

DISCUSSION PAPER SERIES

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**Mortgage Finance and Culture**

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# Mortgage Finance and Culture

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## ABSTRACT

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### **Mortgage Finance and Culture\***

Using a nationally representative sample of 12,344 immigrants from 41 different countries of ancestry living in Spain in 2007, we find that the higher the housing-loan penetration in the country of ancestry, the higher the likelihood of having a mortgage in Spain. Similarly, the higher the mortgage depth in the country of ancestry, the higher the present value of the monthly mortgage payments. Our results suggest that social norms regarding mortgage finance in the country of ancestry matter in determining immigrants' mortgage finance in the host country. More specifically, the effect of social norms on the decision to have a mortgage (the extensive margin) and the amount of the mortgage payments (the intensive margin) is about one third and tenth the size of the effect of having a college degree on mortgage debt, respectively. Evidence of strong persistence of culture among those with longer tenure in the host country, those who immigrated as children or young adults, and second-generation immigrants suggests that vertical transmission of beliefs (from parents to children) is a plausible channel of transmission. Perhaps most importantly, we find that cultural attitudes regarding property rights are most relevant when explaining individuals' decision to get a mortgage, but those regarding credit information matter most when explaining the amount of the mortgage debt.

**JEL Classification:** G21, G28, Z13

**Keywords:** housing-loan penetration, mortgage depth, culture, formal and informal institutions, and epidemiological approach

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## NON-TECHNICAL SUMMARY

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Financial literacy (or social norms regarding mortgage finance) is relevant in explaining individuals' decision to get a mortgage. Its effect is as large as one third of the effect of having a college degree on mortgage debt.

## 1. Introduction

Because average home prices range from 4 times the annual income in developed countries to 8 times in emerging countries (Ball, 2003), mortgage debt is a key element to homeownership. Nonetheless, *both* the mortgage-acquisition decision (extensive margin) and the amount-of mortgage-debt decision (intensive margin) vary widely across countries, as the housing-loan penetration (the percentage of adult population with an outstanding loan to purchase a home) varies from 0.4% in Nicaragua to close to 60% in Sweden, and the mortgage depth (the mortgage debt relative to the GDP) varies from 0.5% in Ghana to 83% in The Netherlands.<sup>1</sup> Given the positive socio-economic effects of homeownership (Dietz and Haurin, 2003; and Inter-American Development Bank, 2012), and the relevance of mortgage debt in accessing adequate housing, in addition to the macroeconomic consequences of mortgage debt (Claessens *et al.*, 2011), understanding the demand for mortgage debt is of fundamental importance.

Thus far, studies using data at the individual level have focused on the effects of inflation, tax treatment on mortgages, legal and economic institutions, bankruptcy exemptions, repossession periods, income, wealth, age, education, and household composition on the propensity to acquire a mortgage or the amount of mortgage debt borrowed.<sup>2,3</sup> Recently, the economic psychology literature has also explored the role of emotional factors in determining the decision to acquire a mortgage, finding no effect of impulsivity on mortgage demand (Ottaviani and Vandone, 2011).<sup>4</sup> Moving to studies using aggregate data, Stulz and Williamson (2003) find that debt markets and banking development is correlated with culture (proxied by religion and language) exploiting variation across 48 countries. Other aggregate-data studies have focused on identifying which factors are associated with cross-country variation of mortgage debt or with a well-functioning housing-finance system (see Warnock and Warnock, 2008; and Badev *et al.*, 2014, and literature reviews within). Nonetheless, most of these aggregate-data studies capture correlations, rather than causal inference. Moreover, they focus on the effects of *formal* institutional constraints, such as the countries' legal rights for

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<sup>1</sup> See columns 3 and 4 in Table 2.A.

<sup>2</sup> See Miles (1994) and Leece (2004) for studies on the effect of inflation on mortgage demand, Jappelli and Pistaferri (2007), and the literature within, for studies on the effect of tax treatment on mortgages, Bover *et al.* (forthcoming) for an analysis of legal and economic institutions on mortgage debt in 11 EU countries, Gropp *et al.* (1997) on the effect of bankruptcy exemptions on mortgage debt, Fabbri and Padula (2004) on the effect of the time to repossess a house on mortgages, and Cox and Jappelli (1993), Duca and Rosenthal (1993), Gropp *et al.* (1997), Crook (2001), Magri (2002), Fabbri and Padula (2004), and Bover *et al.* (forthcoming), among others, on the effects of income, wealth, age, education and household composition on the demand for mortgages.

<sup>3</sup> A related literature, also using individual micro-data, studies the impact of mortgage-lending constraints on female labor supply (Fortin, 1995), household consumption (Masier and Villanueva, 2011), or homeownership (Feldman, 2001; and Rosenthal, 2002; and Barakova *et al.*, 2003).

<sup>4</sup> In contrast, the authors find evidence that impulsivity is associated with unsecured debt, that is, consumer credit.

borrowers and lenders, and the amount and quality of credit information; as opposed to *informal* institutional constraints (or culture or social norms), defined as “*beliefs and preferences that vary systematically across groups of individuals separated by space (either geographic or social) or time*” (Fernández, 2008). The objective of the current paper is to understand the role of *informal* institutional constraints (culture or social norms) apart from environmental factors (or *formal* economic and institutional constraints) in explaining individuals’ decision to get a mortgage and the amount borrowed. .

While others have found that culture affects economic behavior, this paper is the first to provide evidence that cultural attitudes affect financial liabilities, and that they do so both at the extensive and intensive margins.<sup>5</sup> We follow Fernandez and Fogli (2006), Fernandez (2007), and Fernandez (2009), and use, as measure of cultural attitudes regarding mortgage debt, the country-of-ancestry outcome of interest obtained from several sources (as described in Appendix Table A.1). More specifically, we use the housing-loan penetration (the percentage of adult population with an outstanding loan to purchase a home) in the country-of-ancestry as capturing social norms regarding the demand for mortgages, and the country-ancestry mortgage depth (the mortgage debt relative to the GDP) as capturing social norms regarding the amount of mortgage borrowed.<sup>6</sup> We then merge this relatively novel mortgage-debt country-of-ancestry data with a nationally representative survey of 12,344 immigrants from 41 different countries living in Spain in 2007 (the 2007 *Encuesta Nacional de Inmigrantes*, ENI hereafter). Perhaps most importantly, we find that cultural attitudes regarding property rights are most relevant when explaining individuals’ decision to get a mortgage, but those regarding credit information matter most when explaining the amount of the mortgage debt, providing insightful information for policy makers.

