The Impact of Cultural Preferences on Homeownership*

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Abstract

Homeownership has long been a core tenet of the American Dream, but this is not universal across countries. In this paper, we study homeownership decisions among a large and growing segment of the U.S. population: foreign born U.S. residents. We identify a new channel driving immigrants' selection into homeownership, cultural preferences for homeownership. We show that high homeownership in their country of origin ("HOCO") has an effect on tenure choices for foreign-born U.S. residents: moving across the interquartile range of *HOCO* increases homeownership by 3ppt, significantly closing the native-foreign born homeownership gap. We show in a simple tenure choice model how higher cultural affinity can increase homeownership responses to credit supply shocks and test this prediction empirically. Using an exogenous credit shock based on county exposure to lenders that are increasing their mortgage lending nationally, we show that, in response to a 1 SD mortgage credit shock, above-median HOCO residents see an annual increase in their homeownership rate that is 0.2 ppt larger than below-median-HOCO groups (relative to a baseline transition rate of 0.34). These findings imply that country-of-origin-related preferences can change the impact of credit cycles and policies supporting homeownership which target historically marginalized groups.

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I. Introduction

In the United States, homeownership has long been viewed by policymakers as a bellwether for quality of life and a core tenet of the American Dream (Layton, 2021; Goodman and Mayer, 2018). As such, many policies have striven to support high homeownership rates, including, among others, the mortgage interest rate deduction, securitization of mortgage products, and low-down payment programs for first-time homebuyers, though none have pushed homeownership sustainably above 65% (Layton, 2022). More recently, during the global Covid-19 pandemic, President Biden declared a foreclosure moratorium in an effort to prevent a decline in homeowership. Given this policy interest in promoting homeownership, it is important to understand what drives the marginal homebuyers potentially targeted by these programs. Moreover, changes in the availability of mortgage credit have played an important role in increasing access to homeownership for minority borrowers, but also in the exposure of the latter to downturns in the housing market Mian and Sufi (2009); Bhutta (2015). As a result, understanding the degree to which changes in mortgage credit availability have a larger or smaller effect on enabling a transition into homeownership for different minority groups is important for targeting housing policy and anticipating vulnerability to credit cycles.

In this paper, we analyze an understudied yet growing set of homeowners: U.S. immigrant households. The U.S. foreign born population is large and has been growing, representing about 10% of residents in 2000, and rising to 14% by 2019. We collect new data on cultural preferences towards homeownership among foreign-born U.S. residents, with variation driven by households' differential birthplaces. We show that these country-of-origin-related preferences significantly affect household tenure choice in the U.S. Moreover, we provide evidence that these preferences also change the responsiveness of different groups' homeownership to mortgage credit supply shocks.

First, we develop a simple conceptual framework based on Brueckner (1986) that shows how cultural preferences that lead to an additional consumption benefit of homeownership lead to higher homeownership and also – in a model with downpayment constraints – can increase the responsiveness of a group's homeownership to mortgage credit supply shocks.

Second, we compute current homeownership rates by marital status across a suite of immigrant-origin countries using international census data; these cover the majority of countries from which

migrants to the U.S. originate. We use these origin-country homeownership rates as proxies for cultural norms around homeownership at different life stages. Using this data, we show the importance of these cultural factors for understanding homebuying among immigrants, a large and growing population sector, in the U.S.

We map these origin-country homeownership propensities to foreign-born residents living in the U.S. Then, we use household level data from the American Community Survey (ACS) and American Housing Survey (AHS) to show that immigrant households from countries with high homeownership rates for their respective marital status are more likely to own homes after immigrating to the U.S. than are immigrant peers from countries with higher renter rates. Moving between the interquartile range of homeownership preferences implies a 3 percentage point increase in homeownership rates. This explains about 13% of the cross-sectional variation in homeowership rates across U.S. zip codes, suggesting that lived experience is an important driver of tenure choice.

This effect survives rigorous controls for households' financial standings, demographics, household size and composition. We also control for a variety or origin-country characteristics, such as inflation experience, credit supply, property rights, and measures of cultural affinity with the U.S. Finally, we address sample selection concerns by replicating the results in the AHS, using alternative measures of origin preferences, and removing particularly large immigrant population groups. That our results survive these robusntess checks suggests that the surviving variation reflects cultural preferences that transfer from one's origin country to the U.S., consistent with the growing literature on the effects of cultural and social influences on tenure choice.

Third we move from cross-sectional household-level analysis to group-level analysis over time to study the impact of mortgage credit supply shocks on groups with different homeownership propensity. We aggregate households into panels of groups by homeownership propensity within each CBSA for 2006-2018 and compare how their homeownership changes in response to exogenous shocks to mortgage credit supply.

We construct these local credit shocks as "shift-share" instruments based on a county's exposure to lenders that are expanding their mortgage portfolio for reasons unrelated to local credit demand. This approach follows a long existing literature that uses non-local lender-level shocks to construct exogenous shocks to the availability of credit to borrowers.[1] We follow Garcia (2020) and estimate the non-local component of the national change in mortgage lending by each lender as time-varying

lender fixed effects when controlling for county-level mortgage lending activity. This isolates the degree to which a lender increases its activity in a way that is unrelated to the changes in overall credit demand in each county that it has a presence in. Counties that have higher exposure to lenders that are expanding their lending activity nationally (e.g. due to relative changes in their ability to fund mortgages) should see higher *relative* mortgage lending activity - but by construction this shock is uncorrelated with national trends and regional differences in average credit demand changes.

We estimate the effect of these exogenous credit shocks on changes in homeownership over time in a panel of groups with different homeownership propensity. Our design includes CBSA-by-year fixed effects and demographic controls, which allows us to compare the relative homeownership effects between groups that differ in their affinity for homeownership but otherwise are exposed to the same local economic trends and have similar observable characteristics.

Our results show that a 1 SD higher shock to loan originations (a shock value of $\sim$ 14% higher loan originations) leads to about a 0.2 ppt greater increase in homeownership among high HOCO foreign-born groups relative to the below-median HOCO foreign-born. This effect is robust to controlling for lagged shocks, changes in group demographic characteristics, and allowing for different coefficients in different time periods. As a result, foreign-born residents from high-HOCO countries are more likely to experience cyclical homeownership rates.

We proceed with Section II, which discusses the growing evidence in support of cultural and social effects on housing markets and provides a simple model relating tenure choice to cultural preferences and credit supply shocks. Section III describes how we collect and build our data. Section IV outlines our estimation strategy establishing immigrant preferences' impact on household-level homeownership, and reviews our results. Section VI concludes.

II. Conceptual framework

A. Background: culture as a driver of homeownership

We propose that cultural preferences, controlling for current financial and local economic conditions provide a plausible instrument. There is a long literature showing that people's cultural backgrounds and lived experiences impact tenure choice. Researchers have documented that hous-

ing preferences tend to be passed down in families. For example, Blaauboer (2011) finds that childrens' residential environments strongly correlate with their chosen residential environment as adults, and Boehm and Schlottmann (1999) find that parental tenure choice strongly predicts childrens' tenure choice, controlling for a variety of observable characteristics. There is also a growing literature showing how financial experience impacts homeownership: Botsch and Malmendier (2020) and Malmendier and Steiny (2019) show consumers that experienced high inflation are averse to adjustable rate mortgages, and also opt into higher rates of homeownership. Finally, recent work points to a strong correlation between where people grow up and their tenure choice as adults. Ringo (2020) finds that homeownership rates in one's county of birth in the U.S. predicts adult homeownership, and Marcén and Morales (2020) document that the U.S. homeownership rate among immigrants is correlated with homeownership rates in their country of origin in a 2016 cross-section of U.S. households. Happel, Karabulut, Schäfer, and Tuzel (2022) show that differences in attitudes to homeownership in Germany as a result of exposure to residential housing destruction during World War 2 persist even in the long run.

Connections to distant places do not just operate through past personal experience in the other locations: Bailey, Cao, Kuchler, and Stroebel (2018) show individual exposure through online social networks to house price movements in distant counties where connections are located can predict differences in housing investment decisions among households, which suggests that residents with different ancestry might also be affected by contemporaneous preferences for homeownership in their country of origin if they retain social links to their home country or to other members of their ancestry group.

B. A model of tenure choice with cultural affinity for homeownership

In order to structure our empirical analysis of the effect of a cultural affinity for homeownership on homeownership rates and differential responsiveness to credit shocks, in this section we develop a simple model of tenure choice with cultural preferences and downpayment constraints. We consider housing consumption to be exogenous in order to keep the model tractable and extend the model in Brueckner (1986).

To provide the basic intuition, first consider a static tenure choice problem: a household decides

whether to rent, in which case its consumption x^R, net of rent payments Q and taxes t is

$$x^R = (1-t)y - Q,$$

where y is the household income. If the household decides to become a homeowner instead, it has to make a down-payment αP, where P is the house price, at the beginning of the period, which has an opportunity cost r.[2] The household finances the remainder $(1-\alpha)P$ of the house price with mortgage payments at interest rate r, which are tax-deductible, sells the house again at the end of the period for price P and receives back its equity αP. Moreover, the household experiences a cultural cost of being a homeowner ϕ, which represents the degree to which cultural benefits of homeownership (e.g. pride, sense of security, control premium) offset the additional costs of homeownership (e.g. mental burden, lower mobility, time cost of maintenance). Households from groups with a relatively high cultural affinity for homeownership will experience a lower cost of homeownership. Consumption for homeowners is therefore

$$\begin{aligned} x^H =& (1-t)(y - \alpha r P - r(1-\alpha)P) - \alpha P + \alpha P - \phi \\ =& (1-t)y - (1-t)rP - \phi \end{aligned}$$

Note that the initial equity payment and later return of principal net out and that the need to finance the equity payment means that the household effectively pays interest on the full purchase price. For now, we are implicitly assuming that the household has no wealth or financing constraint in coming up with the downpayment - and we will modify this assumption later. Imposing a zero profit condition for landlords, such that $Q = rP$, this means that households are indifferent between owning or renting if

$$trP = \phi,$$

and households with relatively high tax advantages (high t) or high affinity for homeownership (low ϕ) will choose to own rather than rent. A common way of visualizing this "user cost" approach to tenure choice is to plot user costs for owners and renters over tax rates. Figure 1 illustrates the trade-off in this static version of the model: the owner-occupied user cost declines with the household's marginal tax rate, while the rental cost does not vary with tax rates. Therefore, there

is some tax rate t^* above which households choose to own and below which they rent. However, the location of this indifference point is shifted by the cultural affinity for homeownership. A household with a lower mental cost (higher affinity) of homeownership will have an owner-occupied user cost curve that is shifted down for all tax rates, leading to a lower indifference point t^{**} above which a household chooses to own rather than rent. That is, *higher affinity for homeownership results in higher homeownership rates.*

Saving for downpayments. In order to evaluate the role of changes in credit supply and how they interact with this cultural affinity for homeownership, we need to make the model dynamic and introduce a role for the downpayment constraints α which did not matter in the static version. We do so by adding a period in which households need to save for the downpayment in the subsequent period, following Brueckner (1986). Now, households first live through a period 0 in which all households are renters, earn their income and can save for period 1. In period 1, they have the choice to become homeowners as before, but now have to finance the downpayment αP from their (weakly positive) savings s in the previous period. Moreover, any excess savings are invested with taxable returns r during period 1 and are available to be consumed at the end of the period.

