^H < u_t^I, u_t'^H < u_t'^I$. I allow for variation in the strength of the attachment. Specifically, at the beginning of their life, migrants' attachment to their home country is determined through a random draw $\eta_1 \in U[0, 1]$. This attachment is not static, but subject to idiosyncratic shocks:

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

where $\epsilon_t \sim U[-\tau d, \tau d]$ with $\tau = \{\eta_{t-1}, (1 - \eta_{t-1})\}$ and $\tau \in [0, 1]$. With equal probability migrants feel more or less attached to their home country in a given period than they did in the preceding one, with the variance of the shocks decreasing in the initial strength of an individual's (dis-)attachment but collapsing to zero only if an individual is fully certain over their attachment [12]. Generally, χ = 0, only gaining access to citizenship can induce $\chi > 0$. The utility migrants subsequently derive from consumption in either country J = {I, H} in a given period t = $\{1, 2, 3\}$ is given by:

$$u_t^I(c_t^I) = \frac{(1-\eta_t)^{1-\alpha}}{(1-\alpha)} * \frac{c_t^{I\,1-\rho} - 1}{(1-\rho)}; \qquad u_t^H(c_t^H) = \frac{\eta_t^{1-\alpha}}{(1-\alpha)} * \frac{c_t^{H\,1-\rho} - 1}{(1-\rho)}. \tag{2}$$

[11] 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.

[12] This is in line with evidence on identity formation(Bénabou and Tirole [2011], Bhugra and Becker [2005], Hogg [2003]). It should be noted however, that all following theorems and proofs hold equally for the population if I allow for asymmetric preference shocks that do not decrease in strength of (dis-)attachment.

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. 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. I allow risk aversion over future country preference $\alpha \geq 0$ to differ from risk aversion over future consumption captured in ρ. 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). The heterogeneous and time variant country preference is similar to that in Adda et al. [2022] but I assume preference convergence over time, for example due to information effects. Note that since country attachment determines where migrants will want to retire all else equal, uncertainty over future preferences also implies uncertainty over future location.

Resources. Migrants' choices must satisfy their intertemporal budget constraint:

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

where b_t, a_t^I, a_t^H denote amounts held in the liquid as well as illiquid assets in the immigration and home country respectively. While agents can access funds held in the liquid asset already during their working age, they are only able to access the sum of their savings in the illiquid assets in retirement[13]. I assume that the rate of return on the illiquid asset is greater than the one on the liquid asset: $0 < r < q^J$ for $J = \{I, H\}$. However, I also assume that illiquid assets incur a cost k^J when liquidated and that they are country specific. This means that agents will only receive the full rate of return q on an illiquid asset if they retire in the same country where that asset is held. Whenever they hold savings in an illiquid asset outside of the country where they retire, they have to liquidate these savings to access them in retirement, meaning that their effective rate of return on these savings is not q^J but $(q^J\text{-}k^J)$[14]. In the main specification of the model, I assume that $q^I = q^H$ and $k^I = k^H$. This is to capture the general case where migrants come from anywhere

[13]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).

[14]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.

in the world, from sending countries which greatly vary in their financial systems and (effective) interest rates. In the general case, the differences will average out. However, it should be noted that 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. Finally, y_t^I denotes agents' income in period t. Income is determined exogenously, but it is not static:

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

where $\nu_t \sim N(\mu, \sigma_y)$. In general, $\mu = 0$, only access to citizenship can induce $\mu > 0$.

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

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

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. Note that this risk can be a subjectively perceived one. 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. As a consequence, migrants intending to leave the immigration country are unaffected in their choice set, but migrants intending to stay have to factor into their choices that with probability θ they will have to leave. 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.

Access to citizenship. I assume that access to citizenship reduces (perceived) risk to right to stay θ to 0 and reduces variance in future income σ_y and preferences by reducing τ. I further allow for it to raise expectations over future income by shifting the expected value of the income shock from $\mu = 0$ to $\mu > 0$. 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. Access to citizenship raises $\chi = 0$ to $\chi > 0$.

2.2 Implications

The model yields a variety of general predictions about how migrants' make 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. In the following, I will lay out the theorems, the intuition behind them and the empirical implications. All formal proofs can be found in Section A in the Appendix.

2.2.1 Theoretical Implications

In general, agents who are relatively attached to their home country, $\eta_t > 0.5$, will want to return to their home country in retirement all else equal. Because of that, absent any uncertainty, they 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, only they will invest in the illiquid asset in the immigration country a_t^I, so that for them $u_3^H(c_3^H) < u_3^I(c_3^I)$ and they will choose 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]). Furthermore, agents save more the greater their disposable income in a given period y_t is compared to their disposable income in the future, i.e. the greater their capacity to save[15].

The model has three key implications about the impact that different sources of uncertainty have on saving choices.

Implication 1 (Precautionary Motive): *Uncertainty over future consumption levels increases agents' propensity to save across assets.*

Agents want to allocate consumption levels to wherever they yield the greatest marginal utility. For risk averse agents marginal utility decreases in consumption levels. Consequently, uncertainty over future consumption increases the marginal utility of future consumption in expectation, prompting

[15] Again, I abstract from access to credit and fixed investment costs in this model as these channels empirically do not appear to drive saving allocations in relation to access to citizenship.

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], Low and Pistaferri [2015], Gourinchas and Parker [2002], Hubbard et al. [1995], Zeldes [1989]).

In this framework, uncertainty over future consumption levels 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 and particularly so the stronger their attachment to their home country is.

Implication 2 (Preference Channel): *Uncertainty over future marginal utility derived from consumption decreases agents' propensity to save across assets.*

The effect again derives from the fact that agents want to shift consumption to the period and location where it yields the highest marginal utility. However, while uncertainty over consumption levels induces higher saving due to the decreasing marginal utility of consumption of risk averse agents, uncertainty over future marginal utility has the opposite effect. If agents are uncertain over how much they will enjoy an extra unit of future consumption, risk aversion implies that agents expect *lower* marginal utility in the future. Consequently, they shift consumption into the present and decrease their savings. Furthermore, this is true even for risk neutral agents whenever experienced utility varies with different paths their life could take and they are uncertain about which path exactly they will go down. Intuitively, agents have a lower incentive to save if they are less certain about the future they are saving for[16]. This is the preparatory saving motive that I identify in this paper.

In this framework, uncertainty over future marginal consumption can derive from uncertainty over future country preference η_t or future right to stay θ (translating in uncertainty over future location). Greater variance in η_t induced by a greater τ reduces the propensity to save for all agents whenever they are risk averse, $\alpha, \gamma > 0$. 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 they are risk neutral, $\alpha, \gamma \geq 0$. In both cases, the effect is stronger, the greater α. In the latter case, the effect is stronger the greater the country preference differential $\frac{(1-\eta_t)}{\eta_t}$, as the potential loss of future marginal utility is more pronounced.

[16] 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.

Implication 3 (Accessibility Channel): *Liquidation costs decrease saving in the illiquid asset in agents' country of choice whenever they are uncertain about their future location.*

Liquidation costs have no impact on agents' saving choices if they are certain about their future path. However, as soon as agents are uncertain over which path might manifest, the partial irreversibility of illiquid investements renders them a less attractive option to save in as their expected rates of return decrease. This amplifies the negative impact path uncertainty has on agents' propensity to save.

Generally, 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. However, once there is a probability of retiring in the other country instead, the potential liquidation penalty lowers the expected rate of return on this asset. For small probabilities of switching country P(switch), agents will still invest in the illiquid assest of their country of choice, but lower amounts. Whenever $k > q - r$, for medium level of P(switch) agents shift to saving in the liquid asset which has path independent rate of returns, while for high P(switch) they shift to saving in the illiquid asset of the country they did not initially intend to retire in. 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). If $k < q - r$ agents immediately shift from illiquid saving in one country to that in the other as they pass P(switch). 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 η_t, their risk aversion α, γ, and the ratio of the rates of return on the illiquid and the liquid asset $\frac{q}{r}$. In all cases, overall saving will be lower as the highest attainable rate of return is reduced.