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<sup>5</sup> Other authors have used a similar approach to estimate the effects of culture on different socio-economic outcomes, including savings rates (Carroll, Rhee, and Rhee 1994); stock market participation (Osili and Paulson, 2008); preferences for redistribution (Luttmer and Singhal, 2011); fertility and female labor force participation (Antecol 2000; Fernández and Fogli 2006, 2009; Fernández 2007); living arrangements (Giuliano 2007), the demand for social insurance (Eugster *et al.* 2011); preferences for a child’s sex (Almond, Edlund, and Milligan 2013); divorce (Furtado, Marcén, and Sevilla 2013); math gender gap (Nollenberger, Rodríguez-Planas, and Sevilla, 2016); reading, science and math gender gaps (Rodríguez-Planas and Nollenberger, 2018); and smoking gender gap (Rodríguez-Planas and Sanz-de-Galdeano, 2016). A complementary approach is that of Haliassos *et al.*, 2016, which use genetic distance and responses to the Hofstede culture-relevant questions to classify culture and find evidence of cultural differences in financial behavior across European countries.

To the best of our knowledge, no one has studied whether culture explains the demand for of mortgage debt.

<sup>6</sup> Fernandez (2007), Fernandez and Fogli (2006) and Fernandez (2009) use country-of-ancestry female labor force participation (the first), fertility rate (the second) and both female labor force participation and fertility rate (the third) as proxies of culture. Their outcome of interest is females’ labor force participation and/or fertility decisions.

By focusing on immigrants living in the same host country, we are holding constant the host country's labor market and economic institutions and conditions, housing laws and regulations, legal rights for borrowers and lenders, the amount and quality of credit information available to lenders, as well as the weather and geography. If *only* current *formal* institutional constraints determine access to and the amount of mortgage individuals get, the housing-loan penetration (the percentage of adult population with an outstanding loan to purchase a home) and the mortgage depth (the mortgage debt relative to the GDP) of the country of ancestry should *not* matter. Evidence that country-of-ancestry housing-loan penetration and mortgage depth affect immigrants' likelihood of having a mortgage and the mortgage amount, respectively, in the host country would provide strong evidence that cultural values (such as conventions and rules of behavior regarding mortgage finance) from immigrants' country of ancestry matter.

We find that the higher the housing-loan penetration in the country of ancestry, the higher the likelihood of having a mortgage in the host country. Similarly, we find that the higher the mortgage depth in the country of ancestry, the higher the present value of the mortgage payments. Our main results, summarized in Figures 1 and 2, are confirmed in the regression analyses, which include a large and rich set of economic and demographic characteristics known to affect mortgage debt, such as individual's education, family composition, earnings, and wealth, among others, and are robust to a battery of sensitivity analyses.

According to our estimates, if an individual from a country with "average" housing-loan penetration had instead come from a country with housing-loan penetration one-standard deviation above the mean, the likelihood that she has a mortgage in the host country would have increased by 3.21 percentage points, a 17% increase in the likelihood of having a mortgage, relative to the observed mortgage-access rates for immigrants of 19%. Similarly, if an individual from a country with "average" mortgage depth had instead come from a country with mortgage depth one-standard deviation above the mean, the present value of her monthly mortgage in the host country would have increased by 158.87 euros, a 9% increase in the present value monthly mortgage, relative to the observed average of 1,838.86 euros for immigrants. Both estimates are statistically significant at the 1 percent level. To put these estimates into context, getting a university degree is associated with a 61% (or 11.52 percentage points) and 72% (or 1,316.46 euros) increase in the likelihood of having a mortgage and the present value of the monthly mortgage payments, respectively. To put it differently, the effect

of culture on the extensive and intensive margins is about one third and one tenth the effect of having a college degree on mortgage debt, respectively. Our results are robust to different specification strategies, selective migration, omitted variable bias, alternative measures of culture, and changes in sample criteria.

Our heterogeneity analysis reveals that the effects are stronger among immigrants who have been in the host country for at most ten years, as well as those who arrived to the host country after the age of 25 years old. Nonetheless, we also find evidence of strong persistence of culture among those with longer tenure in the host country, those who immigrated as children or young adults, and second-generation immigrants (that is, those who were born in Spain to immigrant parents), suggesting that vertical transmission of beliefs (from parents to children) is a plausible channel of transmission.

Our work contributes to the literature on culture and financial decisions in two distinct and important ways. First, we study the decision to acquire debt as opposed to that of owing financial assets (Guiso, Sapienza and Zingales, 2003 and 2004; Osili and Paulson, 2008). Second, to the best of our knowledge, we are the first to study the effect of culture on financial decisions at *both* the extensive and intensive margins, providing interesting insights for policy makers.<sup>7</sup>

Last but not least, our work also contributes to the regional science and urban economics literature which focuses on immigrant/native differences in homeownership and mortgage attainability.<sup>8</sup> This literature finds that, in the US, immigrants had both less familiarity and less access to mortgage credit before the US credit boom. To the extent that the current paper explores factors behind immigrants' mortgage attainability in a context quite different from that of the US, it deepens our understanding of the homeownership and mortgage attainability link.

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<sup>7</sup> Guiso, Sapienza and Zingales (2003 and 2004) and Osili and Paulson (2008) examine the effect of culture only on the decision to own stocks, not the amount of the investment. Seto and Bogan (2012) find significant variation by country-of-ancestry in the immigrant rates of holding stocks, mutual funds, and US saving bonds. In their appendix, they also present results for the intensive margin.

<sup>8</sup> Coulson (1999) suggests that household attributes and metropolitan characteristics explain the lower homeownership of immigrants. Borjas (2002) finds that the native/immigrant homeownership gap has increased over the 1980-2000 period and that changes in immigrants' residential location choices as well as country of ancestry are behind this gap widening. Painter, Gabriel and Myers (2001) and Painter, Yang and Yu (2003) show that the homeownership gap disappears within one or two decades after arrival if immigrants' higher mobility and concentration is accounted for. Ratner (1996) and Cheney and Cheney (1997) underscore the relevance of access to credit markets on immigrants' likelihood to become homeowners. Most recently, Cahill and Franklin (2013) find that immigrants continue to be likely to be homeowners than natives in Miami-Dade County at the turn of the century.



The remainder of this paper is organized as follows. Section 2 describes the Spanish mortgage market and immigrants' access to mortgage debt. Sections 3 and 4 describe the empirical strategy and data, respectively. Sections 4 and 5 present the main results and sensitivity analysis, respectively. Section 6 presents heterogeneity analysis and Section 7 concludes.

## **2. The Spanish Mortgage Market and Immigrants Access to Mortgages**

### ***The Spanish Mortgage Market***

With the arrival of democracy in the mid-1970s, the European Union integration in the mid-1980s, and the incorporation into the European Monetary Union in the 1990s, Spain underwent radical economic changes, which improved economic confidence and lowered interest rates. Easy access to global liquidity boosted corporate investment and employment, increasing household incomes and the demand for housing and mortgage debt (Henn *et al.*, 2009).

Since the 1950s, the Spanish government had promoted homeownership through generous subsidies and tax incentives, resulting in more than 80% of the households being owner-occupied (Leal, 2005). This form of occupancy has remained widespread across regions and socio-economic groups in Spain up until today (Leal, 2005), partly because of the lack of public housing stock and the small and deficient rental market (Pareja-Eastaway and San Martin, 1999). Hence, when Spanish baby boomers reached household-formation age in the 1990s, they seek to purchase their first house, further fueling the demand for housing and mortgage debt.