Thus, in period 0, consumption of all households - whether future renters (R) or homeowners (H) - is given by

$$x_0 = (1-t)y_0 - s - Q$$

where households may choose different savings rates s^R or s^H depending on their optimal tenure choice in the following period. The period 1 consumption amounts then become

$$\begin{aligned} x_1^R &= (1-t)y_1 + (1+(1-t)r)s^R - Q \\ x_1^H &= (1-t)y_1 + (1+(1-t)r)s^H - (1-t)rP - \phi, \end{aligned}$$

where x_1^R and x_1^H denote the consumption of households that choose to rent and own, respectively, and $s^H \geq \alpha P$ needs to hold for the homeowner.[3] Each household maximises the objective function

$$u(x_0) + \theta u(x_1)$$

where $u(\cdot)$ is a strictly concave utility function and θ is the discount factor. We assume that owning

always dominates renting for households for whom the downpayment constraint is not binding (i.e. for which $s^R \geq \alpha P$), and focus on the households for which the constraint is binding ($s^H = \alpha P$). The owner-renter utility differential for these constrained households is given by

$$\Omega = u(x_0^H) + \theta u(x_1^H) - u(x_0^R) - \theta u(x_1^R).$$

If we think of a mortgage credit supply change as a change in the downpayment requirement α, we can derive the resulting change in the homeowner utility for constrained households (substituting $s^H = \alpha P$):

$$\frac{\partial \Omega}{\partial \alpha} = P\left(-u'(x_0^H) + \theta(1 + (1-t)r)u'(x_1^H)\right) < 0,$$

where the inequality follows from the fact that when the downpayment constraint is binding, s^H is higher than optimal and moves further away from its optimal level if the downpayment requirement increases. That is, higher downpayment requirements - a tightening of mortgage credit - reduce the utility from homeownership holding other parameters constant.

How does this effect of a tightening of mortgage credit supply vary with household affinity for homeownership? Differentiating with regard to the cultural cost of homeownership ϕ, we find

$$\frac{\partial \Omega}{\partial \alpha \partial \phi} = -P(1 + (1-t)r)u''(x_1^H) > 0,$$

so for households where the cost ϕ is larger, i.e. they have a *lower* affinity for homeownership, the negative impact of an increase in downpayments is mitigated, while higher affinity households experience a larger utility decline after mortgage credit tightens. Intuitively, households with a higher consumption benefit from being homeowners in the later period would benefit more from smoothing their consumption by shifting some consumption towards the earlier period when they are renters. However, a downpayment constraint requires them to lower consumption in the earlier period in order to save so they can afford to become homeowners. A higher downpayment constraint – and therefore higher required savings – lowers relative consumption in the earlier renter period even more for future homeowners. This leads some households to stay renters and forgo the painful period of low consumption and high savings that becoming a homeowner entails. This decline in the relative attractiveness of becoming a homeowner is stronger for high homeownership

propensity households because they will already, on average, have chosen homeownership even at lower consumption levels in the first period, and pushing that level of early period consumption lower is therefore more painful for them.

This simple model shows how *households with high affinity for homeownership can see a bigger increase in their homeownership in response to an increase in mortgage credit supply than lower affinity households* - which is what we will test empirically in section V.

III. Data

A. Homeownership & Other Origin-Country Characteristics

We use a number of different approaches to try to measure the reference homeownership rate in the country of origin that is relevant for understanding tenure choices by U.S. residents of different ancestry.

Homeownership rates in country of origin: One of the key concerns in measuring homeownership across countries is whether statistics provided by different national and international organizations measure the same concept and whether the sampled populations are representative of the underlying population. Moreover, to the degree that residents in different life stages will have different peers and reference groups in their home country, we need to take into account heterogeneity in homeownership within countries as well. To address these concerns, our main approach for constructing homeownership rates in the country of origin follows Marcén and Morales (2020) in using harmonized international census microdata from IPUMS (Center, 2020) to construct our own homeownership rates for comparable subgroups within each country. In particular, for each country we retain households where the head is 18-69 years old, and categorize each household further by the marital status of the household head.[4] We compute separate homeownership rates for each marital status in the expectation that homeownership reference points related to these major life events most cleanly transfer to the cultural expectations of U.S. residents. Where countries have multiple census years available in IPUMS, we retain the sample that is closest to the year 2015. After dropping 5 censuses that had implausibly low average homeownership rates,[5] we are left with homeownership data by marital status for 70 countries of origin in the US census data. This baseline sample contains origin country data covering 72% of the birth places of all

the foreign-born in the U.S. in the year 2000. Table I shows example data for the largest country of origin groups in the U.S. covered by this data. Note that variation in the mapping between households in the U.S. and origin-country homeownership rates can come either from variation in the homeownership for different marital statuses in their country of origin, or from variation in the marital status distribution among household heads from that country residing in the U.S.

Alternative homeownership statistics: As a robustness check, we also hand-collected data on average national homeownership rates (not disaggregated by marital status or age) from various international organizations and government statistics agencies. We were able to find data for 62 countries through this method (see Appendix Table AI for an overview of the sources for the most important origin countries).[6] In the 50 countries where these two samples overlap, the correlation between the national average homeownership rates obtained through both methods is 87%.

Country economic characteristics: In order to analyze the drivers of homeownership in origin countries, we also collect a cross-sectional data set of country characteristics from official data sources. In particular, we collect data on GDP per capital, inflation rates, urbanization rate, and domestic credit for 2000-2020 from the World Bank's World Development Indicators. In addition, we also use indices of property rights protection and investment freedom from the Heritage Foundation for the years 2000-2008.

Imputed household wealth: One of our main selection concerns is that relatively wealthier immigrants may select into migrating to the United States from their home countries, meaning that origin country average statistics will not capture the behavior of those wealthy households. As the ACS does not include wealth variables, we must impute it. To do so, we use common socioeconomic and demographic variables observed in both the ACS microdata and the Panel Study of Income Dynamics (PSID). For details on non-housing networth imputation, see Appendix A.

Major religion by country: To assess the role of particular determinants of culture, we also collect a data set of the major religion of each country in our sample. We start with data from the United Nations Statistics Division on a country's population by religion. We combine different religious denominations into the categories Christianity, Islam, Buddhism, Hinduism, and other (which includes Atheists and Agnostics), and assign to each country the category with the largest population share. However, this data set only covers about half of the countries in our sample. For

the remaining countries, we manually collect data on their major religion by accessing Wikipedia (and the CIA World Factbook where Wikipedia is not sufficient) and assigning the religion category that describes the largest population share reported there. While this is straightforward for most countries, for some (e.g. China) official sources are not clear on which of the major religions best describes the majority practice in the country. When in doubt, we assigned "Other" to those cases.

B. Tenure Choice and Household Finances

American Community Survey (ACS). In order to measure household-level tenure choices for foreign-born U.S. residents, we use microdata from the American Community Survey for the years 2005-2019.[7] This is a repeated cross-section of a representative sample of U.S. households, which contains ∼3.4 M households with foreign-born heads who are 18-69 years old whom we are able to match to homeownership rates in their countries of origin. The key variable in this data set for our analysis is the measure of whether the household owns the home that it lives in. In addition, this data allows us to measure the characteristics of the head's spouse, including their country of origin, which enables analyses that measure the effect of within-family differences in origin countries on household tenure choices. Moreover, we construct the following control variables at the household and individual level from this data: household income, education of the household head and their spouse, years since immigrating of the head and their spouse, age and gender of the head and their spouse, number of children living in the household, race of the household head and marriage status.

American Housing Survey (AHS). We augment the ACS data with data from the American Housing Survey. The AHS is also a repeated cross-section, but instead of surveying a representative sample of households, its focus is on a sample of housing units. We use data from 2001-2019, covering ten waves of the biannual survey, which yields 175k households over 585k observations. We have foreign homeownership preferences for about 30k of the households with foreign-born heads. Like in the ACS, we observe many socioeconomic and demographic characteristics of the households, including household income, education of the household head, years since immigrating of the head, age and gender of the head, number of children living in the household, and marriage status. While the ACS microdata provides us with a public use microdata area (PUMA) which we can map to a commuting zone, the AHS data only provides 15 core-based statistical areas (CBSA), or a catch-all non-CBSA code. The AHS also provides detailed data on mortgage origination and

other financial characteristics of the household.

Mortgage market. In order to measure local mortgage market outcomes and mortgage lending by lender, we use data collected under the Home Mortgage Disclosure Act (HMDA). We obtain the loan-level data for 2007-2017 from the Consumer Financial Protection Bureau's website, which provides information on the lender and location of the property as well as property and loan characteristics, and supplement it with loan-level data for 2004-2006 available from the National Archives. We match lenders to their parent company using the crosswalk maintained by Robert Avery[8] and aggregate the data at the level of total loans and loan volume by lender-county-year. We retain only first-lien purchase loans that were originated for single-family (1-4 units) site-built properties that are owner-occupied, in order to focus our analysis on the type of lending that is most likely associated with a household's transition into homeownership. This data is available from HMDA for 2004 onwards and we are therefore able to construct a panel of lender-county-year data for 2004-2017.

IV. Immigrant Origins and Tenure Choice

In this section, we outline how we estimate how one's country of origin homeownership rate impacts the propensity to own a home in the U.S. after immigrating, at the household level for households headed by the foreign-born. Before doing so, we highlight a few characteristics of the immigrant homeownership experience in the US that motivate some additional household level controls not used in the standard literature predicting homeownership, such as age, education, income, marital status or the presence of children.

First, immigrant homeownership cycles are more volatile than native born cycles, as shown in Figure 2 panel (A), in which plot the time series of homeownership rates by nativity between 2000 and 2019. Homeownership rates among native born households fall from a pre-bust average of 69% to 66% at the trough in 2015, again rising to 67% by 2019. For foreign born households, homeownership increased over the past 20 years, but not without large swings. In 2000, their homeownership rate approached 50%, rising to 55% during the housing boom. During the trough, it fell to 51%, before recovering to 54% in 2019. Thus, over the past two decades, native born households saw a decline in homeownership of 2pp (-3%) relative to a rise in homeownership of 4pp

(8%) among foreign born households.

These amplified market cycles are consistent with takeup of homeownership being more sensitive among marginal buyers Mian and Sufi (2009); Bhutta (2015). However, our interpretation of "marginal" differs from the standard low-credit, low-income, or minority status often studied in the literature. Through the lens of our theoretical framework, borrowers become observationally more "marginal" when they have a strong cultural preference for homeownership; they are more sensitive to credit supply shocks. Additionally, they transition into homeownership at lower marginal income tax rates, and hence lower incomes due to the progressivity of income taxation in the US, in line with Figure 1. Disentangling the effect of being marginal due to income vs. marginal driven by preferences motivates many of our household finance controls in the following estimation as well as our measure of homeownership affinity, $HOCO$.