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. Under liquidation costs, uncertainty over right to stay can reduce individual's welfare even more substantially. In this model, if a migrant wants to retire in the immigration country, but believes that with a high probability P(switch) they will have to leave, they will 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 to there, while an agent with a weak home country attachment will prefer to stay in the immigration country. However, with positive 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 $\frac{(1-\eta_3)}{\eta_3}$.

2.2.2 Empirical Implications

The model yields multiple testable implications. First, migrants will save less than comparable natives[17] if and only if, compared to natives, they face greater uncertainty over their future location and enjoyment of consumption than uncertainty over consumption levels. Access to citizenship will increase migrants' saving rate and decrease a previously detrimental gap whenever migrants face greater uncertainty over their future location and enjoyment of consumption than uncertainty over consumption levels *plus* the reduction in location and preference uncertainty associated with access to citizenship outweighs any reduction in income uncertainty. Access to citizenship will not just reduce but fully close the saving rate gap, whenever uncertainty over future location and enjoyment of consumption is the dominant driver of differences migrants' and natives' saving behaviour. This would be evidence of uncertainty over the future stifling saving due to the preparatory outweighing the precautionary saving motive.

Furthermore, if we allow for positive liquidation costs on some assets, changes in different types of uncertainty do not only have contrasting implications with regard to migrants' overall saving rate — but also the saving technology they use. If migrants' saving choices are informed predominantly by high levels of income uncertainty, they should hold a higher proportion of their savings in liquid assets (for example bank deposits) than natives do. Access to citizenship should decrease both liquid and illiquid saving, but illiquid saving to a lesser degree. In contrast, migrants will hold lower levels of saving in illiquid assets such as pension plans or housing than natives do if their choices are shaped chiefly by high levels of uncertainty over future location and experienced utility. In this case, access to citizenship will increase both illiquid and liquid saving, but illiquid saving to a greater degree. In general, liquidation costs only impact saving choices if there is some uncertainty over future location. However, it could be that uncertainty over future location impacts saving only through liquidation costs, not differences in utility that migrants derive from consumption in different countries. In this case, migrants will hold a much higher fraction of their savings in

[17] That is, natives who differ neither in their capacity to save (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).

liquid rather than illiquid assets with the overall saving amount only slightly below that of natives. Access to citizenship will increase saving in illiquid assets, while decreasing savings held in liquid assets. Finally, access to citizenship will only lead to a change in liquid saving and a shift in illiquid saving from one country to another if liquidation costs are greater than the difference in the rates of return to illiquid and liquid assets and uncertainty over future location is perceived as substantial by at least a part of the migrant population.

Access to citizenship could increase migrants' willingness to save in two distinct ways — by decreasing uncertainty over future country preferences or by decreasing uncertainty over future right to stay. Both channels will lead to greater certainty over future marginal utility and thus stimulate saving, but, as laid out above, with different welfare implications. If access to citizenship increases migrants' saving rate by granting them greater certainty about their future preferences, this should affect migrants from EU countries and non-EU countries alike. Both groups move to a new country and only find out over time how much they enjoy living there, and both groups main gain greater clarity over their future in the country if they get access to citizenship. However, since EU migrants have a secure permanent right to stay already through their EU passport, gaining access to citizenship should not affect how they perceive their future right to stay. Thus, access to citizenship will increase the saving rate of non-EU migrants alone, if and only if the main channel through which the effect operates is uncertainty over future right to stay.

It could also be that access to citizenship shifts migrants' preferences, increasing their attachment to the immigration country. Such a preference shock should affect all migrants, temporary or permanent, similarly, resulting in an increase in the desired length of staying in the immigration country across the initial distribution of intended durations of stay. If instead only migrants who initially intended to stay long term become more assured in said intention, this would provide additional evidence that rather than shift preferences, access to citizenship decreases uncertainty over future right to stay — lowering incentives for migrants to save abroad and thus potentially choose to return at some point.

Finally, if migrants have differential preferences for their home and the immigration country and this shapes their saving choices, migrants who report a greater attachment to their home country should have more immediate return plans and save at greater rates than migrants planning to stay long term. Furthermore, if access to citizenship shifted migrants capacity to save, we should see an increase in income, labour market outcomes or their credit take up.

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%).[18] 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%)[19] and more likely to depend on benefits (9.4%, compared to 3.0%)[20].

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[21], 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 immediate 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

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

[19] 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.

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

[21] 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.

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[22] 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[23]. Finally, and crucially, the new law established age dependent residency requirements. While adult migrants aged 23 and older had to have resided in Germany regularly for at least 15 years, adolescent migrants aged 16-22 became eligible to naturalise after only 8 years of residence.

These regulations remained in place for nearly a decade, until May 1999, when the newly elected German parliament passed the Citizenship Act ("Staatsangehörigkeitsgesetz") which came into effect on 1^{st} January 2000. The law represented another drastic overhaul of the existing

[22]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.

[23]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.

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[24]. Finally, the law granted "ethnic Germans" ("Aussiedlern") automatic citizenship upon them settling in Germany. These comparatively restrictive regulations[25] 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 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,

[24]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.

[25]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.

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[26] 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.

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

[26]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.

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.[27] 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 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

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

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:

$$Y_{it} = \alpha + \beta * \text{TreatedMig}_i * \text{PostAlAct}_t + \theta * X_{it} + \text{Year}_t + \text{State}_s + \text{HH}_i + \epsilon_{it} \tag{7}$$

where 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.*

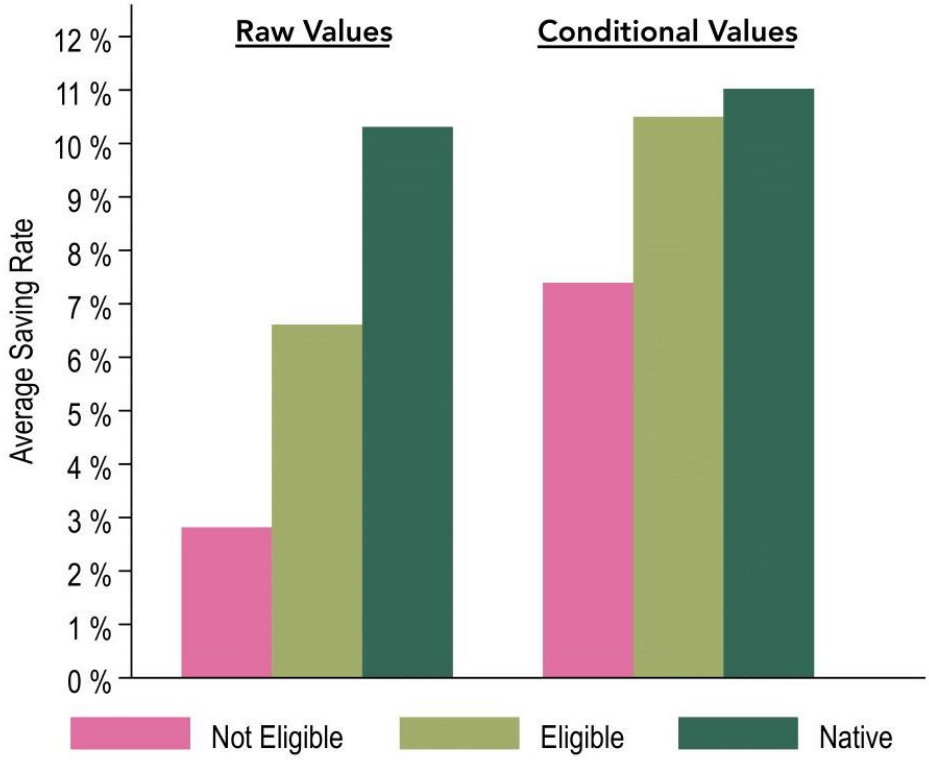
Recalling the theoretical predictions from Section 2, the first thing we need to establish about migrants' saving choices under uncertainty, is whether their choices are predominantly driven by the precautionary or the preparatory saving motive. If migrants are particularly uncertain about their future 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.