Up until the early 1980s, mortgage lending was restricted to public banks and credit unions. The change came in 1981 when the 2/1981 Law authorized private banks and credit institutions to offer mortgages to the public. With the market liberalization and the rising mortgage demand, mortgage lending quickly rose, soaring after 1995. Debt for housing purchase (including debt to buy consumer goods) as a proportion of the GDP rose from 12% in 1982 to 87% in 2006. At the same time, mortgage rates fell from 18% to 3.5% in 2005, and the standard loan maturity for first-time buyers grew from 10 years in 1981 to 27 years in 2005 (Garcia and Raya, 2007).<sup>9</sup>

Starting in 1995, Spain experienced a decade of loose lending as a result of both the Spanish entry into the European Monetary System and the fierce competition across financial

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<sup>9</sup> Masier and Villanueva (2011) report that within the subset of households who became owners in Spain after 1992, 80% of them financed the transaction using a mortgage.

institutions. Over that period, average maturity increased from 18 to 25 years, and the average interest rate spread fell by 110 basis points (Masier and Villanueva, 2011), making mortgages considerably more affordable. At the same time, the down-payment requirements also loosened as the average loan-to-value ratio increased from 75% for mortgages signed between 1991 to 1995, to 91% for loans signed after 2003 (Masier and Villanueva, 2011).

In addition to the liberalization of the mortgage market, real mortgage rates in Spain were around zero as most mortgages are indexed to the 120-month Euribor, and the Euribor hovered around 2% while Spain had a persistent positive inflation differential of ½ to 1 percentage points with its Euro partners (Henn *et al.*, 2009). On top of the low real interest rates, the generous income tax deductions for mortgage payments also lowered the user cost of house ownership.<sup>10</sup> As a result, households' willingness to take on mortgage debt quickly rose with mortgages representing from 40% of disposable income in 2000 to 92% in 2007 (Henn *et al.*, 2009).

The increased housing demand coupled with the underdeveloped rental market, the deregulation of the mortgage industry and the low interest rates further boosted the demand for housing developing a housing bubble with housing prices increasing 175% between 1998 and 2008 (Gonzalez and Ortega, 2013). In contrast with the US, mortgages in Spain are collateralized by the property and income of the mortgagee. This, added to: (1) the illusion that the entry in the European Monetary System had changed the paradigm and brought about indefinite nominal stability, (2) lenders and borrowers' myopia in anticipating a downturn and a fall in housing prices, and (3) high competition in the lending industry, led financial institutions to offer mortgages generously and to dramatically lower their credit standards (Diaz-Serrano and Raya, 2014). According to Diaz-Serrano and Raya, 2014: "*In 2002, 98% of the surveyed individual who applied for a mortgage in Spain were granted one, while in 2005, this percentage was 100%.*"<sup>11</sup>

### ***Immigrants Access to Mortgages***

Beginning in 2000, the Spanish economy experienced an economic boom—partly driven by the real-estate market boom—and attracted an impressive inflow of immigrants from Latin

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<sup>10</sup> Income tax relief is available for both principal and interest payments. The general deduction rate is 15% with a maximum deduction of about 9,000 euros per year. The deduction also applies for 4-year deposits into savings accounts for home purchase (OECD, 2007).

<sup>11</sup> These figures were estimated with the Spanish Family Financial Survey, which does not identify the nationality of the potential borrowers.

America, Eastern Europe and Northern Africa. With an average arrival of 500,000 immigrants per year between 2002 and 2007, the stunning growth of Spanish immigrant population—from 1.2% of the population in 1991 to a 10% in 2007—is well documented (Rodríguez-Planas, 2012, and references within).<sup>12</sup> Many undocumented immigrants regularized their situation through several generous amnesties (in 1991, 1996, 2000, 2001, and 2005), which granted them with legal residence. Following the amnesties, the number of family-reunification requests also rose, increasing subsequently the demand for dwellings (Vono-de-Vilhena and Bayona-Carrasco, 2012). As immigration in Spain is labor-based (Fernández and Ortega, 2008), immigrants were quick to find jobs in the thriving economy. Their employment rate was more than 10 percentage points higher than that of natives (Rodríguez-Planas and Nollenberger, 2016), and estimates reveal that immigrants were responsible for 20% to 25% of the gains in the Spanish GDP per capita (Bank of Spain, 2006).

The immigration boom further accelerated the housing demand as immigrants also entered the real-estate market (Henn *et al.*, 2009; and Gonzalez and Ortega, 2013). As explained by Vono-de-Vilhena and Bayona-Carrasco (2012), just as homeownership was viewed as the best option and the leading choice among Spanish young people seeking a first dwelling in Spain, it was *also* an important goal for immigrants. Indeed, the Spanish residential system strongly encouraged immigrants to reproduce natives' homeownership behavior (Modenes and Bayona, 2008). Pareja-Eastaway (2009) explains that the preference for ownership among immigrants in Spain is explained by "*low interest rates and high rents, a continued period of economic expansion, the scarcity and bad quality of rented dwellings, and expectation of increases in the value of the acquired dwellings.*" Leal and Dominguez (2008) also explain that high numbers of migrants from developing countries contributed to the exhaustion of the small rental market, putting more pressure on the housing market as a whole, thus leading to an increase in the construction of housing units in areas with a larger immigrant population. Garcia (2014) adds that "*apart from immigrant workers and their families, other groups of foreigners found their niche in Spain, from Northern European pensioners (particularly British and German, but also other Europeans) to a more heterogeneous group of residents working or studying in cities.*" Indeed, Gonzalez and Ortega (2013) find robust evidence that immigration in Spain was partly responsible of the housing market boom. They

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<sup>12</sup> Easy entry into the country, a lax implementation of immigration laws, and several generous amnesties that have granted legal residence to illegal immigrants (in 1985, 1991, 1996, 2000, 2001, and 2005) explain the large immigration flows—see Izquierdo *et al.* 2009.

estimate that, between 1998 and 2008, immigration in Spain explained about 25% of the increase in housing prices and more than 50% of the increase in the housing stock.

Modenes and Bayona (2008) explain that, in contrast with other countries such as the US, there were strong efforts from the mortgage and housing sectors to promote homeownership among immigrants. While immigrants represented about 11% of the population in 2007, as much as 37% of the *new* homeowners and more than 30% of the new mortgages during the first half of 2007 were to immigrants (Garcia and Raya, 2007). According to the International Association of Money Transfer Networks, between 2005 and 2007, immigrants in Spain borrowed approximately 172 billion euros (IAMTN, 2008). In our sample, which is representative of the immigrant population living in Spain in 2007, close to one third are home owners. Of these, about 60% purchased the home after the turn of the century, and 21% did so in 2005 or afterwards.