Second, foreign born households spend many years in the US with very low homeownership rates, only approaching native born homeownership rates upon living in the US for 41+ years (likely those who arrived as children). Figure 2 panel (B) plots homeownership rates by years in the US among foreign-born residents, controlling for household head's age, age squared, educational attainment, and marital status, as well as household income and commuting zone-by-year fixed effects. The figure shows two horizontal lines as well, the top line reflects the average homeownership rate among native born household heads in our 2000-2019 ACS sample (68%), while the lower line reflects the average homeownership rate among foreign-born household heads (52%). The figure shows a steep homeownership profile, reflecting the fact that it takes time for immigrants to build up savings, establish credit, and put down roots. While some migrants do seem to buy housing very early on, even upon arrival, there is steep growth especially in years 6-10; however, immigrant households never seem to close the homeownership gap relative to native households. In all of our following specifications, in addition to standard socioeconomic, demographic, and household financial controls, we will also control for time in the US as a key determining factor for homeownership among the foreign born group.

A. Estimation approach

In order to establish the baseline effect of homeownership in the country of origin on tenure choice in the U.S., we use household-level data to estimate specifications of the following form:

$$HO_{ht} = \gamma HOCO_{ht}^{head} + \beta' X_{ht} + \zeta_{CZ,t} + \varepsilon_{ht} \quad (1)$$

Here, $HOCO_{ht}^{head}$ is the homeownership for householders of the same marital status in the country of origin of the household head if the head is foreign-born; X_{ht} is a vector of control variables consisting of household and individual characteristics; $\zeta_{CZ,t}$ represents fixed effects controlling for common variation at the commuting zone or year level. In fact, the full specification for most of our analyses flexibly includes commuting-zone-by-year level fixed effects, which control for the fact that immigrants might sort into cities with trends in housing markets or local labor markets that also affect homeownership rates.

To highlight the geographic variation underlying our analyses, Figure 5 shows the geographic distributions of homeownership rates and foreign-born shares. Each map is divided into four, population weighted, quartiles.

Panel (A) shows the distribution of foreign born population shares across U.S. counties. The darkest shaded quartile of counties have foreign born populations comprising at least 21% of their population; the lightest have foreign born populations lower than 4% of their totals. California, Texas, and Florida all have significant foreign born population shares; however, we observe foreign-born pockets in most states. Atlanta, GA, Raleigh-Durham, NC, central Washington state, and Colorado show that immigrants do not just locate in highly agricultural, or very urbanized areas.

Panel (B) shows that homeownership rates are highest in the midwest and mid-Atlantic states, with homeownership rates dropping along the West Coast, and around expensive metropolitan areas such as Miami, Boston and New York City. The bottom quartile covers counties with homeownership rates of up to 63%, and the top quartile has counties ranging from 77–91%. The maps display how a focus on the goal of a 65% national homeownership rate masks wide variation in county level data, with zip code level data showing even more heterogeneity.

In this section, we establish that there is indeed an effect of homeownership in the country of origin (HOCO) on immigrants' tenure choice in the U.S., and that this effect is robust to plausible

confounding effects.

B. Baseline household level effects of HOCO on homeownership

To determine the size of the effect of country-of-origin homeownership on tenure choices among foreign-born U.S. residents, we estimate equation 1 in the household level ACS data. The results are shown in Table II. Each column shows the estimated effect of homeownership in the country of origin of the household head, matched by marital status, on whether the household owns their home in the U.S. The first column shows the raw association between the two variables, while the second column flexibly controls for a large number of characteristics of the household, such as income, household size, children, years since immigration, and age and education of the household head. These control variables capture other factors that we already know drive tenure choices. Additionally, they address the concern that immigrants from countries with high homeownership rates may be incidentally selected with regard to characteristics that drive higher homeownership rates in the U.S, such as being high-income. That the relationship survives these controls and remains statistically significant, shown in column 2, suggests a direct link between the homeownership experiences in immigrants' origin country and their choices in the U.S.

The following columns of Table II additionally control for the possibility that immigrants from higher homeownership countries might be sorting into labor markets or housing markets (here captured by commuting zone boundaries) that are more or less conducive to homeownership on average or which experience rising homeownership rates during the years in the sample. Column 3 adds commuting zone fixed effects and column 4 allows for commuting zone-by-year interacted effects. That is, the estimate in column 4 identifies only off within-labor-market variation in tenure choices within each year between immigrant households that are identical with regard to their observable characteristics noted above, except in the household head's country-of-origin. In our most conservative specification, we estimate the elasticity of homeownership with regard to *HOCO* to be 16% and this estimate is significant at the 1% level.

To put this number in perspective, note that it means the interquartile range of *HOCO* across households in our sample, which is between 58 ppt and 76 ppt, is associated with a 2.9 ppt difference in homeownership rates. For comparison, this represents $\sim$ 13% of the interquartile variation in homeownership across U.S. zip codes, or 18% of the gap in homeownership rates between native

and foreign born households (or 40% of the gap conditioning on all the controls in Table II).

To visualize how this effect is driven by different countries, we can aggregate the residualized household homeownership rates and marriage status *HOCOs* to the origin country group level. We plot the relationship between the two variables in Figure 3. The top graph shows the raw averages of homeownership in the U.S. among foreign-born residents, plotted over the averages of the marital status matched *HOCOs*. The lower graph residualizes these variables with regard to the full set of control variables in column 4 of Table II before aggregating. While the marker sizes are not weighted by number of households in the U.S., both graphs use a weighted-linear fit overlaid in the dashed red line, which accounts for differential numbers of immigrants from origin countries. These graphs make it clear that homeownership rates vary widely between countries, with average rates conditional on marital status of more than 90% in Romania, Hungary, and Cambodia at the upper end, and rates below 50% in Turkey, Ghana, and Switzerland at the lower end.

It is reassuring that no obvious grouping of countries by geography or wealth emerges from these graphs. For instance, several low-income countries can be found both among the highest and lowest *HOCO* and U.S. homeownership countries. Moreover, the most visible outliers from the fitted linear relationship in the residualized graph are Switzerland and South Sudan, which only constitute 0.14% and 0.0009% of the U.S. foreign-born population.

C. Robustness to other country-of-origin characteristics

An important concern with regard to the mechanism for our findings in Table II is that they may reflect omitted variable bias arising from immigrant households bringing other aspects of the lifestyle or economic situation of their country of origin with them, which then incidentally affect their homeownership in the U.S., without a particular preference over the latter. We consider a number of plausible home country characteristics that might be driving homeownership both in the U.S. and the origin country – the unconditional correlations of which with origin country average homeownership rates are shown in Figure 4: On the one hand, we consider economic characteristics, such as GDP per capita, urbanization rate, annual inflation rate, and domestic credit to private borrowers as a share of GDP. These capture the idea that low wealth, exposure to economic risk, urban lifestyles, or a lack of access to credit may all keep homeownership in the country of origin artificially low, and this lack of resources and lifestyle choices may be replicated in

the immigrants' experiences in the U.S. Note, for example, that homeownership is unconditionally negatively correlated with urbanization at a country level as shown in Figure 4.

On the other hand, the legal system and property rights may make homeownership a more or less attractive investment relative to the security of, and access to, other assets. The persistence of the resulting attitudes towards homes as part of a household portfolio may be part of the cultural differences that explain immigrants' homeownership in the U.S. To capture these dimensions, we consider indices of property rights and investment freedom created by the Heritage Foundation. As can be seen in Figure 4, these indices are highly positively correlated with GDP per capita and urbanization, and associated with lower inflation. Moreover, some studies suggest that religion may play a role in tenure choices (e.g. Das, Coulson, and Ziobrowski (2019)), so we also test how including fixed effects for which of the major religions predominates in the country of origin affects the results.

We test the importance of these confounding country-of-origin characteristics by sequentially including each of them as control variables in the full specification of column 4 of Table II. The results are shown in Table III. The results are intuitive: while accounting for religion lowers the effect size a bit (as it correlates strongly with broader regions of origin), the effect is still large and significant (column 1); GDP per capita, urbanization share and country-of-origin inflation do not significantly affect homeownership (column 2-4), in line with the findings in Malmendier and Steiny (2019), and private credit availability has a positive effect (column 4). When all of the country characteristics are included jointly, only urbanization has a significant (and positive) effect on U.S. homeownership. Importantly, the *HOCO* effect on U.S. homeownership is consistently positive and significant in all specifications, and the magnitude of the coefficient is slightly bigger and more precisely estimated even when all country characteristics are controlled for (column 7). This is not too surprising, as our baseline specification already includes a rich set of household characteristic controls and any other country-of-origin effects would have to operate through a channel that is orthogonal to those observables.

D. Household-level effect heterogeneity and additional robustness checks

Heterogeneity by household characteristics. It is possible that the strength of the influence of the country of origin on U.S. tenure choices depends on the characteristics of the household

head. To explore this possibility, we estimate additional specifications that interact the *HOCO* variable with indicators of the householder's gender, education, and length of residence in the U.S. The results are shown in the first two columns of Table IV. We find that the effects of *HOCO* on households headed by men are smaller by about a quarter of the original effect size. (column 1). Similarly, the effect is reduced by about a third for college-educated householders (column 2).

Robustness checks. One concern with our *HOCO* effect estimation may be that there is reverse causality: immigrants move to the U.S. *because* they acquire a home, for instance as an investment, and that home purchase may be driven by recent real estate dynamics in their country of origin that are correlated with, but not driven by, the homeownership rate in that country. However, in that case we would expect the *HOCO* effect to be highest among recent movers. In contrast, if the *HOCO* effects represent something more like the expression of a cultural reference point at different life stages, immigrants would be expected to take a couple of years to establish themselves in the U.S. before taking the decision to settle somewhere and buy a home in line with their *HOCO*. We test these ideas in column 3 of Table IV by comparing the *HOCO* effect among immigrants who arrived in the U.S. less than 10 years before the survey, and long-term residents who have been in the U.S. for a period of more than 10 years. The results show that the *HOCO* effect is significantly larger among long-term foreign-born residents, and smaller and not statistically significant among recent immigrants.

Another potential concern is that immigrants from particular countries are *selected* with regard to their tendency to buy a house when in the U.S. relative to their country of origin. For example, if migrants from high homeownership origin countries tend to be selected to be particularly wealthy or more educated than average, e.g. because only the elites of low-income countries are able to pay the costs associated with migrating, then these selected characteristics might drive homeownership in the U.S. rather than the homeownership rates in the origin country. This concern should be mitigated by the fact that our baseline regressions already directly control for foreign-born households' income, education, and household size, such that any such selection would have to be orthogonal to these observables. However, to additionally ensure that our results are robust to the *average* characteristics of migrants from that origin, column 4 shows a version of our regression where we also control for the average share of college-educated household heads, mean household income, mean number of children and mean household size among migrants from that origin country. In addition,

we control for the GDP per capita of the origin country, in case immigrant selection is driven by the economic opportunities in the country of origin. Given that some of these migrant characteristics may actually be affected by homeownership, they may represent "bad controls" (Angrist and Pischke, 2008) that shut down the causal channel of interest – and the estimates including these controls should therefore be interpreted with caution. As the results in column 4 show, while the estimated effect size is reduced when including these additional controls, it is nonetheless statistically significant and implies an elasticity of 11% of U.S. tenure choice with regard to the household *HOCO*.