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[28] 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 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[29]. 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.

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 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

[28] 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.

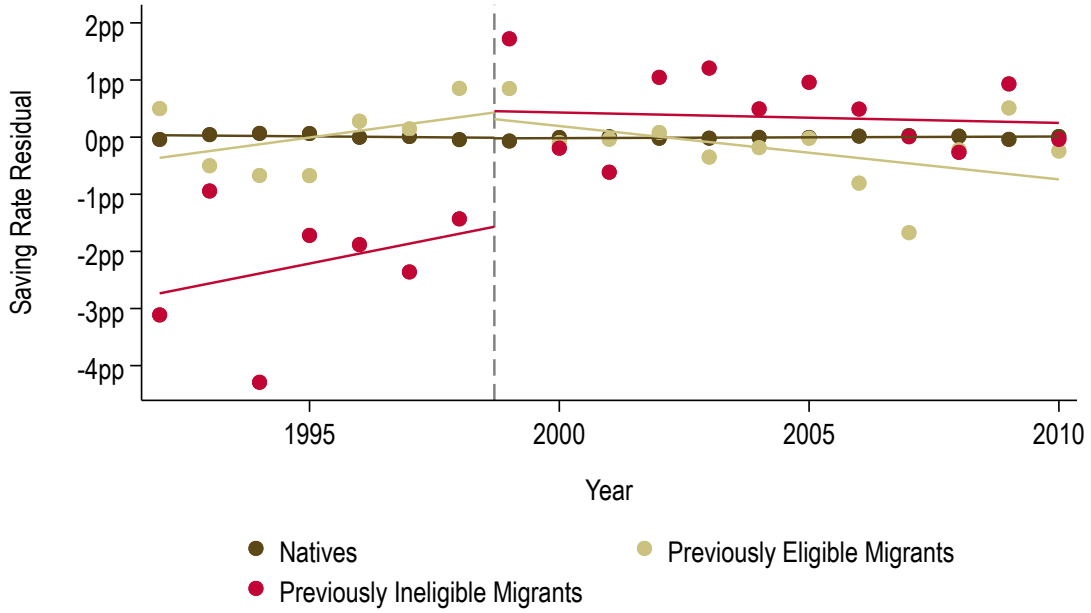
[29] Natives' saving rate is completely flat while migrants of both groups see a slight upwards trend in their saving rate residuals — highlighting the importance of using two control groups and not merely comparing migrants to natives. The uptick could derive from the anticipation of the introduction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

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.

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.

Figure 3 Progression of the Mean Residual Saving Rate Over Time



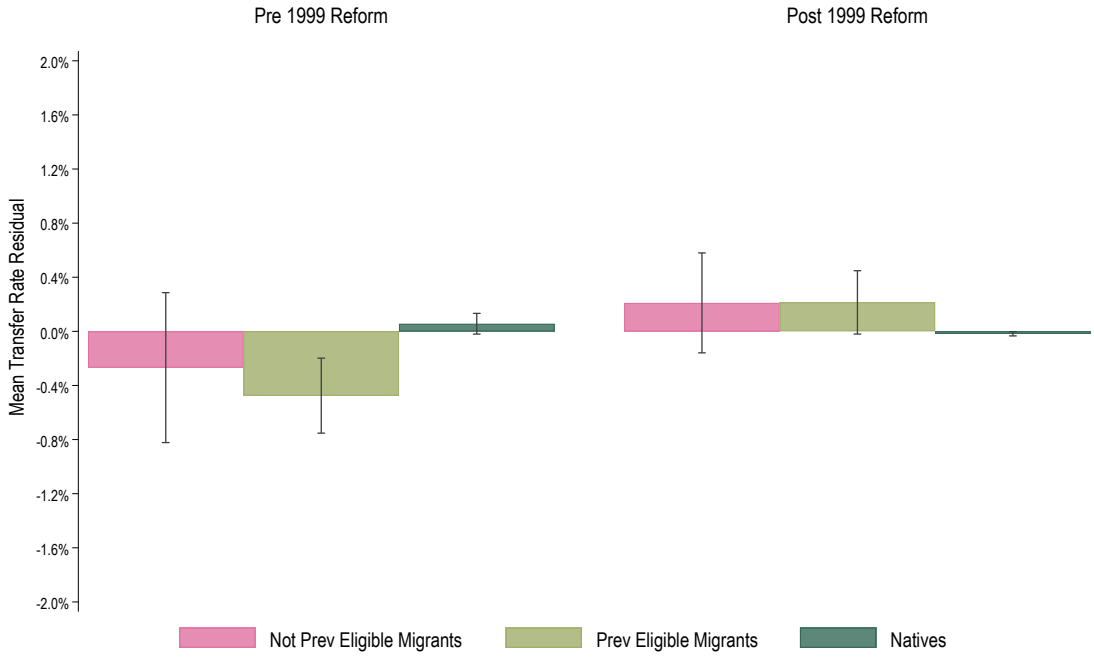
Notes: This figure shows the evolution over time of the saving rate residual for migrants who were ineligible for citizenship in the pre-reform period (pink), migrants who were eligible for citizenship pre-reform (light green), and natives (green). Dots represent mean values for each group within a given 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.

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.

Figure 4 DID Pre/Post Residual Remittance Rate



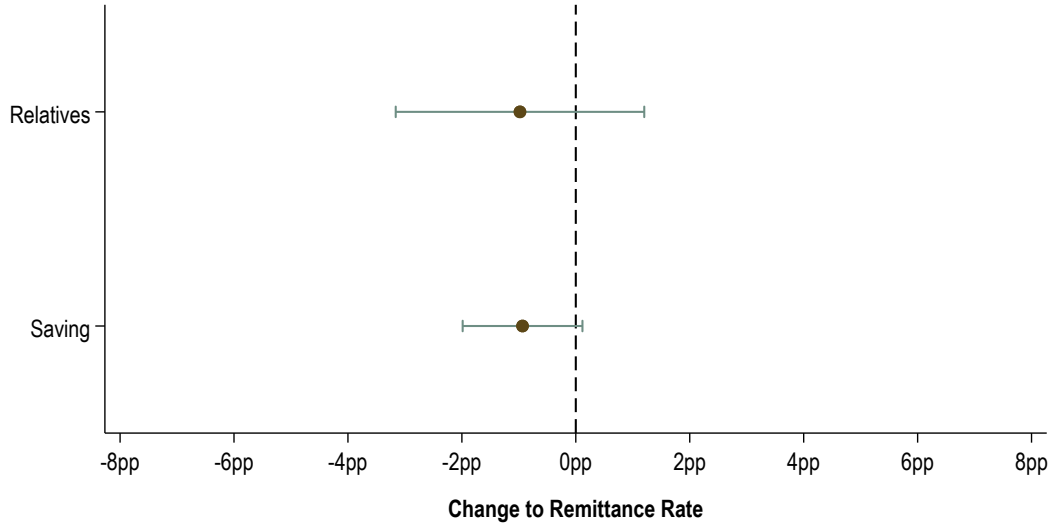
Notes: This figure shows the residualised remittance rate for migrants who were ineligible for citizenship in the pre-reform period (pink), migrants who were eligible in the pre-reform period (light green), and natives (dark green) in the pre-reform (left-hand side) and post-reform (right-hand side) 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.

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 5 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.

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.

Figure 5 DID Pre/Post 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.

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.