As explained by Amuedo-Dorantes and Mundra (2013), not only the documents required to acquire a mortgage were the same for immigrants than natives, access to a mortgage was as easy for immigrants as natives.<sup>13</sup> In fact, many banks in Spain (such as Santander Central Hispano, Bankinter, Caja Madrid, among others) facilitated access to mortgage finance to immigrants by offering them language support, personalized customer services, and efficient online banking. This easy access is well reflected by the amount of the mortgage, the loan term and the loan-to-value ratio, which were, on average, *more* generous for immigrants than for natives. According to Garcia and Raya (2007), during the first half of 2007, immigrants' average mortgage in Spain was 15% higher than those of natives (which averaged 180,000 Euros). Similarly, the term of the loan was a couple of years longer than the average loan term among the native population (which averaged 35.5 years), and represented between 85% and 90% of the loan-to-value ratio (compared to an average of 83% for natives).

Diaz-Serrano and Raya (2014) explain that the expansion of the lending industry also lowered the credit standards for immigrant borrowers. These authors explain that “*during the first decade of this century, it was not unusual for a significant amount of borrowers to devote almost two-thirds of their monthly earnings to paying their mortgage, hold a mortgage with a loan-to-value above 100% or be granted a mortgage despite an unstable job situation.*” Diaz-Serrano and Raya (2014) show that, instead of restraining immigrants' credit, lenders in Spain charged non-EU immigrants an average of 18 basis points more in their mortgages than their native counterparts. As these authors explain, this differential is relatively small compared to

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<sup>13</sup> There are no restriction on property ownership by foreigners in Spain.

the 70 basis points observed in small-firm Italian loans (Albaretto and Mistrulli, 2011) or the 50 to 100 basis points observed across races in the US (Blanchflower *et al.*, 2003). Perhaps most importantly for our study, Serrano and Raya (2014) did not find that there was a differential treatment among lenders by immigrants' continent of origin after holding other socio-demographic characteristics constant.

### 3. Empirical Strategy

To analyze the effect of culture on mortgage debt, we use epidemiological approach, which isolates the effect of culture from those of contemporaneous economic conditions and institutional factors by focusing on immigrants living in the same host country, and estimates whether their country-of-ancestry housing-loan penetration and mortgage depth affect immigrants' decision to have a mortgage and the amount of the mortgage debt in the host country, respectively.

As we have information on *both* mortgage acquisition and amount of mortgage debt, and because the decision to get a mortgage is heavily intertwined with the amount of mortgage debt to acquire, we jointly model both decisions by estimating the following Zellner's simultaneously unrelated regression model (SUR):

$$M_{ijk} = \alpha_1 + \alpha_2 LoanPenetration_j + X'_{ijk} \alpha_3 + Z'_j \alpha_4 + \lambda_{1k} + \epsilon_{1ijk} \quad (1)$$

$$PV_{ijk} = \beta_1 + \beta_2 MortgageDepth_j + X'_{ijk} \beta_3 + Z'_j \beta_4 + \lambda_{2k} + \epsilon_{2ijk} \quad (2)$$

where  $M_{ijk}$  is a dummy variable equal to 1 if individual  $i$  from country-of-ancestry  $j$  living in province  $k$  has a mortgage in Spain in 2007 and 0 otherwise;  $PV_{ijk}$  is a continuous variable calculating the 2007 present value of the mortgage for individual  $i$  from country-of-ancestry  $j$  living in province  $k$  based on the loan term, the year of purchase and the prevailing interest rate on the mortgage during that year. The vector  $X'_{ijk}$  includes a set of individual characteristics that may affect the demand for mortgages for reasons unrelated to culture, and that vary with the specification considered (as explained in Section 5 below).  $Z'_j$  are a set of country-of-ancestry measures such as the literacy rate, the GDP per capita (in logarithms), the GINI coefficient, continent and religion controls, and a dummy for whether Spanish is the official language in the country of ancestry.  $Z'_j$  is *not* present in the specifications from our main analysis (Section 5), but it is used in the sensitivity analysis (Section 6) instead.

A common concern within the epidemiological approach is that immigrants may “self-select” in some areas in a given country. To address concerns that immigrants from different countries are living in very different regions of Spain, leading to differences in access to mortgage finance, we use fine geographical controls, namely province-of-residence  $k$  fixed effects ( $\lambda_{1k}$  and  $\lambda_{2k}$ ). Moreover, the use of province-of-residence fixed effects is important as it implies that our identification strategy relies on comparing the mortgage-debt choices of immigrants from different countries of ancestry holding constant the province of residence. This implies that differences across provinces in the housing and mortgage demand and supply—including, but not limited, to the type of housing demand or level of competition in the mortgage market—are held constant. To the extent that the strength of the immigrant networks varies across provinces, our approach will control for these network influences. Nonetheless, because Alba and Logan (1992), Krivo (1995) and Painter and Yu (2010) find that recent immigrants have the highest ownership rates in the areas with the largest proportion of immigrant population, suggesting that immigrant networks play a role in homeownership attainment, we will explore the extent to which immigrant networks influence our estimates of the strength of the country-of-ancestry mortgage finance environment in the robustness section.

Standard errors are clustered at the country of ancestry in all specifications. All regressions are weighted with the population weights provided by ENI. Hence, our estimates are representative of the population of immigrants in Spain in 2007. While our main estimates use Zellner’s simultaneously unrelated regression model, results are robust to estimating a univariate probit model to estimate the effect of housing-loan penetration on the likelihood of having a mortgage, and a univariate Tobit model with a left-censor limitation at zero to estimate the effect of mortgage-depth on the present value of mortgage payments, separately, as discussed in the Section 6.

Our coefficients of interest are those on the average level of housing-loan penetration and mortgage depth in the country of ancestry, namely  $\alpha_2$ , and  $\beta_2$ , which capture the role of social norms regarding mortgage debt in explaining immigrants’ demand for mortgage debt in the host country. Positive and statistically significant coefficients would suggest that coming from a country with higher housing-loan penetration and mortgage debt is associated with a higher likelihood of acquiring a mortgage and a higher amount of mortgage debt in Spain. Thus, the demand for mortgage debt for immigrants from a country  $j$  with higher demand of mortgage debt (higher *LoanPenetration<sub>j</sub>* and *MortgageDepth<sub>j</sub>*) would be higher than that of

immigrants from a country of ancestry with lower demand (lower *LoanPenetration<sub>j</sub>* and *MortgageDepth<sub>j</sub>*).

In Section II, we explained that lenders in Spain offered mortgages generously and dramatically lowered their credit standards. Perhaps more relevant to our analysis, contract conditions offered to immigrants were not correlated with country-of-ancestry after holding socio-demographic characteristics constant (Serrano and Raya, 2014). Hence, as long as we assume that contract conditions in Spain were not correlated with country-of-ancestry mortgage depth or loan penetration, our estimates can be interpreted as demand-side effects. Note that evidence that immigrants in Spain are discriminated against natives (as Serrano and Raya, 2014, find) is not a problem for our identification strategy as long as discrimination is constant across countries of ancestry, and hence, independent of the country of ancestry once we condition on income, age, family structure and the other socio-demographic controls in  $X'_{ijk}$ , which is what Serrano and Raya (2014) find. If anything, differences between rates of mortgage application and obtaining a mortgage due to differential rates of approval between natives and immigrants could potentially downward bias our estimates of culture as observed mortgages would be lower than immigrants' desired demand. Finally, in Section 6, we present sensitivity analysis showing that our results are not driven by lenders in Spain discriminating immigrants by country of ancestry.