As Table I shows, the share of U.S. migrants from different origin countries is highly concentrated. As a result, it is important to establish whether our *HOCO* effect estimates are driven by idiosyncrasies of the biggest origin countries or also hold for the smaller foreign-born origin groups in the U.S. In column 5 of Table IV, we therefore exclude any households with heads from one of the top 5 countries included in our data (Mexico, Puerto Rico, Philippines, Canada, Vietnam)[9]. The results show the estimated *HOCO* elasticity for this smaller sample is still 10% and significant at a 1% level, which suggests that the large origin countries are not driving the baseline results.

Our measure of homeownership preferences assigns *HOCO* measured in international census microdata by household head marital status. We explore two variations: on the one hand, many origin-country specific selection effects that might be driving our results, e.g. the wealth of migrants, are likely less correlated in their effect to the marital status-specific homeownership rates in the country of origin, even if they are correlated with overall homeownership rates in the origin country. In column 6, we show that if we replace our *HOCO* measure with the average origin country homeownership rate estimated from census data - without accounting for marital status - that makes the effect estimate smaller, noisier, and no longer statistically significant. This means that any concern over *HOCO* being a proxy for a different driver of U.S. tenure choices would require that omitted variable to be not just driving overall homeownership for migrants from that origin country but instead to operate in a way that differs across marital status groups.

In column 7, we show that our results are not due to mismeasurement of *HOCO* in the international census microdata. We hand-collect average national homeownership rates from official government sources or international organizations like the OECD. While this sample covers a smaller number of countries (62, compared to 74 in our microdata sample), it *does* include China and India,

which are the origin countries for a large share of U.S. foreign-born residents, and which are not included in our baseline sample. The *HOCO* constructed from the national average homeownership rates in this alternative data set still has an effect on U.S. tenure choice that is significant at the 10% level, and the estimated effect size of 16% is again very similar to our baseline estimate using the microdata *HOCO* by marital status.

The other concern around sample selection may be that the American Community Survey household data has a sampling methodology or differential response rates that correlate both with *HOCO* and U.S. tenure choices. In column 8, we instead use data from the American Housing Survey, which collects a much smaller sample using a different methodology focused on being representative of housing units in the U.S. and tracking them over time. When we estimate our baseline effect in this separate data set of only $\sim$ 46K foreign-born householders, we obtain an estimated *HOCO* elasticity of 15% that is significant at the 5% level, so our baseline effect does not seem to be driven by methodological idiosyncrasies of the ACS sample.

V. Credit cycles and foreign-born homeownership

One of the key goals of this paper is to assess the degree to which an affinity for homeownership as a result of foreign-born residents' country of origin changes the impact of credit shocks on housing market outcomes for different groups. How different demographic groups respond to credit expansions can have important impacts on their financial situation: other researchers have shown that racial minority households in the U.S. saw large increases in homeownership during the peak of the housing boom of the mid-2000s, which then resulted in an increased risk of mortgage delinquency and foreclosure during the subsequent bust (Bayer, Ferreira, and Ross, 2016). Moreover, homeownership is associated with differences in child outcomes, mobility, and many other aspects of household behavior (Dietz and Haurin, 2003). As a result, differential responsiveness to mortgage credit supply shocks can lead to differences in a number of group outcomes, which has important implications for the effectiveness and welfare consequences of policies that try to promote homeownership.

In this section, we show that an affinity for homeownership resulting from foreign-born residents' country of origin can substantially affect the impact of mortgage credit supply shocks on housing

markets.

A. Identification of mortgage credit supply shocks

In order to estimate the impact of mortgage credit on homeownership, we need to address the fact that a household's access to credit is likely to be endogenous with regard to its income and wealth, which are affected by a group's homeownership rates, and may also be affected by racial discrimination (Ambrose, Conklin, and Lopez, 2021). To estimate the effect of increased access to mortgage credit on homeownership rates among groups with different countries of origin, we therefore need to identify changes in credit supply that are plausibly exogenous with regard to group characteristics.

Our baseline analysis uses mortgage credit supply shocks based on county exposure to heterogeneous shocks to aggregate mortgage lending by different banks, following Gilchrist, Siemer, and Zakrajsek (2018) and Garcia (2020). The intuition for the approach is that local mortgage lending may change either due to local changes in credit demand or due to a change in lenders' willingness to originate new mortgages for idiosyncratic or common reasons - shifts in "credit supply" - that are unrelated to local market dynamics. To the degree that the idiosyncratic shifts in bank mortgage credit supply have a greater impact on counties where the affected banks have a higher market share, they can generate variation in local lending that avoids concerns over reverse causality from local housing market dynamics affecting lending.

To estimate lender fixed effects that are orthogonal to local mortgage demand shocks we run regressions of the following form: for any county c and lender j, we proceed in two steps, adapting the method in Gilchrist et al. (2018). First, we estimate

$$\Delta \ln L_{c,j,t} = \alpha_{c,t} + \eta_{j,t} + \varepsilon_{c,j,t}, \tag{2}$$

where $L_{c,j,t}$ is the number of loans originated by lender j in county c in year t; $\alpha_{c,t}$ are locality-by-year fixed effects, and $\eta_{j,t}$ are lender-by-year fixed effects. We keep only lenders in the sample in each year that have lending activity in at least 3 counties and estimate this regression separately for the years 2005-2017. We follow Gilchrist et al. (2018) and weight the data points by the geometric mean of the lender's market share in the county and the county's share in the lender's activity in

each year. Moreover, as we are interested in exposure to *relative* differences in lender activity, we re-center the estimated $\hat{\eta}_{j,t}$ terms for each year such that the loan-origination-weighted mean of lender shocks is zero.

Note that if a county's lending declined because of local economic shocks, this will be captured by the county-by-year fixed effects, while a change in lending due to a lender's change in ability to fund mortgages, independent of the dynamics of the markets in which the lender is present, will be captured by the lender-by-year fixed effects.

The shock to local mortgage lending in a county that is driven by exposure to lenders that are experiencing aggregate changes in their ability to fund mortgages is then constructed as the market-share weighted average in each county of the lender fixed effects:

$$S_{c,t} = \sum_{j \in C} \underbrace{\frac{L_{c,j,t}}{\sum_{j \in C} L_{c,j,t}}}_{\substack{\% \text{ of local lending} \\ \text{by lender } j}} \times \underbrace{\hat{\eta}_{j,t}}_{\text{Re-centered lender FE}}$$

Counties will experience below-average access to mortgage lending if they have greater exposure to lenders that are curtailing lending more on average nationally. To further purge this raw credit supply shock of county demand characteristics, e.g. the concern that over the period of study banks with credit supply shocks in a particular direction were associated with counties that are systematically different - beyond the level of credit demand in each period that is controlled for in equation 2. We estimate

$$S_{c,t} = \gamma_1 \underbrace{\hat{\alpha}^{\text{Loan}}_{j,t}}_{\substack{\text{Re-centered County} \\ \text{Loan count FE}}} + \gamma_2 \underbrace{\hat{\alpha}^{\text{Lend}}_{j,t}}_{\substack{\text{Re-centered County} \\ \text{Lending vol. FE}}} + \lambda_c + \lambda_t + \chi_{ct}, \tag{3}$$

weighting each county-year by its IRS population count. Here, $\hat{\alpha}^{\text{Loan}}_{j,t}$ and $\hat{\alpha}^{\text{Loan}}_{j,t}$ are estimates of the county-year fixed effect from equation 2 when the dependent variable is either the log change in loans or the log change in dollar lending volume, so they capture the extensive and intensive margin of changes in local credit demand. Moreover, we also control for county fixed effects and year fixed effects. We use the residual from this regression as our estimate of the credit supply shock in each county that originates from exposure to particular banks that is unrelated to local credit demand shocks, i.e. our main credit supply shock is $\tilde{S}_{ct} = \hat{\chi}_{ct}$.

The identifying assumption for using this shock to study the effects of exogenous shifts in credit supply on homeownership is that exposure to lender fixed effects is not systematically correlated with differential within-county shocks to the demand for homeownership by low- and high-HOCO residents. That is, this assumption could be violated, for example, if banks that lend relatively more in some geographic areas experience mortgage funding constraints at the same time as the demand for homeownership shifts in relative terms between low- and high-HOCO groups in the same areas in a way that is not correlated with general shifts in extensive and intensive margin lending in the county. Given the construction of the instrument above, we believe that this particular violation of the identifying assumption through correlated local exposure to particular banks and demand shifts is both unlikely and, if it occurs, correlated with shifts in county demographics, such as income or family structure. To address that possibility, we therefore also control for time-varying HOCO-group-by-county demographics in our estimations below.

A.1. Credit shock effects on lending

To verify that the credit supply shock constructed above is not just exogenous but also relevant, we estimate the effect of the shock on county- and commuting zone-level lending. While we will later estimate the differential effect by homeownership affinity in a reduced form estimation, one can think of this estimation as the "pseudo-first stage" of our household level estimation approach. Moreover, these estimates will also allow us to properly scale our reduced form coefficients for calculating counterfactuals.

The effect of this credit supply shock on county- and commuting zone-level loan growth is shown in Appendix Table AII, which shows estimates from regressions of the form

$$\Delta \ln \text{Loans}_{it} = \alpha_i + \alpha_t + \beta \hat{S}_{it} + \gamma' X_{it} + \epsilon_{it}.$$

As the table shows, a county-level shock that corresponds to an exogenous increase in loan supply by the local lenders of 10 log points is associated with about a 4 log point increase in local loan growth (Panel A, column 4). Effects of a similar magnitude can be found when we aggregate to the commuting zone level, where the corresponding effect would be a 5 log point increase in loan growth. The fact that the magnitude does not vary much at different levels of aggregation suggests

that the effect is likely not explained by crowding out or spillovers between neighboring geographies.

What is the geographic variation in credit supply shocks underlying these results? Figure 6 shows the pattern of these credit supply shocks for the years 2006 and 2016, which are near the beginning and end of our credit shock panel respectively. Note that there is both substantial variation in the shock size across counties, even within the same region or state, and also over time, as the regions with the largest credit supply shocks vary substantially across these two years.

B. Estimation approach

One limitation of the household-level ACS data is that it represents a repeated cross-section of a representative sample of U.S. households, but households cannot be tracked over time. However, cross-sectional analysis of credit shock effects on homeownership is not suitable for our purposes: as we showed earlier there are large cross-sectional differences in *levels* of homeownership across different areas, which could be correlated with static geographic differences in exposure to lenders. Therefore, we would like to control for these time-invariant levels and exploit variation in credit shocks over time *within* counties. Moreover, mortgage credit supply shocks allow additional households to enter homeownership at the margin, adding to and existing stock, and should therefore mainly be associated with *changes* in homeownership. Thus, the dependent variable should be in differences, which also requires variation over time.

Under the assumption that any sampling bias of different HOCO groups does not vary over time, we can aggregate the household-level ACS data used in earlier analyses into group level data for HOCO-county-year cells that are comparable over time. We define 5 different groups g in the household data – US-born, high-HOCO foreign-born, low-HOCO foreign-born, Mexican-born, and no-HOCO data foreign-born – so that we can compare relative effects for foreign-born residents with different affinities for homeownership. High and low HOCO are defined as above and below the population-weighted median HOCO among non-Mexican foreign-born. The reason to treat the Mexican-born foreign-born differently is that they constitute the largest group of foreign-born residents and have HOCO values close to the median, such that minor differences in weighting can shift large foreign-born population shares between the low and high-HOCO categories and can make the results highly sensitive to the idiosyncratic characteristics of the Mexican origin group. For each county-year-group, cell we compute average homeownership rates and demographics, weighting

each household by its ACS population weight.