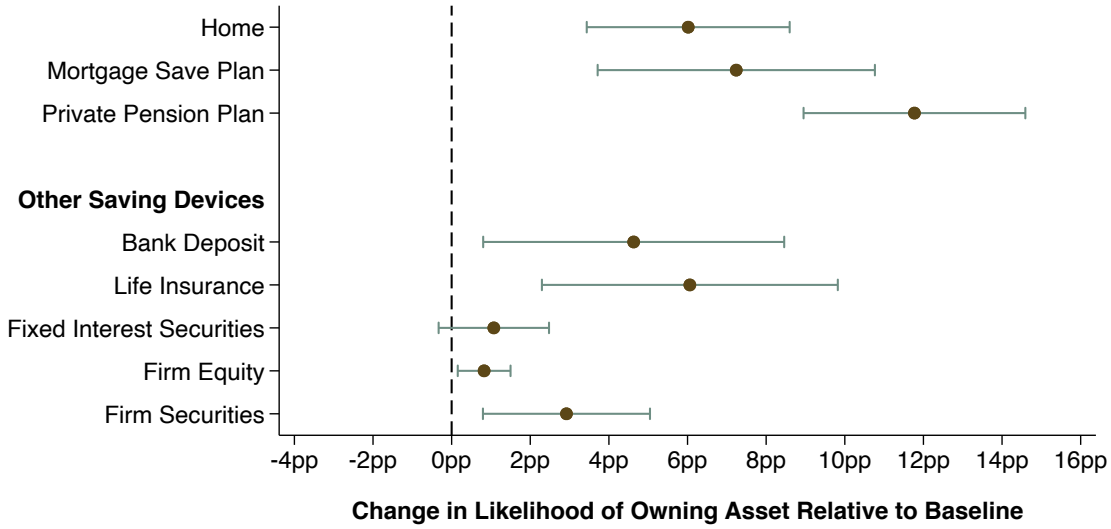
5.2 Long Term Investments

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[30].

Figure 6 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 6 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 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[31], 5.2pp more likely to hold bank deposits, 6pp

[30] 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

[31] 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.

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 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. Migrants' capacity to save does not save through them gaining access to citizenship. Instead, the empirical changes in their saving behaviour are exactly 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.*

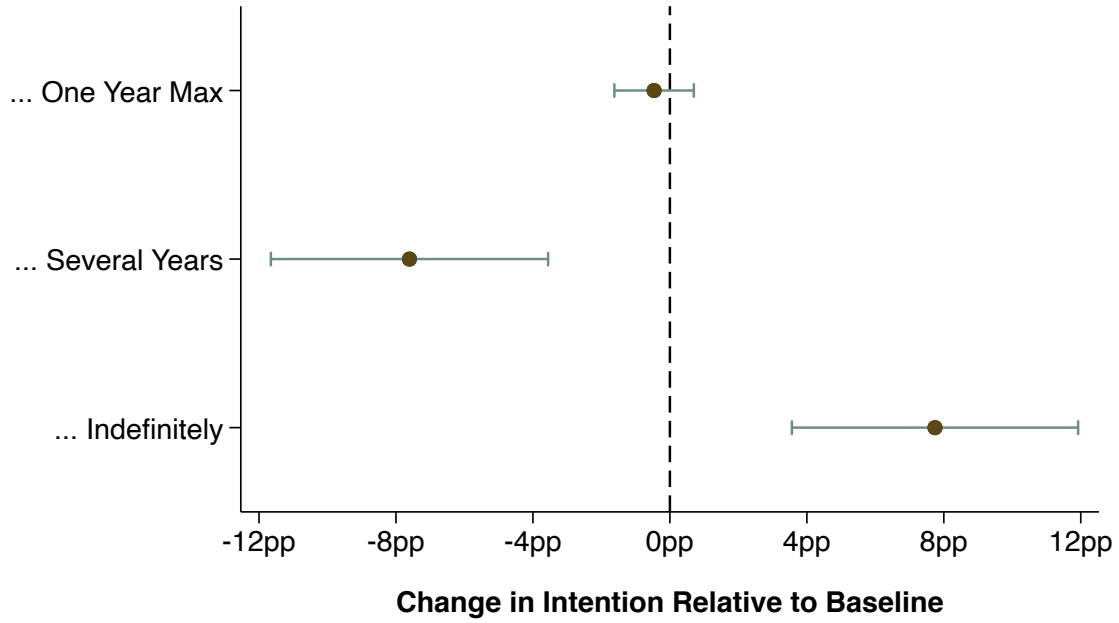
The evidence suggests that migrants increase their saving and long term investments in response to gaining access to citizenship because it lowers their uncertainty over the utility they will derive from consumption in the future, prompting risk averse agents to shift consumption forward.

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 7 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 7 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 clearly 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 the marginal utility they can expect to derive from consumption in retirement. 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.

6 Discussion

We have established that migrants without access to citizenship save significantly less than natives and migrants *with* access to citizenship. And that the residual gap can be closed by giving migrants the prospect of easier access to citizenship. Furthermore, we see that the lasting increase in migrants' saving rate is accompanied by a higher propensity to invest in housing as well as private pension plans and other assets in Germany. These observable changes imply that migrants are

more likely to accumulate higher levels of private wealth when given access to citizenship. This in turn should reduce their personal risk of being poor in old age and increase their lifetime welfare – assuming that as restrictions are lifted, they are better able to make choices in line with their actual preferences. However, could the individual improvements also have aggregate implications for welfare?

If the higher saving rate and propensity to invest in country specific assets indeed translates into higher wealth accumulation, then migrants choosing to stay in Germany will have a higher wealth stock by the time they retire. This in turn will make them less likely to depend on government transfers during retirement. In general, there are different sources of state transfers that individuals can receive in retirement besides statutory pension payments – irrespective of whether they are a German citizen or non-German a resident. Transfers are available to all individuals whose combined retirement income from the statutory and potential occupational and private pensions is less than the legal minimum below which individuals are determined to be "in need of help" (hilfebedürftig) – unless they have sufficient wealth. In practice, this currently means that an individual with a monthly net income of less than 893€ and not more than 5000€ in wealth would be eligible to receive "basic security in old age" (Grundsicherung im Alter) payments (pending case specific regulations). Furthermore, even if the requirements of "basic security in old age" payments are not met, individuals with a monthly net income of less than 432€ and less than 5000€ in wealth can receive "livelihood security" (Hilfe zum Lebensunterhalt) payments or housing assistance (Wohngeld) if the household net income is deemed insufficient to meet rent or upkeep costs (exact income cutoffs depend on number of people living in the household, area of residence, etc). In 2020, about 2% of the non-German population living in Germany received "basic security in old age" transfer payments, compared to only 1.2% among German citizens.

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

7 Conclusion

In this paper, I provide evidence that uncertainty about the permanence of their right to stay keeps migrants from accumulating wealth in the host country. Specifically, I show that migrants

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

These are important insights for governments seeking to attract migrants to address the growing threat ageing populations pose to the stability of pension systems. The findings of this paper show that earlier access to citizenship can lastingly increase the saving rate of new migrants. This enables them to accumulate more wealth in the host country, be more self sufficient in retirement, and require less public assistance. As an added benefit, migrants' decreased reliance on state transfers preempts allegations of them trying to take advantage of the host country's welfare system, and generates support among a broader fraction of the native population. And as citizenship, unlike other dimensions of integration, is under direct government control, the findings of this paper provide policy makers with immediate scope for action.