#### **4. Data**

##### ***Encuesta Nacional de Inmigrantes (ENI)***

Our main data set is the *Encuesta Nacional de Inmigrantes* (ENI) data, which is a one-time cross-sectional, nationally representative survey of immigrants living in Spain, regardless of their legal immigration status. To obtain a representative sample of the immigrant population in Spain, the Spanish Statistical Institute (INE) relied on the municipal population registries (*Padron Municipal*). Because registration in the municipal *Padron* entitles undocumented immigrants with free health care services and education (up until the age of 16 years old) for the immigrant and his or her family, the incentives of registering are extremely large (Gonzalez and Ortega, 2011; and Amuedo-Dorantes and Mundra, 2013). The interviews were conducted between November 2006 and February 2007.

To be eligible to participate in the survey, the respondent has to be an immigrant who is at least 16 years old, and lives in Spain for at least one year, or if less than one year, the immigrant has to claim intention to stay in the country for at least one year. The ENI provides

information about the immigrants' socio-economic background, including age, sex, country of ancestry, marital status, number of children living in the household, number of people living in the household, highest education level completed, current province of residence, employment status, monthly earnings, euro amount of remittances sent to the country of ancestry, Spanish fluency, homeownership in Spain and in the country of ancestry before he or she emigrated, and legal immigration status. In addition, the ENI also has information on mortgage debt. More specifically, the immigrant is asked whether he or she holds a mortgage in 2007, the monthly payments, the term of the loan, and the year the house was bought. With this information, we estimate the present value of the monthly mortgage payments (PV, hereafter) as follows:

$$PV = Payment * \frac{(1 - \frac{1}{(1+r)^{lt}})}{r}$$

where *Payment* is the monthly mortgage payment, *r* is the mortgage interest rate and *lt* is the full loan term. As data on mortgage interest rates are not available in the ENI dataset, we collected it from Bank of Spain and matched it to the individual data based on the year the house was purchased and the term of the loan, which were both available in the ENI.

Table 1 displays the summary statistics for the variables from the ENI dataset for our final sample. The first two rows present the key outcome variables, namely the percent with a mortgage and the present value of the mortgage at survey date. We observe that 19% of our sample are paying off their home mortgage at survey date, and their average present value of monthly mortgage is 1,839 euros. The following rows, which were used to estimate the present value of monthly mortgage, show that the average monthly mortgage payment is 631 euros, the median loan term is 25 years, and the median year of purchase was 2002 (the average loan term and year of purchase are 25 years and 1998, respectively).

Moving now to immigrants' socio-demographic characteristics, we observe that about half of our sample (52%) are males, a similar proportion are married, and about 57% have minor children living with them in the household. In terms of education, more than half of our sample has completed secondary education (equivalent to a high-school degree), and close to one fifth has a university degree. Less than a tenth of immigrants in our sample (7%) report not being fluent in Spanish. Close to two thirds of our sample reports working, and their average monthly earnings are 706 euros. Among those reporting having a mortgage, 76.4% of



them work, and their monthly earnings are 1,026 euros. About two fifths of our sample sends remittances to their home country, and the average monthly remittance is 615 euros. Close to one third of our sample owned a home in the country of ancestry prior to emigrating.

Most of the immigrants in our sample (89%) are foreign born, also known as first-generation immigrants. Second-generation immigrants are those born in Spain to at least one foreign-born parent. Two fifths of our sample of immigrants comes from Europe, another two fifths come from Latin America, 15% come from Africa, and close to 4% from Asia. The median (average) immigrant in our sample is 38 (41) years old, has migrated at the age of 26 (26), and has been in Spain for approximately 7 (15) years. More than one quarter of our sample (27%) are naturalized, and 13% are permanent residents. Another third holds some type of temporary residency status (29% with temporary residency card and 4% with a conditional residence permit). About 9% of the sample report not having legal documents to live in Spain. Our results are robust to restricting the analysis to those who are naturalized citizens or permanent residents as shown in Section 7.

### ***Country-of-Ancestry Data***

To proxy social norms regarding mortgage debt, we focus on two main country-of-ancestry variables: the housing-loan penetration, and the mortgage depth.

The housing-loan penetration is defined as the percentage of adult population with an outstanding loan to purchase a home, and it comes from Table A.2 in Badev *et al.* (2014). These authors obtained the housing-loan penetration indicator from the Global Financial Inclusion (FINDEX) database. This indicator refers to any provider of housing loans, including regulated financial institutions, microfinance institutions, and informal sources. The FINDEX was constructed with survey data collected from a random sample of 150,000 individuals in 148 countries. The survey was conducted by Gallup Inc. in 2011 and it constitutes the first comprehensive attempt to measure financial inclusion at a global scale.

The mortgage depth is defined as the ratio of the mortgage debt to the Gross Domestic Product (GDP), and it has been collected from difference sources. Most of the mortgage depth information in our data set comes from Table 2 in Warnock and Warnock (2008), and is the average mortgage debt-to-GDP ratio for the 2001-2005 period.<sup>14</sup> In addition, for five Latin

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<sup>14</sup> Warnock and Warnock (2008) gathered the data from a wide range of sources and use them (and others) to cross-check wherever possible, compiling data on mortgage debt for 62 countries for at least one year during the 2001-2005 period.

American countries in our sample (Ecuador, El Salvador, Nicaragua, Paraguay and Uruguay), we collected the mortgage depth from the Housing Finance Information Network ([www.hofinet.org](http://www.hofinet.org)) as information was unavailable in Warnock and Warnock (2008).<sup>15</sup> Finally, as information for Norway, Portugal, Spain, Sweden, Switzerland and the UK was also unavailable in Warnock and Warnock (2008), we used data from Cerutti *et al.* (2015), which also report annual averages from 2001 to 2005. As explained by Badev *et al.* (2014), it is important to note that, unlike the housing-loan-penetration indicator, the mortgage-depth indicator “*only captures formal mortgage loans from regulated financial institutions and excludes loans from non-regulated microfinance institutions and informal sources. Similarly, it excludes loans or grants from government organizations outside the regulated financial system.*”

Because of data limitations, we use measures of these two variables collected after the turn of the century—as opposed to when individuals (or their parents) emigrated. It is important to highlight that the use of contemporaneous measures is a common practice in the literature (Giuliano, 2007; Fernández and Fogli, 2009; Furtado, Marcen and Sevilla, 2013; and Nollenberger, Rodríguez-Planas, Sevilla, 2016; among others). A frequent argument in favor of such practice is that countries' aggregated social norms change slowly over time. Most importantly, we also collected a range of additional country-of-ancestry level variables to conduct sensitivity analysis and, hence, test the relevance of alternative hypotheses. Definitions and data sources for these country-of-ancestry variables are shown in Appendix Table A.1 and discussed in detail in Sections 6.