Then, at the group-county-year level, we estimate regressions of the form

$$\Delta HO_{c,g,t} = \phi \tilde{S}_{c,t} + \beta_g \tilde{S}_{c,t-1} \times \mathbb{1}[HOCO_g] + \gamma' X_{c,g,t} + \zeta_{c,g} + \psi_{CBSA,t} + \varepsilon_{it}, \tag{4}$$

where $\Delta HO_{c,g,t}$ is the change in the local homeownership rate of group g over time; $\mathbb{1}[HOCO_g]$ is a dummy indicating the different groups; and $X_{c,g,t}$ represents time-varying demographic controls similar to those used in the household level regressions as well as one lag of the level of homeownership.[10] The baseline specification also contains county-group level fixed effects $\zeta_{c,g}$ which control for the fact that some areas may generally make it easier or harder for groups with different affinities to move towards homeownership, which could lead them to have generally higher or lower growth in homeownership in our sample. Moreover, we include CBSA-by-year fixed effects $\psi_{CBSA,t}$ to account for regional trends in homeownership over time.

C. Results: Affinity for homeownership and credit supply responsiveness

How does an affinity for homeownership affect the average response of households to mortgage credit shocks? The results of estimating equation 4 for the years 2006-2018 is shown in Table V. The first two columns show the baseline effect of the mortgage credit supply shocks on homeownership changes for the different groups, with low HOCO foreign-born as the reference group - such that its coefficient represents the baseline level of the credit shock effect - and all other coefficients defined relative to it. [11] Column 1 includes only year and CBSA-group fixed effects, in addition to the demographic controls and lagged homeownership levels, while column 2 also adds CBSA-by-year trends. These different fixed effects shift the (negative) intercept for the effect of credit shocks on low-HOCO foreign-born homeownership (first row). However, the relative difference in impact on high HOCO origin groups (third row) is very similar across the different specifications: foreign-born residents with higher affinity for homeownership have a significantly higher responsiveness to credit shocks.

The units of the shock correspond to relative log point differences in national loan growth (controlling for local credit demand) among the banks that the average county in the CBSA is exposed to. That is, the coefficient in row 3 of column 2 indicates that a 1 SD higher shock to

loan originations (a shock value of $\sim 14\%$ higher loan originations) leads to about a 0.2 ppt greater increase in homeownership among high HOCO foreign-born groups relative to the below-median HOCO foreign-born. The average increase in homeownership among high HOCO foreign-borns groups in this period was 0.34pp/year, so this 1 SD credit supply shock significantly increases the transition rate to homeownership among this group.

One concern may be that past mortgage credit shocks affect house prices (Loutskina and Strahan, 2015), which in turn may have a delayed impact on present homeownership, such that some of the estimated effect of credit shocks on homeownership in the subsequent period may in fact be due to earlier credit shocks. To test whether these delayed effects of past shocks play a role, in column 3 we additionally control for group-specific interactions with the credit shock two years earlier, which turns out to affect the estimated difference in responsiveness of high HOCO groups very little.

Moreover, the period 2006-2018 that our data allows us to study contains a severe boom-bust cycle in house prices from the mid-2000s to the early 2010s that caused substantial dislocation in housing markets. Any economic uncertainty and disruptions to the normal functioning of the mortgage credit system during this period might affect the degree to which changes in credit supply translate into changes in homeownership. In column 4 of Table V, we allow the group-specific credit supply effects to vary between the earlier boom-bust period of 2006-2013, and the 2014-2018 boom period. While the coefficient for the additional effect on high-HOCO groups is less precisely estimated and about 10% smaller than in column 2, the estimated differences between periods are not significant. This suggests that our results are not substantially driven by a particular period during the recent housing market cycles.

VI. Conclusion

Homeownership has long been a core tenet of the American Dream, but this is not universal across countries. By utilizing cultural preferences in homeownership to vary tenure choice in the U.S., we provide a new perspective for understanding tenure choice and the impact of credit market variation among immigrant groups, a large and growing cohort of U.S. homeowners. We find that homeownership preferences positively predict immigrants' tenure choices in the U.S. Given that

one's ancestry often intersects with more visible identifiers, such as race or ethnicity, policymakers should consider country-of-origin differences when designing policies as origin-based preferences can amplify or dampen the impact of policies which hope to encourage homeownership. In this paper, we highlight a particularly salient dimension of housing policy and the transmission of economic shocks to the housing market by studying the impact of changes in credit supply. Our results suggest that where someone was born before they moved to the U.S. can have long-lasting effects on how they interact with financial markets, as credit supply variations are more likely to lead to an investment in homeownership for groups that come from countries where homeownership is more common. However, there are many other dimensions of housing policy and housing market shocks that may show similar differences across foreign-born groups, but which we do not cover in this paper - and we hope that future research can fill that gap.

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Notes

[1]See, e.g. Khwaja and Mian (2008); Garcia (2020); Greenstone, Mas, and Nguyen (2020)

[2]For simplicity, we will assume that the household can borrow and invest at the same rate, but the conclusions do not qualitatively depend on this.

[3]Note that the homeowners here implicitly receive returns on their entire savings - even though αP is invested in the downpayment - because any downpayment reduces the mortgage cost at a rate r.

[4]We distinguish between 4 marital status categories: single or never-married, married, separated or divorced, and widowed.

[5]We dropped any sample with an average homeownership rate of less than 33% that could not be independently verified by an online search, which led us to drop: Argentina 1991, Benin 2002, Ethiopia 1994, Togo 2010, and Papua New Guinea 1990.

[6]This hand-collected comparison sample covers origin countries comprising 87% of all the foreign-born in the U.S. and 9.2% of the total U.S. population.

[7]This data was accessed through IPUMS(Ruggles, Flood, Goeken, Grover, Meyer, Pacas, and Sobek, 2020).

[8]We downloaded this crosswalk from Neil Bhutta's website. The mapping to lender parent companies is only available through 2017 at which point the lender identification codes in HMDA change. Therefore, we limit the analysis to the years before for which we can consistently aggregate to parent companies over time.

[9]Note that the international census data for China and India does not allow for computing homeownership rates by marital status, such that Chinese-headed households are not included in our baseline regressions.

[10]We include average income, marriage rates, college shares, male headship share, age (linear and squared) of the head, hispanic share, children in the household, household size, and the population share of different race for each group in the county.

[11]The "intercept" coefficient that represents the reference group has been labeled "low HOCO" for clarity, even though it does not have an interaction with a group indicator in the regression. While separate coefficients for the Mexican-born and no-HOCO data foreign-born groups are estimated, they are not shown in the table to make the presentation more concise.

VII. Tables

Table I: Homeownership rates for selected countries of origin computed from international census data

Rank	Origin	$\%\text{Pop}^{00}_{USA}$	% Married	% $HOCO^{All}$	% $HOCO^{Married}$
		ACS 2000 Birthplace			
1	Mexico	3.2	67	66	69
2	Puerto Rico	0.7	44	65	81
3	Philippines	0.5	64	77	77
4	Canada	0.4	55	68	81
5	Vietnam	0.4	65	92	95
⋮	⋮	⋮	⋮	⋮	⋮
	United States	86.5	54	67	83

Notes: This table summarizes our homeownership rates, by country of origin (*HOCO*) for the largest country-of-origin groups among foreign-born immigrants residing in the U.S. These homeownership rates are computed from harmonized country census microdata (obtained through IPUMS) by marriage status. Only countries for which this data was available are shown. The table is ranked by the population share of each immigrant group among U.S. household heads who are 18-69 years old in 2000 (according to Decennial Census data), and also shows the share of household heads from that origin who are married. It shows the average homeownership rate in the country of origin, as well as the rate among married household heads. We also provide the US native-born population data for the year 2000. Full table of 70 countries with homeownership data available upon request. Population shares of the 5 largest country-of-origin groups for which we could not compute homeownership data by marriage status: Germany, 0.47%; India, 0.47%; China, 0.38%; Cuba, 0.36%; South Korea, 0.29%.

Table II: Baseline effects of Homeownership in Country of Origin on Tenure Choice

Dependent var.:	Household Homeownership$_{it}$ (in %)			
	(1)	(2)	(3)	(4)
HOCO (%)	0.897***	0.168***	0.166***	0.153***
	(0.09)	(0.06)	(0.05)	(0.05)
Observations	3,448,546	3,436,300	3,436,300	3,436,252
R-Squared	0.06	0.27	0.30	0.31
Household Characteristics	No	Yes	Yes	Yes
Commuting Zone FE	No	No	Yes	No
Commuting Zone × Year FE	No	No	No	Yes

Notes: This table shows the results of estimating Equation 1 in a pooled household level sample of households with foreign-born heads who are 18-69 years old, for the years 2000 and 2005-2019. The dependent variable is an indicator of homeownership in percent (so 100 indicates that the household owns their home). The independent variable is the homeownership rate in the country of origin (*HOCO*) of the household head for people with the same marriage status (single, married, separated/divorced, widowed). Household characteristic control variables consist of: HH Income, (linear and ventile indicators), predicted non-housing household net worth, Quadratic function of Age of HH head and 5-year age group indicators, indicators for educational achievement of HH head, Indicators for # of children and # of relatives in the HH, Indicators for discretized years since immigration of head, marital status of HH head, and the interaction between marital status and years-since-immigration categories. Heteroskedasticity-robust standard errors clustered at the origin country level shown in parentheses. *,**, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Table III: Effects of HOCO on Tenure Choice: Country Characteristic Controls

Dependent var.:	Household Homeownership$_{it}$ (in %)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
HOCO (%)	0.092***	0.165***	0.157***	0.163***	0.108**	0.179***	0.168***	0.167***
	(0.03)	(0.05)	(0.05)	(0.05)	(0.05)	(0.04)	(0.04)	(0.03)
GDP per capita (2021 USD)		0.082						-0.098
		(0.05)						(0.13)
Urban population (% of total)			0.008					0.118**
			(0.04)					(0.05)
Consumer price inflation (annual %)				-0.147				0.012
				(0.12)				(0.24)
Domest. credit by fin. sector (% GDP)					0.030***			0.022
					(0.01)			(0.02)
Property rights index						0.032		0.106
						(0.05)		(0.10)
Investment freedom index							-0.001	-0.074
							(0.06)	(0.07)
Observations	3,436,252	3,436,252	3,385,624	3,223,662	2,100,486	3,175,701	3,175,701	2,060,006
R-Squared	0.32	0.31	0.31	0.31	0.30	0.31	0.31	0.30
Household Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Commuting Zone × Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Major religion FE	Yes	No	No	No	No	No	No	Yes