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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:

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

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

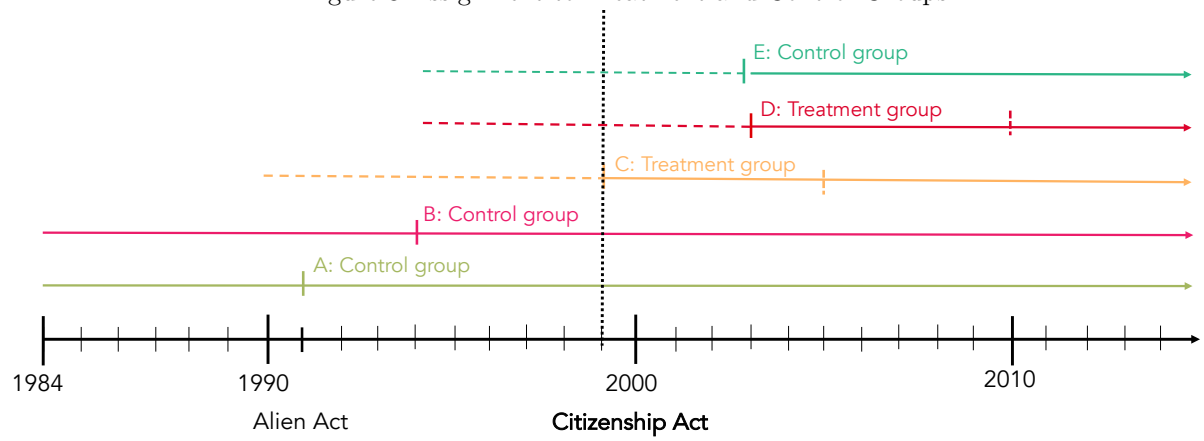
My main outcome variables are the amounts households save in Germany as well as remit abroad — in absolute terms and as a fraction of the net household income available to them. The amounts are measured in euros per month adjusted for inflation while the saving and remittance rates reflect the fraction 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 4 & 5.

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

Figure 8 Assignment to Treatment and Control Groups

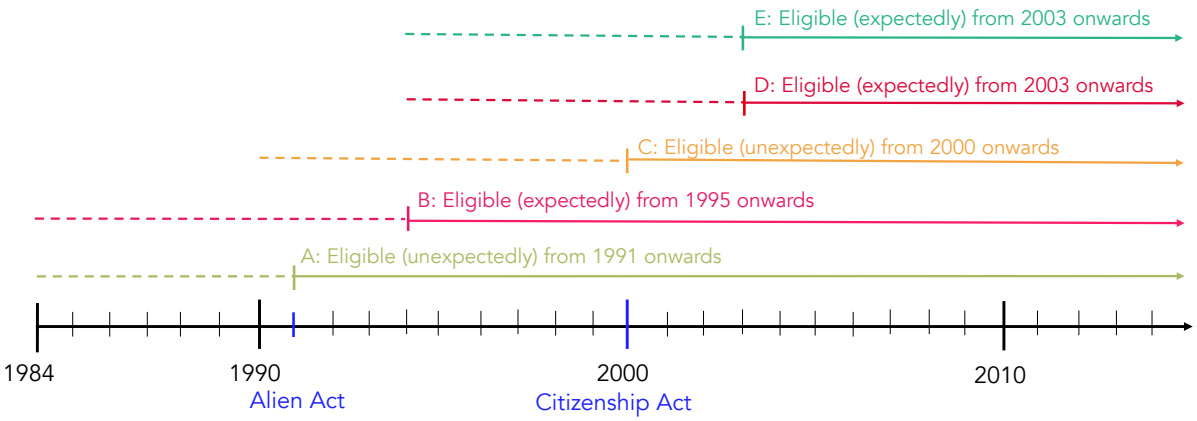


Notes: This graph depicts the core intuition behind the first identification strategy. Each line represents the changing location and legal status of a given migrant. Dashed horizontal lines denote a migrant who has moved to Germany but does not yet have access to citizenship. Solid lines denote migrants 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 8 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 9 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 9 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.

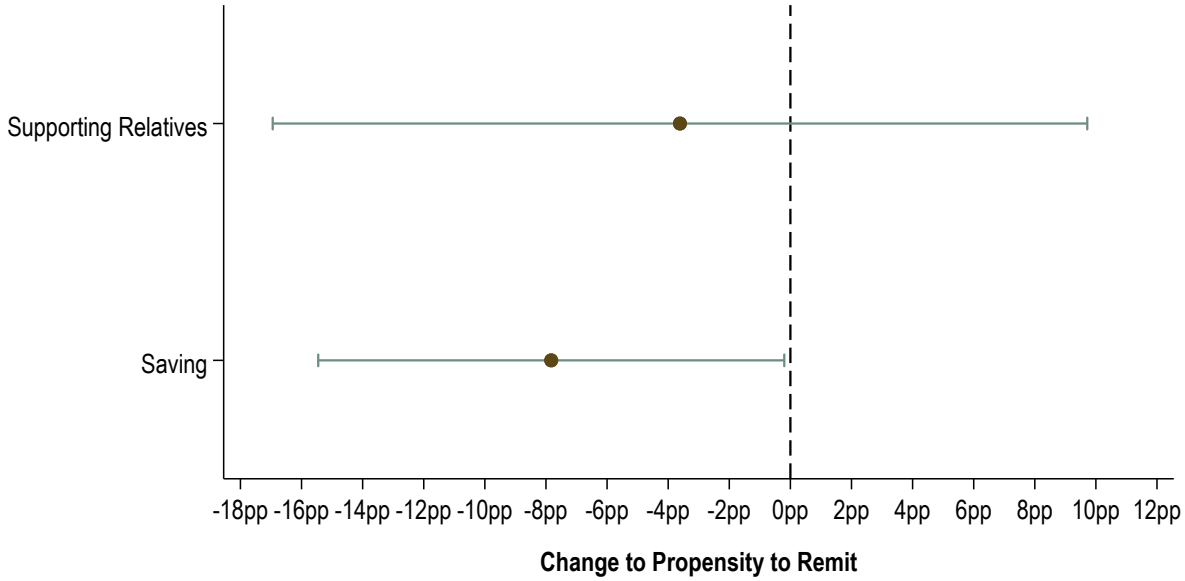
Table 5 Effect of Eligibility for Citizenship on Identity & Worries

	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.