### ***Sample Selection and Country-of-Ancestry Descriptive Statistics***

While some studies using the epidemiological approach only use second-generation immigrants (Fernandez and Fogli, 2006; Giuliano, 2007; Nollenberger, Rodríguez-Planas, Sevilla, 2016, and Rodríguez-Planas and Nollenberger, 2018), others study the behavior of the immigrants themselves (Carroll, Rhee and Rhee, 1994; and Furtado, Marcen, and Sevilla, 2013) or both first- and second-generation immigrants (Osili and Paulson, 2008; and Luttmer and Singhal, 2011). To maximize the size of our sample (second-generation immigrants represent 11% of our sample or 1,941 individuals), our main analysis is done using both first-

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<sup>15</sup> Hofinet gathered this information from different central banks, namely, BEC and BIES (2011) in Ecuador, *Superintendencia del Sistema Financiero* (2012) in El Salvador, Central Bank of Nicaragua (2011), Central Bank of Paraguay (2011), and Interamerican Development Bank (2010) in Uruguay.

and second-generation immigrants. Heterogeneity analysis in Section 7 shows that results hold separately for both groups of immigrants.

We restrict our sample to immigrants who are at least 18 years of age and live in one of the 52 Spanish provinces. In addition, as we merge ENI individual data to country-of-ancestry data, we restrict our sample to those individuals for whom we observe housing-loan penetration and mortgage depth in their country of ancestry.<sup>16</sup> ENI individual data is merged to country-of-ancestry data using the first-generation immigrants' reported country of birth. For second-generation immigrants, we assign their mother's country of birth if she was born outside of Spain herself and information on her country of birth was available. Otherwise, we assign their father's country of birth if he was born outside of Spain himself and information on his country of birth information is available.<sup>17</sup> Following a standard practice in the epidemiological approach, we also drop immigrants whose country of ancestry has fewer than 15 observations.<sup>18</sup> In Section 6, we explore the robustness of our results to changes in sample criteria.

Our final sample has 12,344 immigrants from 41 different countries of ancestry (as shown in Table 2.A). Countries of ancestry are from various continents and levels of development. For instance, the countries of ancestry in our sample cover all continents, with many European (13 countries) and some transition economies (Bulgaria, Czech Republic, Romania, Slovakia, and Russia), many countries in the Americas (Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, El Salvador, Mexico, Nicaragua, Paraguay, Peru, United States, Uruguay, and Venezuela), some in Asia (China, India, Pakistan, and Philippines), Africa (Algeria, Ghana, and Morocco) and one in Oceania (Australia). Countries of ancestry with the highest sample of immigrants are Morocco, Ecuador and Romania (immigrants coming from these countries represent 33% of the sample).

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<sup>16</sup> This restriction implies losing the following countries of ancestry: Cabo Verde (15 observations), Cuba (299 observations), Equatorial Guinea (65 observations), Gambia (35 observations) because *both* country-of-ancestry variables are missing. In addition, we lose Armenia (23 observations), Dominican Republic (255 observations), Georgia (17 observations), Guinea (16 observations), Honduras (27 observations), Lithuania (31 observations), Mali (27 observations), Moldova (43 observations), Nigeria (66 observations), Senegal (69 observations) and Ukraine (206 observations) because country-of-ancestry mortgage depth is missing. We also lose Norway (22 observations) and Switzerland (154 observations) because housing-loan penetration is missing.

<sup>17</sup> For those second-generation immigrants who reported that both parents were born in Spain (319 observations or 1.7% of our sample after adjusting with population weights) or for whom information on both parents' country of birth was missing (219 observations or 0.9% of our sample after adjusting with population weights), we assigned Spain as their country of ancestry. Our results are robust to excluding them from the analysis (as shown in Section 6).

<sup>18</sup> For instance, Fernández and Fogli (2009) and Nollenberger, Rodriguez-Planas, and Sevilla (2016) eliminate those countries of ancestry with fewer than 15 observations. In our case, this restriction implied dropping 371 observations. Given that our regressions are ran at the individual level, whether we include these small numbers of observations does not affect our results.

Table 2.A displays the summary statistics at the country level of the two outcome variables and the country-of-ancestry variables. Countries of ancestry are ordered from the lowest mortgage depth in the home country (shown in column 3) to the highest. Column 1 shows a large variation in the likelihood of having a mortgage in Spain across countries of ancestry. While only 2% of Paraguayans and 3% Nicaraguans have a mortgage in Spain, as many as 31% of Czechoslovakians and 33% of Australians do so. Column 2 also shows a large variation in the average present value of monthly mortgage payments with only 160 euros for immigrants from Paraguay and 390 euros from those from Bolivia, and as much as 4,317 euros for immigrants from Philippines and 4,145 euros from those from El Salvador.

Interestingly, immigrants' mortgage debt from the three largest recent sending countries (Morocco, Ecuador, and Romania) is not that distant from that of those from countries with an older sending tradition (France, Morocco, or Venezuela). For instance, 26% of Ecuadorians and 15% of Romanians have a mortgage (with an average present value of monthly payments of 3,381 euros and 1,743 euros, respectively). In comparison, 32% of French, 22% of Venezuelans, or the 19% of Moroccans have a mortgage with an average present value of monthly payments of 2,427 euros, 2,157 euros, and 1,414 euros, respectively. Similarly, the mortgage demand of work-based immigrants (Morocco, Ecuador, and Romania) resembles that of leisure-based ones—17% of British and 22% of Germans and Russians have a mortgage in Spain with an average payment of 1,704 euros, 1,450 euros, and 1,374 euros, respectively.

Column 3 shows even greater dispersion of mortgage depth across countries of ancestry as it varies from 0.5% in Ghana and Russia to 83% in The Netherlands. Housing-loan penetration (column 4) also displays considerable variation as it varies from 0.4% in Nicaragua to 60% in Sweden. The average housing-loan penetration across countries is 10% with a 13% standard deviation; and, on average across countries, mortgages represent 15% of the GDP with a 21% standard deviation. The correlation between housing-loan penetration and mortgage depth is large, namely 0.88 (shown in Table 2.B).

Figure 1 plots the average likelihood of having a mortgage in Spain by country of ancestry (column 1 of Table 2.A) previously adjusted to account for immigrants' individual characteristics (as explained in the notes of Figure 1) versus the housing-loan penetration (column 3 of Table 2.A). Figure 1 shows that the higher the housing-loan penetration in the country of ancestry, the higher the likelihood of having a mortgage in Spain. The regression line has a slope of 0.15 with a standard error of 0.06. The adjusted  $R^2$  is 0.09.

Figure 2 repeats the exercise with the present value of the mortgage in Spain by country of ancestry (column 2 of Table 2.A) versus the country-of-ancestry mortgage depth (column 4 of Table 2.A). We also find that the higher mortgage depth in the country of ancestry, the higher the present value of mortgage taken in Spain. The regression line has a slope of 1,387.01 with a standard error of 788.56. The adjusted  $R^2$  is 0.04.