Notes: This table shows the results of estimating the same specification as column 4 of Table II, and additionally controlling for country-of-origin characteristics. Each column adds in one characteristic as a control variable. On the one hand, we add Major religion fixed effects (column 1) and 2000-2020 averages of economic characteristics from the World Bank's World Development Indicators: GDP per capita (column 2), urbanization rate (column 3), annual inflation rate (column 4), and domestic credit to private borrowers as a share of GDP (column 5). On the other hand, we include indicators of property rights (column 6) and investment freedom (column 7) from the Heritage Foundation, which are averaged over 2000-2008, and for which higher numbers indicate more rights. Column 8 jointly includes all of these characteristics and fixed effects. Heteroskedasticity-robust standard errors clustered at the origin country level shown in parentheses. *,**, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Table IV: Effects of Homeownership in Country of Origin on Tenure Choice: Additional Specifications and Robustness Checks

Dependent var.:	Household Homeownership$_{it}$ (in %)							
	(1) By Gender	(2) By Educ.	(3) By Years since Immig.	(4) Mig. Char. Controls	(5) Excl. 5 largest Orig. Ctries	(6) Nat. avg. HOCO Data	(7) Gov. source HOCO Data	(8) AHS Data
HOCO: by marriage status	0.171***	0.178***	0.004	0.144***	0.189***			0.170***
	(0.05)	(0.05)	(0.08)	(0.05)	(0.05)			(0.06)
HOCO × Male	-0.037***							
	(0.01)							
HOCO × College Educ.		-0.075**						
		(0.03)						
HOCO × LT Resident (> 10 Yrs)			0.196**					
			(0.08)					
HOCO: microdata national avg.						0.083		
						(0.09)		
HOCO: gov. sources national avg.							0.148*	
							(0.08)	
Observations	3,436,252	3,436,252	3,436,252	3,436,252	1,636,834	3,093,899	3,485,350	49,094
R-Squared	0.31	0.31	0.31	0.32	0.33	0.31	0.31	0.32
Household Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Commuting Zone × Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
CBSA × Year FE	No	No	No	No	No	No	No	Yes

Notes: This table shows the estimation results from additional specifications that vary particular aspects of the baseline regression in column 4 of Table II. The first three columns check for differential impacts by characteristics of household head: whether the head is male, his or her education level, and how long the head has been in the U.S. Column 4 controls for average migrant characteristics by origin country. Column 5 excludes the five largest immigrant groups in the U.S. from the sample. Column 6 substitutes our preferred marital status - by - origin *HOCO* measure with average homeownership rate in country of origin. Column 7 uses hand collected data from governmental reports for *HOCO*, rather than estimating it from microdata. Column 8 utilizes the AHS sample instead of the baseline ACS sample. Heteroskedasticity-robust standard errors clustered at the origin country level shown in parentheses. *,**, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

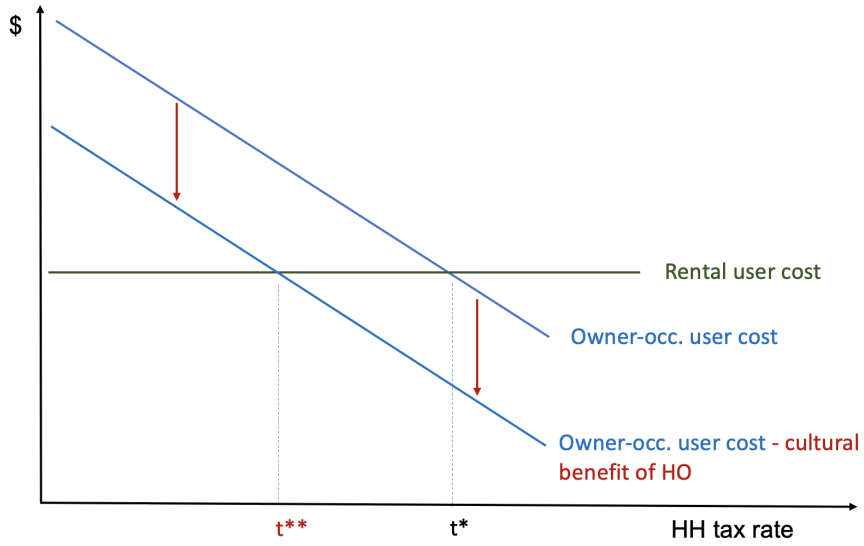
Table V: Credit supply shocks and affinity for homeownership

Dependent var.:	Δ Homeownership$_{cty,g,t}$ (in ppt)			
	(1)	(2)	(3)	(4)
Shock$_{cty,t}$	-3.844***	-3.630**	-2.747**	-2.002**
	(1.47)	(1.69)	(1.18)	(0.97)
Native $\times$ Shock$_{cty,t}$	3.606**	3.168*	1.733	1.501*
	(1.48)	(1.62)	(1.10)	(0.87)
High HOCO $\times$ Shock$_{cty,t}$	2.668**	2.947**	2.126***	1.651**
	(1.33)	(1.20)	(0.82)	(0.78)
Observations	134,571	134,571	134,013	133,999
Adj. R-Squared	0.27	0.28	0.59	0.61
Group Demographics$_{cty,g,t}$	X	X	X	X
Homeownership$_{cty,g,t-1}$	X	X	X	X
Year FE		X	X	
Group $\times$ County FE			X	X
Year $\times$ Commuting Zone FE				X

Notes: This table shows the results of estimating Equation 4 for the years 2006-2017 in a sample of county-year-group cells, where the groups are the referenced HOCO categories: US-born natives, foreign-born without HOCO data, above-median HOCO, below-median HOCO, and Mexican-born. The omitted reference category is below-median HOCO. Coefficients for interactions with Mexican foreign born and no-HOCO foreign born groups have been omitted from the table for easier readability. The dependent variable is an indicator of the local group-level change in homeownership rates in percentage points. The group demographic control variables include average income, marriage rates, college shares, male headship share, age (linear and squared) of the head, hispanic share, children in the household, household size, and the population share of different races. See the text for how the credit shocks are constructed. Heteroskedasticity-robust standard errors clustered at the CBSA level shown in parentheses. *,**, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

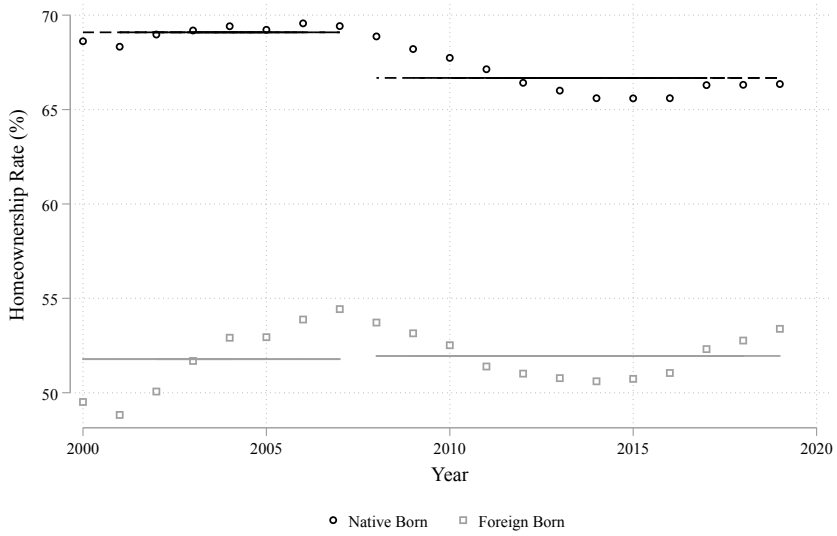
VIII. Figures

Figure 1: Static tenure choice with cultural affinity for homeownership

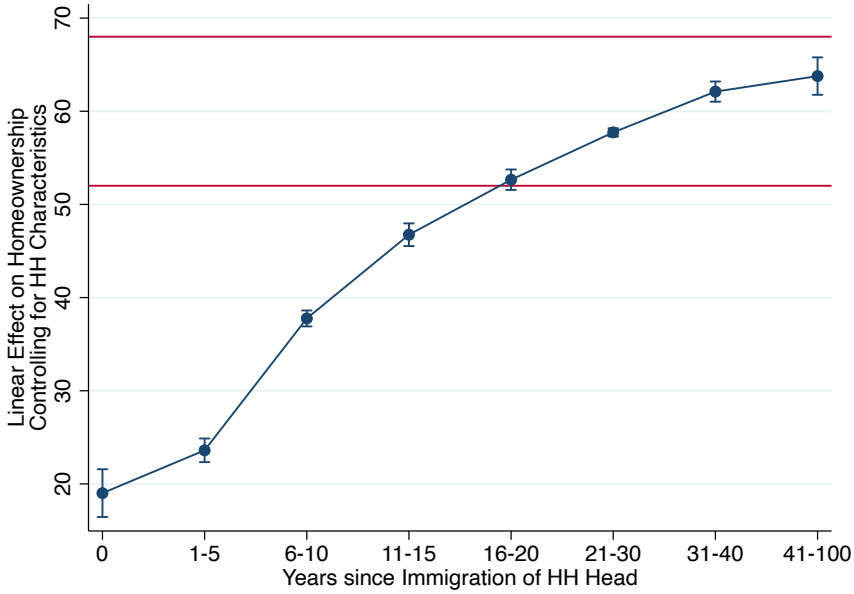


Notes: This figure shows the user-cost vs. tax rate profile for households that rent or own, as outlined in Section II. Here "cultural benefit of homeownership" is analogoous to ϕ.

Figure 2: Foreign Born Homeownership in the US



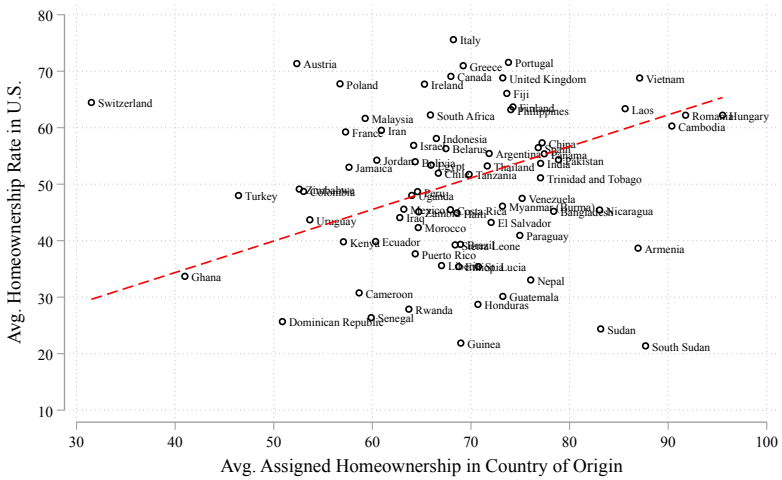
(A) Homeownership Rates by Nativity

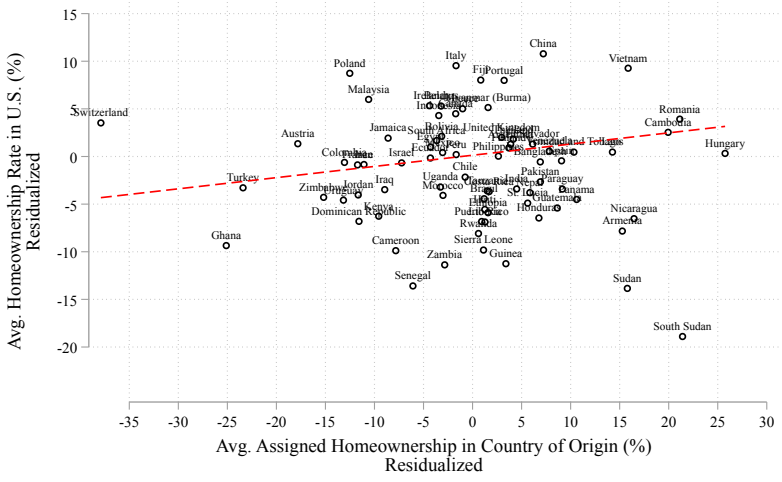


(B) Homeownership by Years in US (foreign born only)

Notes: Panel (A) shows the homeownership rate among native vs. foreign-born households in the US between 2000 and 2019, among household heads aged 18-69. We've overlaid the time series with average homeownership rates during the boom period, 2000-2007, and during the bust and recovery, 2008-2019. Panel (B) shows the estimated homeownership rate among foreign-born households by years elapsed since arriving in the US. We control for commuting zone-by-year fixed effects as well as household income, household head's age and age squared, educational attainment, and marital status, and cluster standard errors by commuting zone and year. Data in both panels from the ACS microdata.