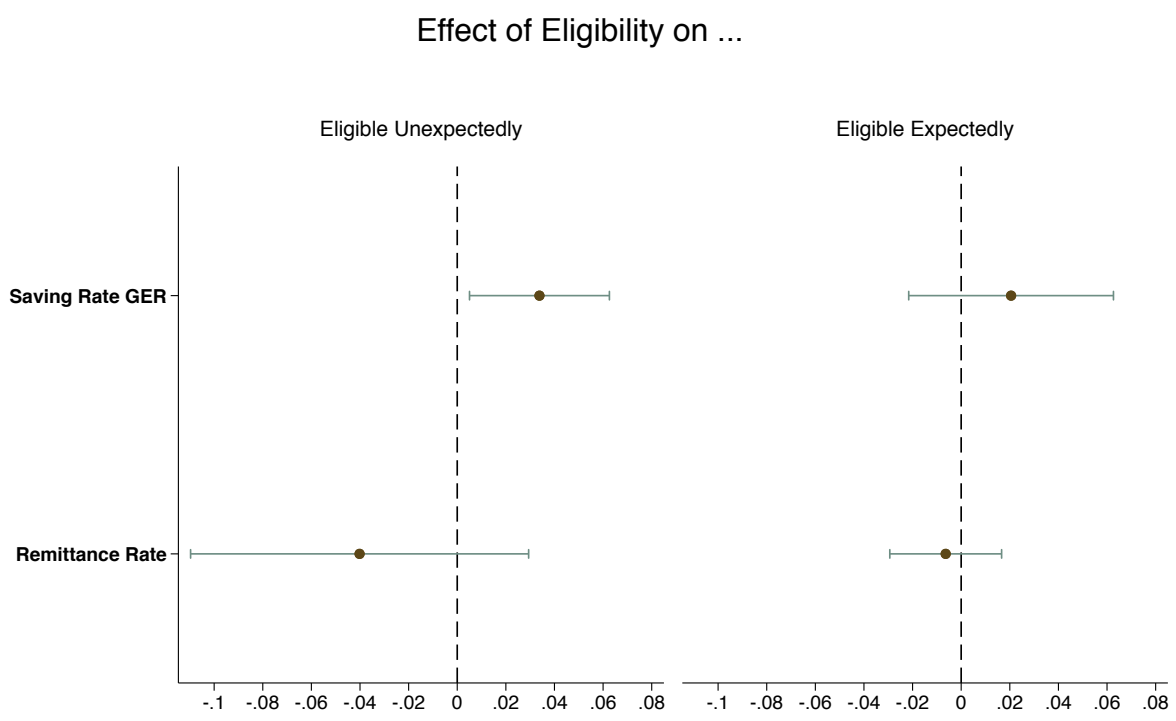
G Additional Result Figures

Figure 10 1990 DID, Residual Remittance Rate



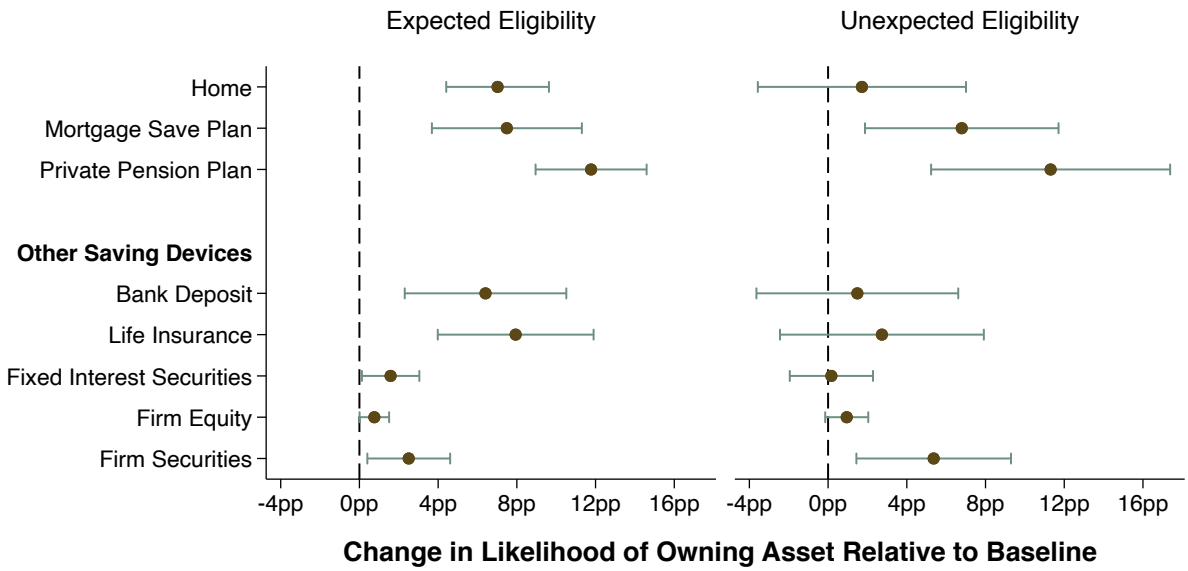
Notes: This figure depicts the effect of becoming eligible for citizenship relative to merely gaining the prospect of future eligibility on households' propensity to remit money for the purpose of supporting relatives and saving respectively. The variation stems from the Alien Act passing parliament 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



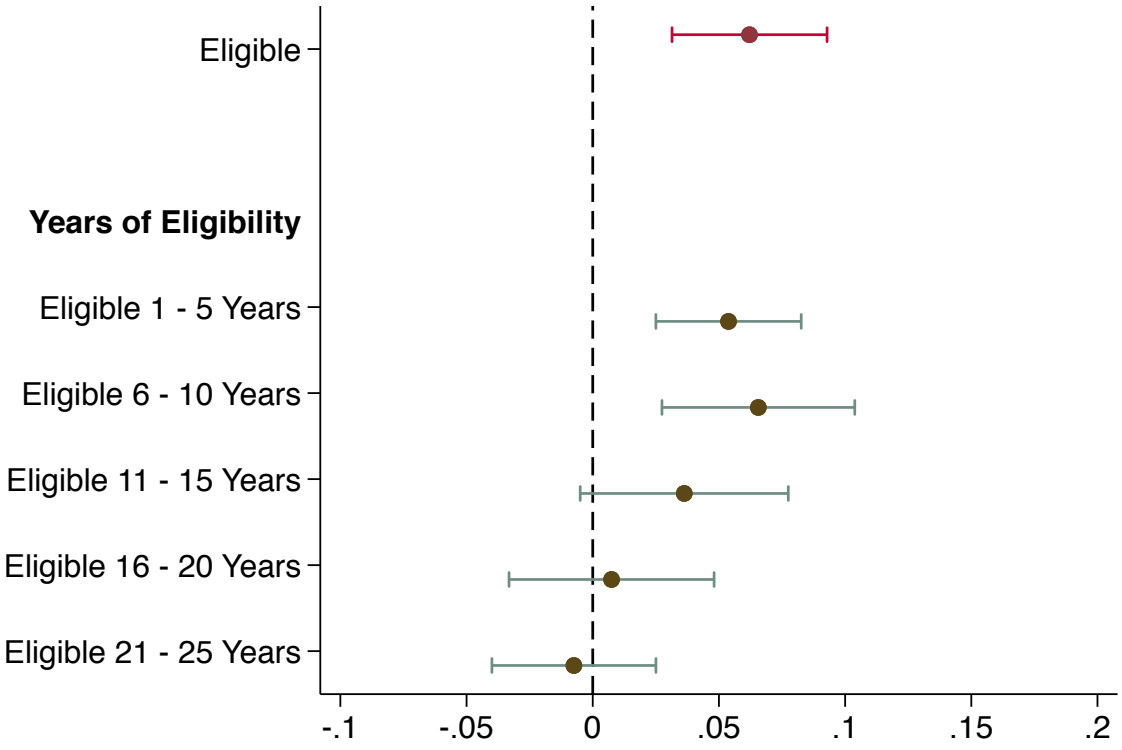
Notes: This figure shows the effect of citizenship eligibility on household saving and remittance rates separately for households that become eligible expectedly (right-hand side) and unexpectedly (left-hand side). Markers indicate point estimates and caps represent 95% confidence intervals. Standard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

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



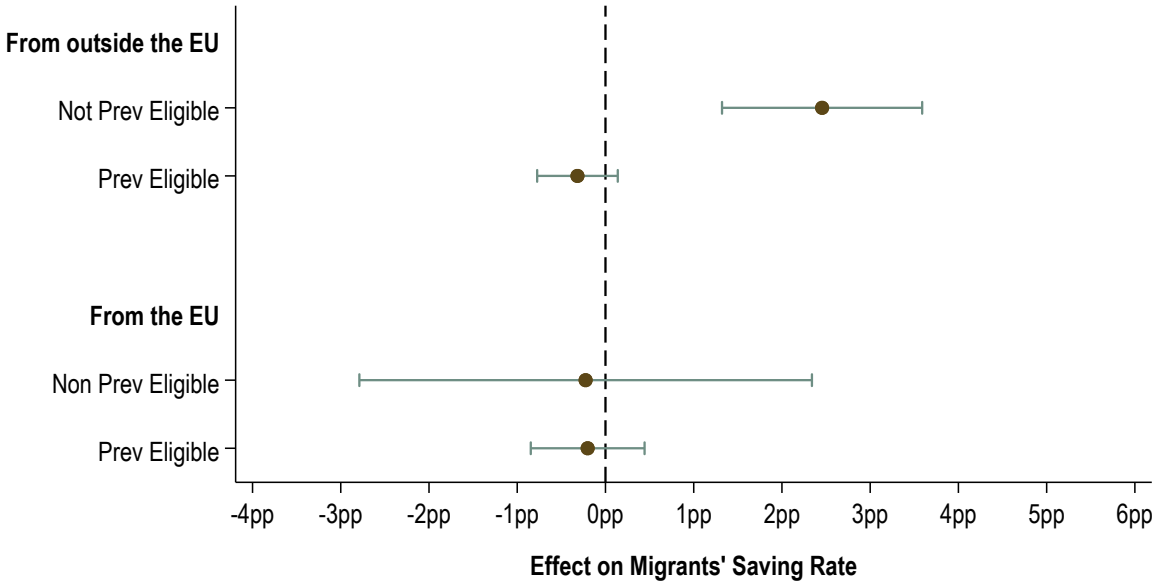
Notes: This figure shows the effect of citizenship eligibility on households' likelihood to own different saving technologies separately for households that become eligible expectedly (right-hand side) and unexpectedly (left-hand side). Markers indicate point estimates and caps represent 95% confidence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