## 5. Does Culture Affect the Mortgage Demand?

Tables 3.A and 3.B display the results from estimating different empirical specifications of equations 1 and 2, in which additional covariates are sequentially included in the regression. Doing so, highlights how our coefficients of interests,  $\alpha_2$  and  $\beta_2$  (shown in Row 1), vary with the inclusion of additional covariates. It also sheds some light on the mechanisms through which the relationship between social norms about mortgage finance and the demand for mortgages operates.

Column 1 in Tables 3.A and 3.B only includes as individual controls the age of the immigrant at the time of the survey and its square. Because family structure or the immigrants' gender prevalence in the host country may differ systematically across countries of ancestry *and* at the same time affect immigrants' mortgage demand, Column 2 controls for the gender of the immigrant, as well as the marital status and number of children living in the household. Another concern arises if individuals' demand for mortgages depends on their income constraints or credit history, and these vary systematically across countries of ancestry. To address this, Column 3 controls for variables well known to determine the borrower's income, and their risk profile, namely the immigrants' completed education, work status, monthly earnings, as well as a control for whether the immigrant is fluent in Spanish (Diaz-Serrano and Raya, 2014).<sup>19</sup> The specification in Column 3 is our baseline specification. Columns 4 to 6 further assess the relevance of various potential sources of omitted variable bias and their potential effect on our conclusions, by adding additional covariates to our baseline specification.

Some of the additional characteristics that we will sequentially include (such as, for instance, family structure, education, work status, income, or the amount of remittances sent to the home country) may well be affected by financial social norms. Therefore, by including them, we are testing whether social norms about mortgage debt have a direct impact on the

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<sup>19</sup> To avoid losing observations due to item non-response in one or several of these questions, we coded these variables as reporting a certain education degree or labor force status, and added indicator variables for item-non response for each variable.

mortgage demand beyond the indirect ways in which they could affect such demand through these other variables. To put it differently, by including some of these additional controls we are limiting the avenues through which culture is allowed to operate. While this may well be a very demanding test of the relevance of culture, it is important to assess the sensitivity of our results to the inclusion of additional variables to the extent that they may capture underlying socioeconomic and behavioral differences across individuals rather than culture.

Focusing first on Row 1, Columns 1 to 3 in Tables 3.A and 3.B, we observe that all coefficients of interest,  $\alpha_2$  and  $\beta_2$ , are positive and statistically significant at the 1 percent level, highlighting the relevance of country-of-origin social norms on mortgage debt in explaining the demand for mortgage in the host country. Moving from Column 1 to 3 has little effect on  $\alpha_2$ , and reduces the size of  $\beta_2$  a tad, suggesting that not controlling for these socio-economic differences over-estimates the true effect of culture on the present value of monthly mortgage payments by 138 euros (or 15%).<sup>20</sup>

Based on estimates from Column 3, if an individual from a country with “average” housing-loan penetration had instead come from a country with a housing-loan penetration one-standard deviation above the mean, the likelihood of having a mortgage in the host country would have increased by 3.21 percentage points, a 17% increase, relative to the observed mortgage-access rates for immigrants of 19%.<sup>21</sup> Similarly, if an individual from a country with “average” mortgage depth had instead come from a country with a mortgage depth one-standard deviation above the mean, the present value of his or her monthly mortgage in the host country would have increased by 158.87 euros, a 9% increase in the present value monthly mortgage, relative to the observed average of 1,838.86 euros for immigrants.<sup>22</sup>

To put it differently, if an immigrant from Uruguay (where the housing-loan penetration and mortgage depth are 2% and 5%, respectively) had come from Germany (where the housing-loan penetration and mortgage depth are 24% and 47%) instead, her likelihood of having a

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<sup>20</sup> We follow papers that use both first- and second-immigrants (Osili and Paulson, 2008; and Luttmer and Singhal, 2011) and do not use tenure in Spain as a right-hand-side control. Adding years in Spain as an additional control to the main specification does not affect them main results. In particular,  $\alpha_2 = 0.1701$  (*std error* = 0.0014) and  $\beta_2 = 413.49$  (*std error* = 10.77). In the heterogeneity analysis, we explore whether the effects vary with tenure in the host country.

<sup>21</sup> This is calculated as  $(\alpha_2 = 0.247) * (Housing\ loan\ penetration_{StDev} = 0.13) = 0.0321$

<sup>22</sup> This is calculated as  $(\beta_2 = 756.54) * (Mortgage\ depth_{StDev} = 0.21) = 158.87$

mortgage and present value of mortgage payments in Spain would have increased by 5.4 percentage points and 320.77 euros, respectively.<sup>23</sup>

To put these estimates into context, getting a university degree is associated with a 61% (or 11.52 percentage points) and 72% (or 1,316.46 euros) increase in the likelihood of having a mortgage and the present value of the monthly mortgage payments, respectively. Hence, the effect of culture on the extensive and intensive margins is about one third and one tenth the effect of having a college degree on mortgage debt, respectively.

Notice that all of the explanatory variables sequentially added in Columns 1 to 3 behave according to expectations. Being older, married, or having children increases both the likelihood of having a mortgage and its present value. Similarly, higher education or earnings increase the demand for mortgage debt, but lack of Spanish fluency decreases it.

Household size has been shown to be an important determinant of both household formation and housing tenure choice (Angel and Tienda, 1982; and Evans, Lepore and Allen, 2000). Even though we control for marital status and number of children living in the household, it is not infrequent for immigrants to live with their extended family. Column 4 adds to the specification in column 3 the number of people living in the household. Doing so, reduces a bit the coefficients of interest,  $\alpha_2$  and  $\beta_2$ , but they remain positive and statistically significant at the 1 percent level.<sup>24</sup>

As immigration status affects the decision to become a homeowner (Amuedo-Dorantes and Mundra, 2013), it is likely that it also affect the demand for mortgages. Immigration status may also vary systematically across countries of ancestry. If so, not controlling for it would bias our culture estimates. Column 5 controls for immigrants' legal status in the host country. Interestingly, we find that not controlling for immigration status over-estimates the effect of culture on the likelihood of having a mortgage by 7 percentage points (or 30%), and the present value of the monthly mortgage by 211 euros (or 28%). Nonetheless,  $\alpha_2$  and  $\beta_2$  remain positive and statistically significant at the 1 percent level, suggesting that culture continues to be associated with the demand for mortgages.

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<sup>23</sup> This is calculated as  $[Housing\ loan\ penetration_{Germany} (0.237) - Housing\ loan\ penetration_{Uruguay} (0.020) = 0.217] * \alpha_2 (0.2467) = 0.054$  and  $[Mortgage\ debt_{Germany} (0.474) - Mortgage\ debt_{Uruguay} (0.050) = 0.424] * \beta_2 (756.54) = 320.77$

<sup>24</sup> While Painter and Yu (2010) find that multiple workers in the household increases the likelihood of homeownership, we find that mortgage financing decreases with the number of people living in the household. Note that our analysis is quite different to that of Painter and Yu (2010) as our covariate includes non-workers living in the household. In addition, as we are measuring the effect on having a mortgage and its amount, it is not clear that more workers (and hence, greater economic power) would necessarily translate in higher need for financing.