Figure 3: Relationship between Homeownership in the U.S. and *HOCO* among Immigrants at the Origin Country Level



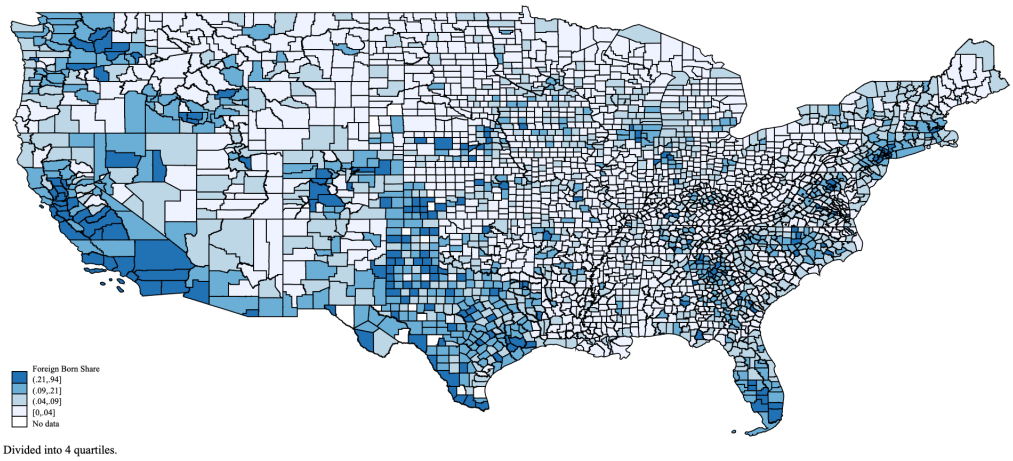


Notes: These graphs shows origin country averages of homeownership among U.S. households with foreign-born heads on the vertical axis, and the average of these households' associated homeownership in the country of origin by marital status on the horizontal axis. The left graph shows these averages for the raw ACS data from the years 2000 and 2005-2019, while the right graph residualizes both homeownership and *HOCO* at the household level before aggregating. The control variables for the residualization consist of: HH Income, (linear and ventile indicators), Quadratic function of Age of HH head and 5-year age group indicators, indicators for educational achievement of HH head, Indicators for # of children and # of relatives in the HH, Indicators for discretized years since immigration of head, marital status of HH head, and the interaction between marital status and years-since-immigration categories. The linear fits and slopes in each graph weight each country by the number of foreign-born residents with that origin in the sample. Note that the aggregation means that the regression slopes at the origin country level are merely illustrative here,/ They are not directly comparable to the household level effect estimates, which should be relied on for the quantitative magnitude of the effect.

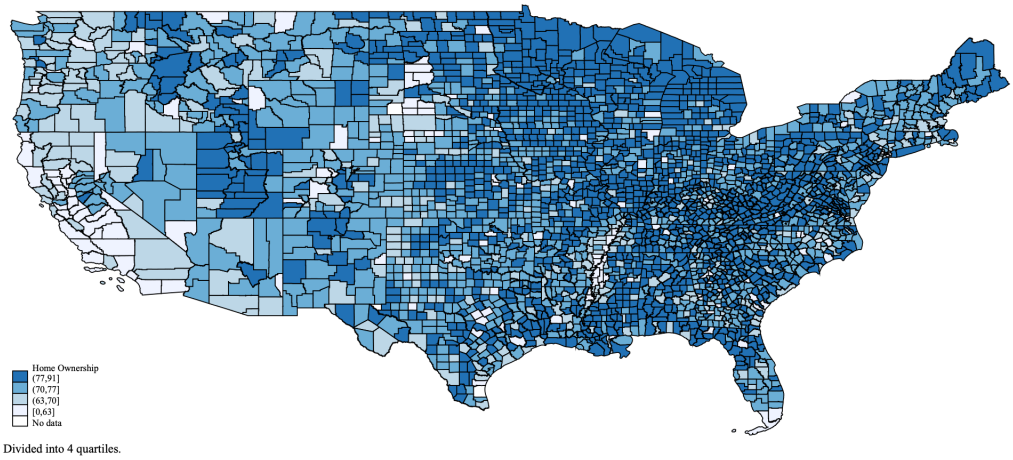
Figure 4: Correlations between *HOCO* and Country Characteristics

Notes: This matrix shows the correlations between the average (not marital-status-specific) homeownership rate in different countries and other country characteristics. On the one hand, the characteristics consist of economic characteristics like GDP per capita (in constant 2021 USD), urbanization rate, annual inflation rate, and domestic credit to private borrowers as a share of GDP - all of which are computed as averages of all available data for 2000-2020 from the World Bank's World Development Indicators. On the other hand, we include indicators of property rights and and investment freedom from the Heritage Foundation, which are averaged over 2000-2008, and for which higher numbers indicate more secure rights and greater freedom.

Figure 5: Spatial Distribution of $HO_{d,2000}$ and $FBShare_{d,2000}$



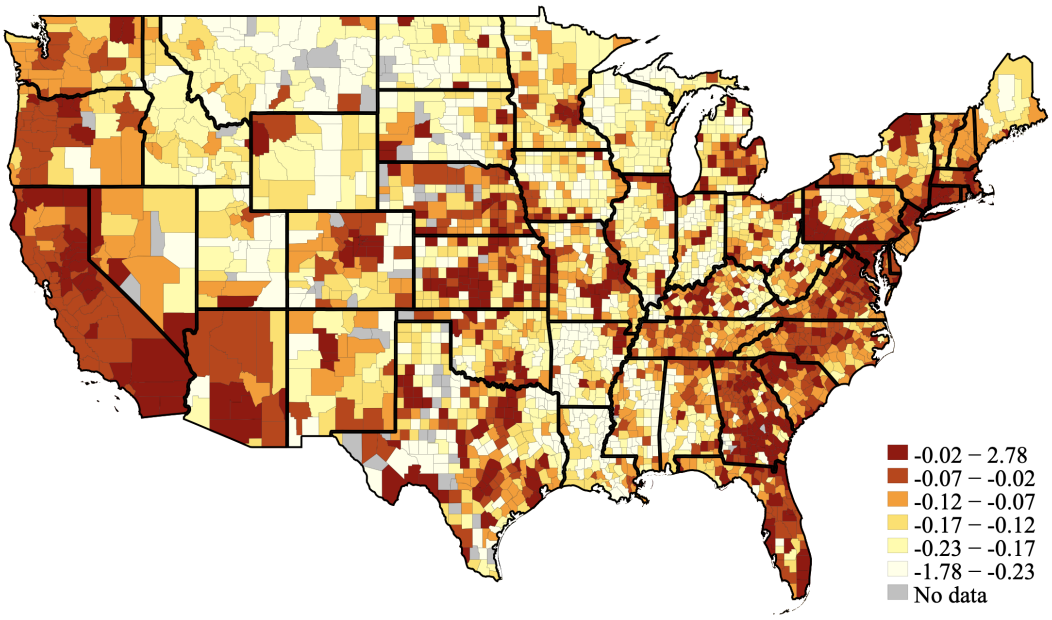
(A) $FBShare_{d,2000}$



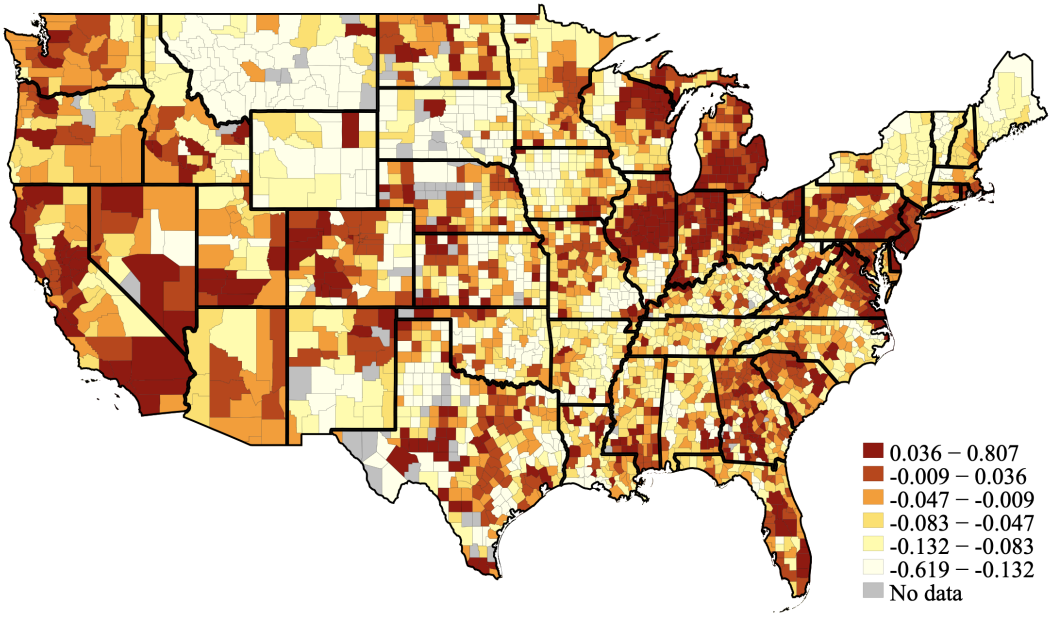
(B) $HO_{d,2000}$

Notes: These maps plot the foreign-born population share and homeownership, all anchored to their distributions at of the year 2000, at the county level. The maps are each divided into equal, population-weighted quartiles. Darker colors have higher values, and lighter colors denote lower values.

Figure 6: Spatial Distribution of credit supply shocks



(A) Credit supply shocks: 2006



(B) Credit supply shocks: 2016

Notes: These maps plot the distribution of credit supply shocks at the county level. Darker colors have higher values of implied loan growth, and lighter colors denote lower values.

ONLINE APPENDIX

Appendix A. Wealth Imputation

In this section, we discuss the imputation of household non-housing networth using the PSID and ACS data. The PSID structure follows an initial set of households recruited in 1968, adding new households as the children of the original households form their own households, or as households otherwise split. This structure does not accomodate population representativeness as immigration evolves over time. As such, we limit the PSID sample to the 1997 and 2017 waves. These refresh the sample of households being surveyed by adding new households that had migrated to the United States between between 1968 and 1997 and between 1997 and 2017, respectively. We end up with 1,046 immigrant households whose heads are between the ages of 18 and 69, in keeping with our other sample restrictions.