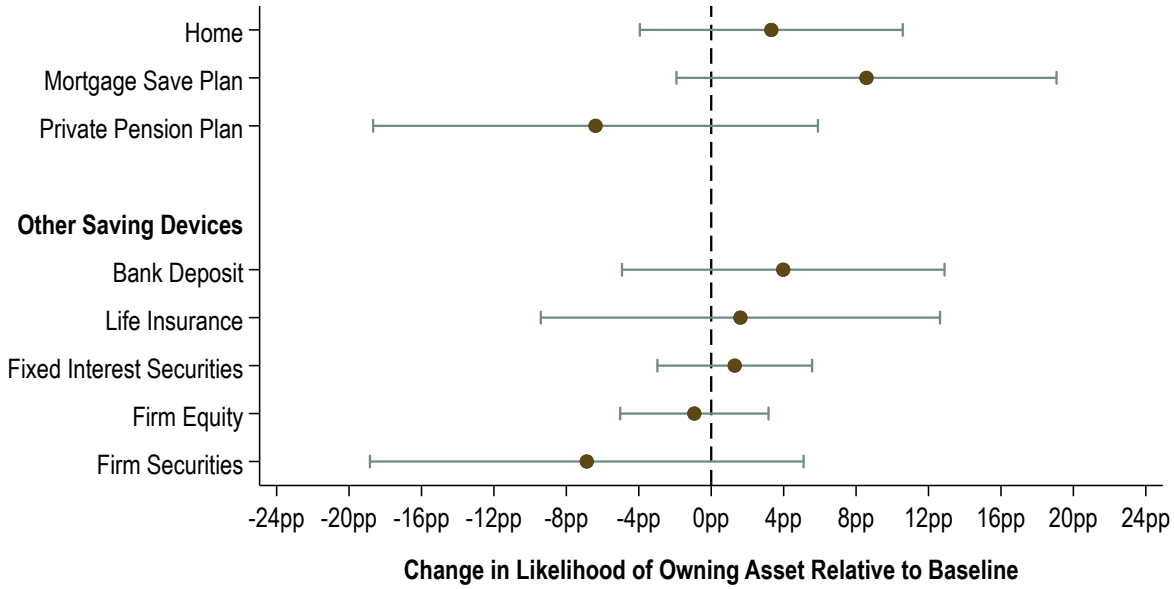
Notes: This figure shows the effect of eligibility and years of eligibility on the propensity to own one's own home. Markers represent point estimates and caps represent 95% confidence intervals. Standard errors are calculated by clustering at the household level.

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

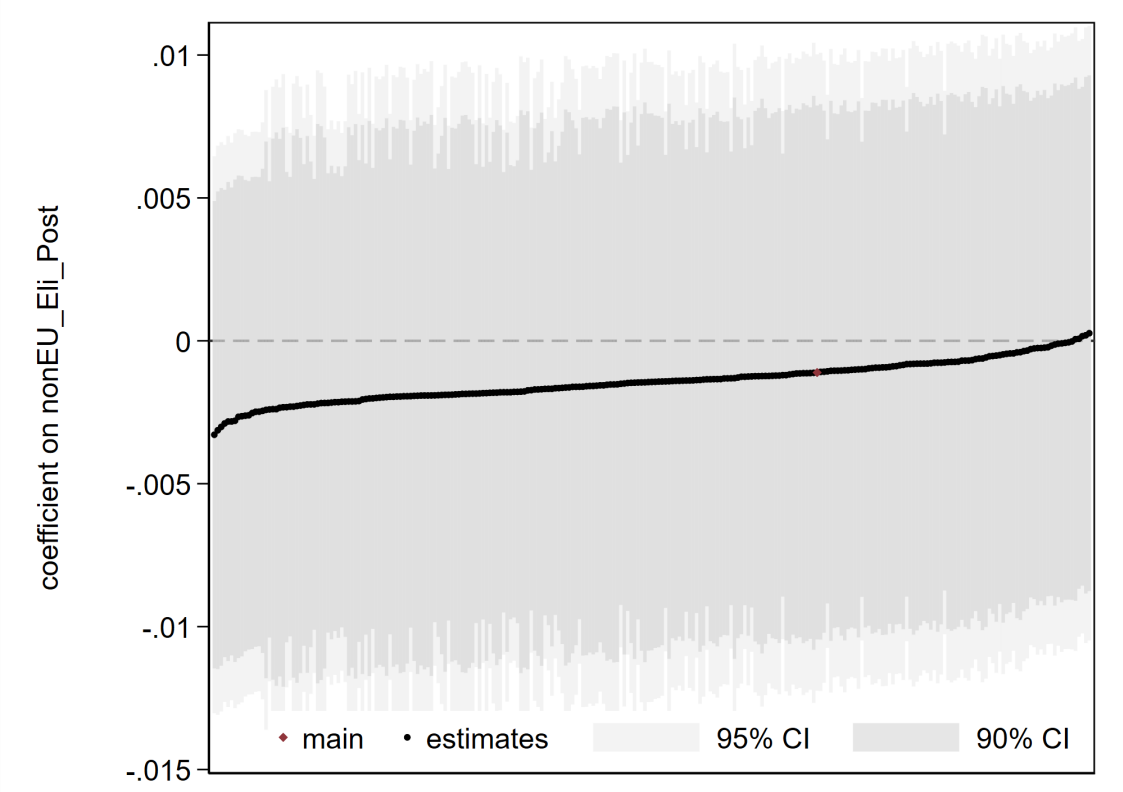


Notes: This figure is replicating Figure 6 for migrants from EU15 countries. Markers represent point estimates and caps represent 95% confidence intervals. Standard errors are calculated by clustering at the household level.

H Robustness of Main results

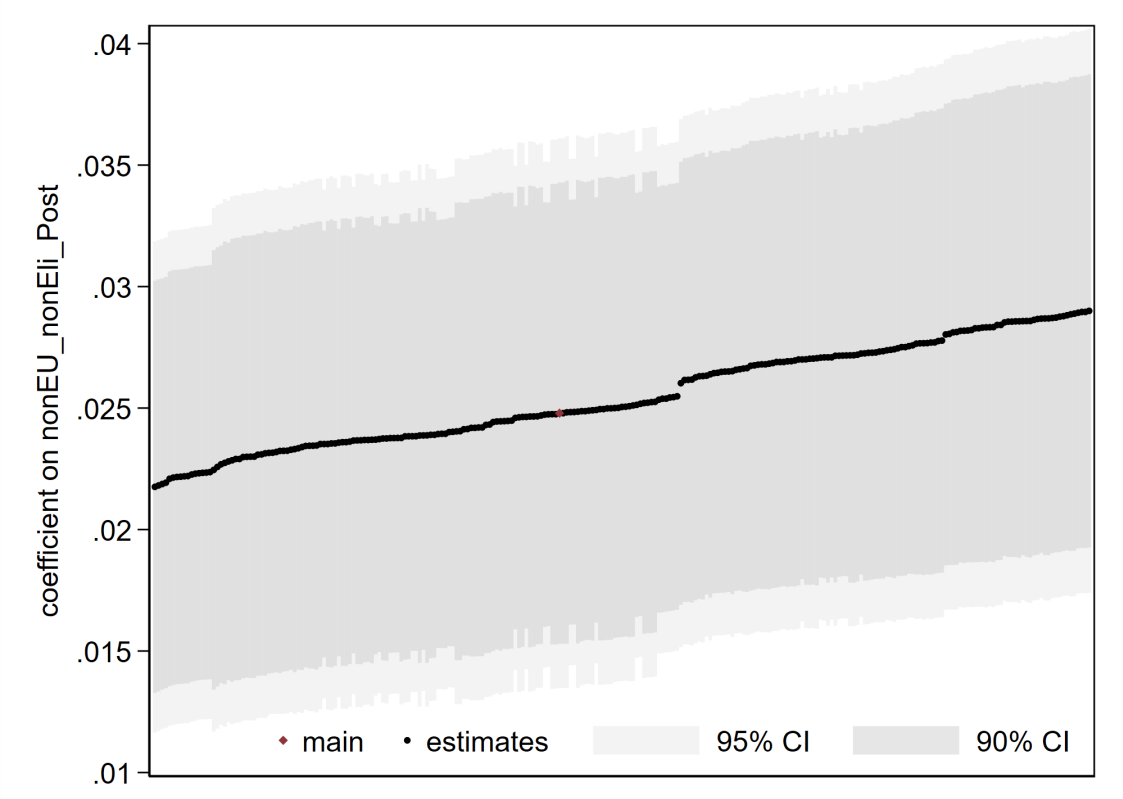
Figures in this section show the robustness of the main results in table 2 to permuting over all possible combinations of control variables (figures 16 and 19) and fixed effects (Figures **??** and 18). To retain computational tractability these two sets of permutations are presented separately. In all 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