We construct non-housing networth following Pfeffer, Schoeni, Kennickell, and Andreski (2016) and predict networth using a suite of socioeconomic and demographic variables. We add up checking and savings accounts, the value of business assets, stocks, IRA's, private annuities, vehicle networth (value less remaining auto loans) and any other real estate that is not the primary residence. We then compute the household's liabilities, adding credit card debt, loans from relatives, medical debt, legal debt, student debt and other non-specified debt, excluding primary and secondary mortgages on the primary residence. Non-housing networth is just non-housing assets less non-housing liabilities.

The predictive variables include fourth order polinomial in household income, race and hispanic status of household head and spouse (if applicable), household heads's level of education,age and gender, household head's age interacted with education to control for differential income profiles, whether there are children present in the home, whether the householder is married, as well as the interaction between marriage and children. Finally, we include census division fixed effects to control for differential non-housing wealth accumulation patterns across U.S. geographies, as well as continent fixed effects for immigrants' country of origin reflecting the fact that those immigrating from Europe may have differential wealth profiles to those from South America, for example. We are limited in the amount of geographic variation we can control for as our sample of $\sim 1,000$

immigrant households hail from only 38 states. Additionally, only 22 states have more than 10 households, limiting the residual variation should we control for state directly. For similar reasons, we cannot control for country of origin; the PSID only provides 16 broad regions which we map to continents as many of these regions have very few households. Observations are weighted by the cross-sectional family weight provided by the PSID.

Figure AI plots the predictive ability of our model. The regression's R^2 is 0.22, suggesting that many wealth determinants have not been directly accounted for. Nonetheless, the model fits the data quite well up to networths of $800,000, suggesting that most of the remaining wealth determinants are most predictive of the right tail (we have only 17/1,1049 households with non-housing networths above $800,000), not the main sample.

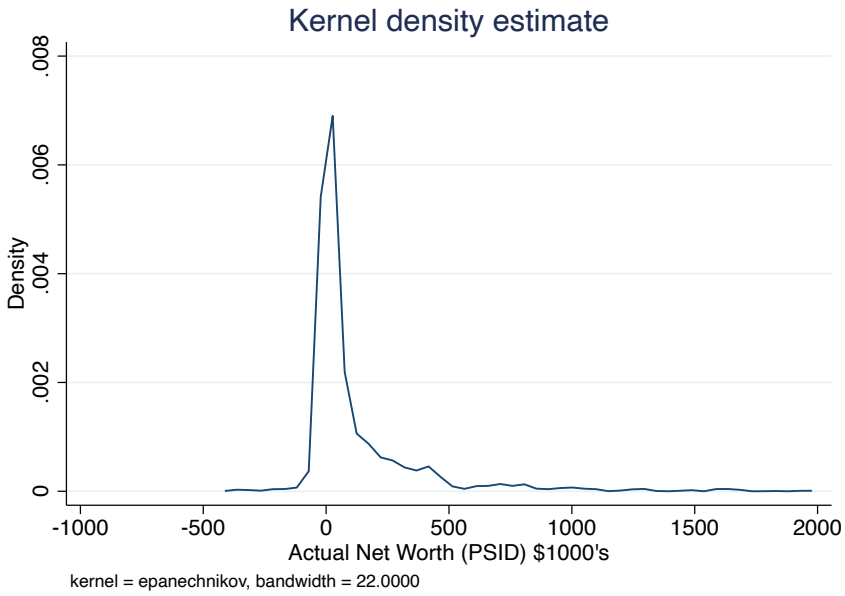
Next, we store the point estimates associated with each of our socioeconomic and demographic predictors of wealth and apply them to our sample of migrants in the ACS data. This allows us to impute non-housing networth as the sum of the model inputs times their respective parameters. Figure AII compares the actual distribution of non-housing networths observed in the PSID to the imputed non-housing networths we build using the ACS data and PSID-derived coefficients. The ACS immigrant sample, composed of nearly 4 million households, yields a distribution with more networth variation than that in the PSID, which is based on only about 1,000 households. Nonetheless, visual inspection of the two distributions shows many similar characteristics: mean networth near 0, with a significant right tail after about $500,000, and smalll mass of households with negative networth between $0 and -$500,000.

Appendix B. Additional Figures

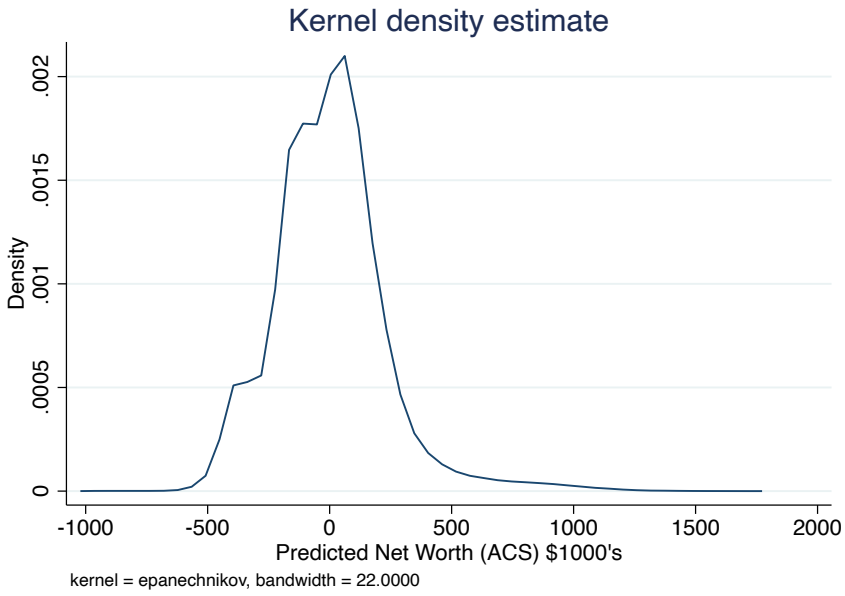
Figure AI: Actual vs. Predicted Networth in the PSID

Notes: These figure plots a scatterplot of actual non-housing network vs. predicted housing networth as in section A. Weoverlay the scatterplot with the 45 degree line which would reflect perfect prediction. Data comes from the 1997 and 2017 PSID waves, restricted to immigrant households. Networth constructed according to Pfeffer et al. (2016), excuding assets and liabilities associted with the primary residence. Distribution of actual non-housing networth trimmed at $2 million for ease of inspection due to the long right tail in wealth, which drops 8/1,049 households from the figure.

Figure AII: Distributions of Networths, by Dataset



(A) PSID



(B) ACS

Notes: These figures plot the kernel density distributions of non-housing networths from the PSID and ACS immigrant samples. We show actual non-housing networth for the PSID, and imputed networth according to Appendix A for the ACS sample. Distribution of actual non-housing networth in the PSID trimmed at $2 million for ease of inspection due to the long right tail in wealth, which drops 8/1,049 households from the figure.

Appendix C. Additional Tables

Table AI: Homeownership rates for selected countries of origin

Rank	Origin	$\%\text{Pop}^{00}_{USA}$	*HOCO*	Year	Source
1	Mexico	3.26	68	2018	OECD report: HM1.3-Housing-tenures
2	China	0.54	90	2015	Chen, Li and Wu (2021)
3	Philippines	0.49	64	2019	Philippine Statistics Authority
4	India	0.36	87	2011	Census of India (2011)
5	Vietnam	0.35	88	2019	Vietnam General Statistics Office
⋮					
71	Belarus	0.01	77	2009	UN Statistics Division
74	Sierra Leone	0.01	79	2004	Statistics Sierra Leone
	United States	86.45	63	2018	American Community Survey

Notes: The summarizes our hand-collected homeownership rates, by country of origin (*HOCO*) for the largest country-of-origin groups among immigrants residing in the U.S. The table moves downward by the population share of each immigrant group. It also displays their share of the total U.S. population in 2000 (according to Decennial Census data), the data source for homeownership, and data reporting year for homeownership. At the bottom, we provide the US population share, and the homeownership rate in 2018. Full table of 60 countries with homeownership data available upon reuqest. Population shares of 14 countries we could not find reliable homeownership data: Cuba, 0.31%; El Salvador, 0.29%; Iran, 0.1%; Ukraine, 0.1%; Guyana, 0.08%; the former Yugoslavia, 0.04%; Lebanon, 0.04%; Bosnia and Herzegovina, 0.04%; Syria, 0.02%; Barbados, 0.02%; Afghanistan, 0.02%; Polynesia, 0.01%; Melanesia, 0.01%; Micronesia, 0.006%

Table AII: Credit supply shock effects on geography-level loan growth.

Dependent var.:	$\Delta \ln \text{Loans}_{it}$			
	(1)	(2)	(3)	(4)
Panel A: County-year panel				
Credit Supply Shock$_{it}$	0.397***	0.416***	0.405***	0.387***
	(0.07)	(0.04)	(0.05)	(0.05)
Observations	34,756	34,756	34,744	34,696
Adj. R-Squared	0.04	0.65	0.64	0.65
Within R-Squared	0.04	0.12	0.12	0.14
Panel B: Czone-year panel				
Credit Supply Shock$_{it}$	0.512***	0.526***	0.510***	0.481***
	(0.09)	(0.06)	(0.06)	(0.06)
Observations	8,551	8,551	8,550	8,550
Adj. R-Squared	0.06	0.76	0.75	0.76
Within R-Squared	0.06	0.21	0.20	0.23
Year FE		X	X	X
Geography FE			X	X
Demographics				X

Notes: This table shows the results of estimating equations of the form

$$\Delta \ln \text{Loans}_{it} = \alpha_i + \alpha_t + \beta \hat{S}_{it} + \gamma' X_{it} + \epsilon_{it},$$

where i is the geography in a panel of U.S. counties or commuting zones for the years 2006-2017. The dependent variable is the change in the log of total loans in HMDA data. The local mortgage credit supply shock $\hat{S}_{it}$ is constructed as the geography market share-weighted average of lender-level credit supply shocks. Lender-level shocks are estimated in a panel regression of lender-by-county-level loan growth on county-year fixed effects and lender-year fixed effects. The latter are aggregated into geography-level lending shocks by weighting them using the lagged loan share of the lender in that geography. Last, the raw lending shocks are residualized in a regression on loan and total lending demand shocks (the re-centered county-year fixed effects from the lender-by-county-level regressions), geography fixed effects, and year fixed effects, with geography population weights based on IRS data. For the construction of these lending shocks, only lenders with loans in at least 3 counties in a given year are included, while the dependent variable contains all mortgage loans in the geography. The last column incudes time-varying average demographic characteristics of the geography, which are aggregated from ACS household level data. These demographic controls comprise household income, predicted non-housing household net worth, age of household head (simple and squared), share Hispanic, share college-educated, numbr of children in the household, share of relatives in the household, share of male household heads, share of married household heads. All regressions are weighted by the total number of loans in each geography-year cell. Heteroskedasticity-robust standard errors clustered at the commuting zone level shown in parentheses. *,**, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.