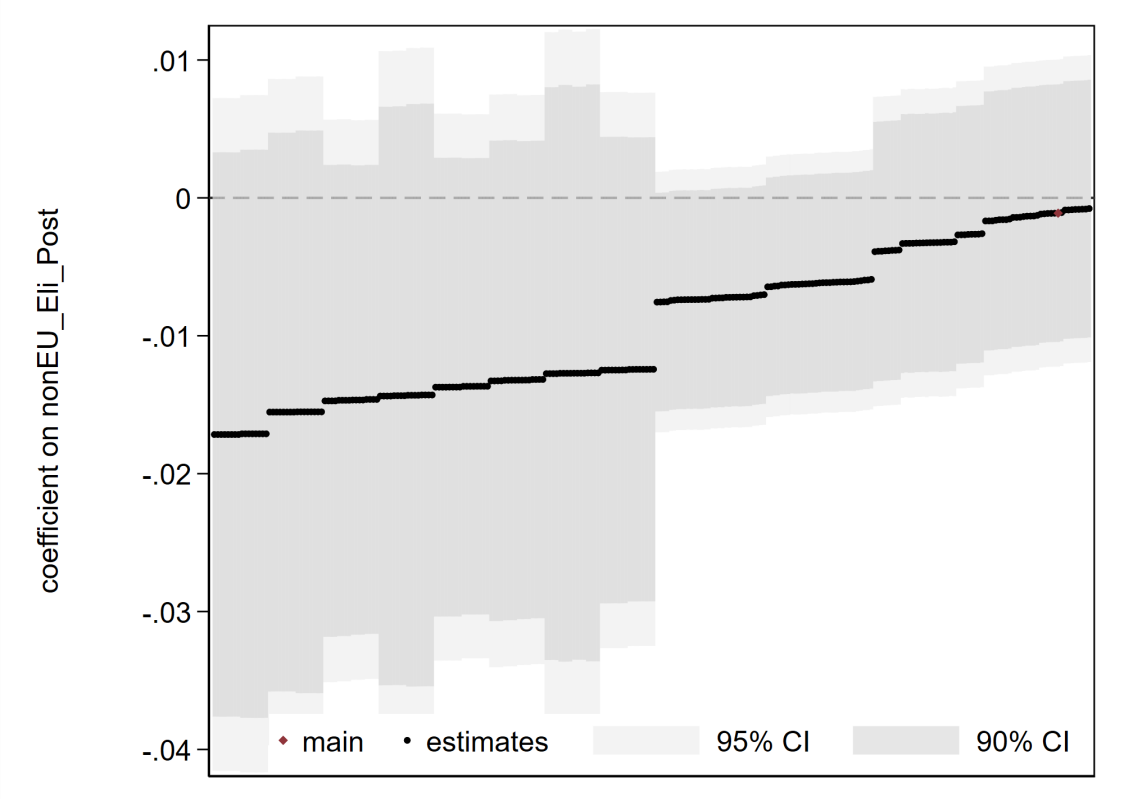
Notes: This figure shows the robustness of the main citizenship on savings rates results shown in column two of table 2 in the main paper. This figure focuses on the effect on the control group, migrants who were previously eligible. Each marker corresponds to a regression with a different set of controls, 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



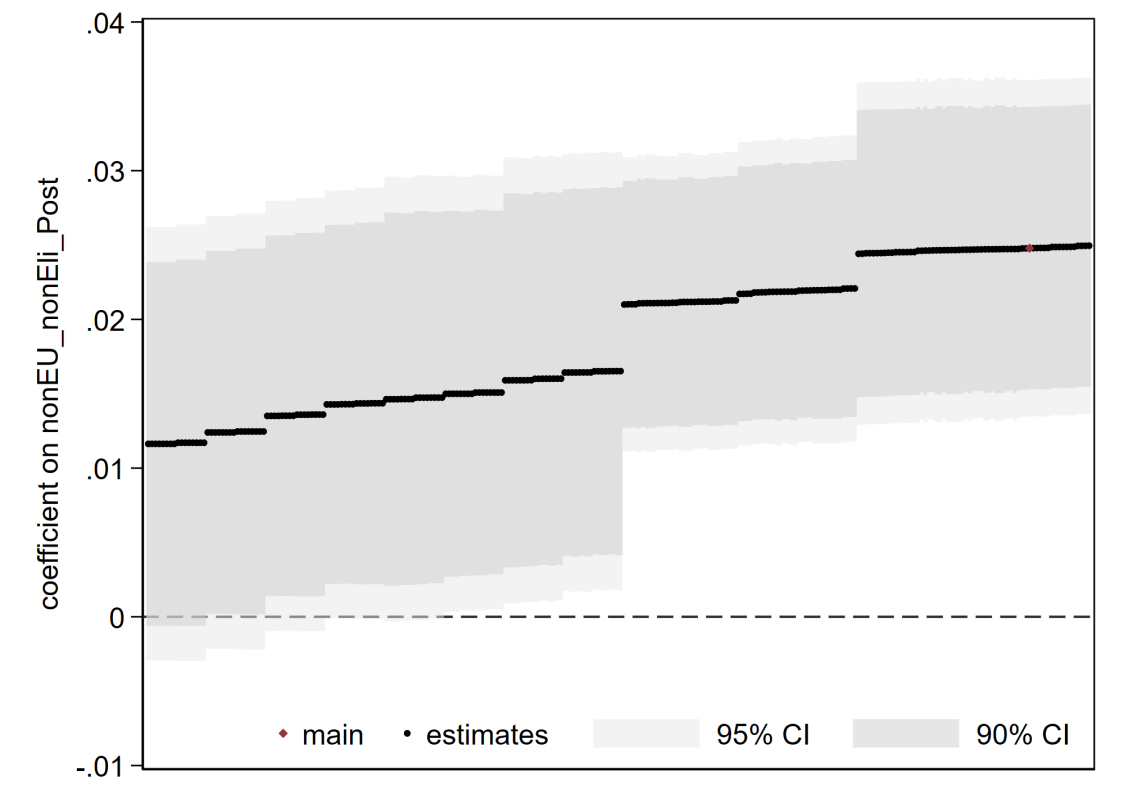
Notes: This figure shows the robustness of the main citizenship on savings rates results shown in column two of table 2 in the main paper. This figure focuses on the effect on the treatment group, migrants who were not previously eligible. Each marker corresponds to a regression with a different set 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.