If immigrants from countries with an under-developed housing finance system are not demanding mortgages in Spain because they are investing in their country of ancestry through remittances, not controlling for individuals' remittances would again lead to omitted variable bias. Column 6 controls for whether the individual sends remittances to the country of ancestry and the monthly amount (in euros). As expected, sending remittances and their amount are inversely related to the likelihood of having a mortgage in the host country. Similarly, the higher the remittance amount the lower the present value of the mortgage (although sending remittances is directly related with the amount of the mortgage). Most importantly, comparing estimates of  $\alpha_2$  and  $\beta_2$  from Columns 5 and 6 reveals only small differences in the size of the coefficients.<sup>25</sup>

Note that if we use estimates from Column 6 instead of our baseline specification, we find that a one-standard deviation increase in the country-of-ancestry housing-loan penetration (or mortgage depth) is associated with an increase in the likelihood that the immigrant has a mortgage (or the present value of the mortgage) in the host country by 2.09 percentage points, an 11% increase (or 118.19 percentage points, an 6.4% increase). Both estimates are statistically significant at the 1 percent level. In comparison, the effect of having a college degree on mortgage financing is now associated with an increase of 9.81 percentage points in the likelihood of having a mortgage and of 1,294 euros in monthly payment. Hence, according to estimates in Column 6, the effect of culture on the extensive and intensive margins is one fifth and one tenth the size of having a college degree, respectively.

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<sup>25</sup> Our findings are robust to using the country-of-ancestry average remittance controls in addition to the individual-level remittance data.



## 6. Robustness Checks

This section explores the robustness of our results to a battery of sensitivity checks, including host-country discrimination and omitted variable bias, selective migration, changes in sample criteria, and alternative specifications.

### *Host-Country Discrimination and Omitted Variable Bias*

One concern is that our results are driven by discrimination in Spain against immigrants from particular countries of ancestry, which happen to have a less developed housing finance system. For instance, there is evidence of discriminatory rental practices against Moroccans in Spain (Bosch et al., 2010). To address this concern, columns 2 and 3 in Appendix Tables A.1.A and A.1.B re-estimate our most preferred specification adding religion controls indicating the share of the population in the country of ancestry that belongs to one of the three most spread religions in the world, namely Muslim, catholic, and protestant; and continent controls, respectively.<sup>26</sup> The assumption here is that, if our results were driven by discrimination based on religion (or continent of ancestry), and countries with similar religious values (or in the same continent) have similar levels of development of their housing finance systems, controlling for religion (or continent of ancestry) would drive the coefficients on our culture proxies,  $\alpha_2$  and  $\beta_2$ , to zero. Columns 2 and 3 in Appendix Tables A.1.A and A.1.B show that this is not the case. Indeed, the sign, size, and precision of  $\alpha_2$  and  $\beta_2$  in Column 2 are similar to those of our baseline specification (shown in Column 1). Adding continent controls in Column 3 has little effect on  $\alpha_2$ , and actually, *increases* the size of  $\beta_2$  by 219 percentage points (or 30%).

Another concern is that access to a mortgage may be easier for those immigrants coming from countries of ancestry who are more similar to Spain. To address this concern, we add to our baseline specification a dummy variable indicating whether the country-of-ancestry official language is Spanish (shown in Column 4 in Appendix Tables A.1.A and A.1.B). Again, doing so leaves our key estimates practically unaffected. Alternatively, it may well be that similitude with Spain is not regarding language but economic development. To address this, Column 5 in adds log GDP per capita to the specification in Column 4. By including the log GDP per capita of the country of ancestry,  $\alpha_2$  and  $\beta_2$  in Column 5 capture differences in country-of-ancestry culture *beyond* those due to differences in the economic development that

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<sup>26</sup> To the extent that differences in religious upbringing can affect the financial development on the country of ancestry (Stulz and Williamson, 2003; and Guiso, Sapienza, and Zingales, 2003), including these variables in the specification will over-control the estimates of the direct effect of culture on the housing finance.

may affect an immigrant's mortgage for reasons unrelated to the house financing system in her country of ancestry. To the extent that these differences in economic development also affect the cultural attitude towards mortgage finance, we may well be over-controlling. Column 5 shows little change to our coefficients of interest,  $\alpha_2$  and  $\beta_2$ , which remain positive and statistically significant at the 1 percent level. Alternatively, as human capital and economic development are highly correlated, we re-estimate the specification from Column 4 with a variable controlling for the percent of individuals in the country of ancestry older than 15 years old who can read and write (shown in Column 6). Again, doing so has little effect on our main results. Hence, it does not seem that the culture findings are driven by immigrants' similarity with the Spanish customs, economic or educational development.

Because there is evidence that wealth determines borrowing constraint to financing a house (Barakova *et al.*, 2003), a final concern is that our results may be driven by systematic wealth differences across immigrants from different ancestries. This is unlikely as we are already controlling for employment status, monthly earnings, education and family structure, among other socio-demographic characteristics. Moreover, we have already seen that controlling for country-of-ancestry GDP per capita has little impact on our main results. Nonetheless, to address this concern, Column 7 adds an additional proxy for immigrants' wealth prior to emigrating, namely an indicator variable equal to one if the immigrant owned a house in the country of ancestry prior to emigrating, and zero otherwise. We find that owing a house in the country of ancestry reduces the likelihood of having a mortgage and the amount of the mortgage debt. This may be due to the fact that those with greater wealth are in less need to finance their home purchase. Alternatively, in addition to measuring wealth, this variable may also be capturing immigrants' lower intent to permanently settle in Spain. Importantly for our analysis, adding this additional control does not change our main finding that culture is related to mortgage financing.

### ***Selective Migration***

A common problem in the epidemiological approach is that immigrants may select where to immigrate. To address that immigrants from particular ancestries may choose certain regions in the host country, all of our findings are estimated with province fixed-effect, the finer geographical area available in the ENI. A different type of selection is economically motivated migration. As explained earlier, we already tested the sensitivity of our results to a large set of individual and family characteristics, as well as country-of-ancestry GDP, and doing so had

little effect on our coefficients of interest, suggesting that it is unlikely that our results are capturing individual unobserved heterogeneity that is correlated with country-of-ancestry social norms regarding mortgage finance, as opposed to the effects of our culture proxies.

Since the migration decision will be both a function of immigrants unobserved ability and country-of-ancestry as well as host-country distribution of income (Borjas, 1987), selection bias could still potentially affect our results. To explore this, we follow Osili and Paulson (2008) and add to our preferred specification the country-of-ancestry Gini index, which captures the extent to which the distribution of income among individuals within a country deviates from a perfectly equal distribution (with an index close to 1 being very unequal and an index close to 0 being very equal). Column 2 in Appendix Tables A.2.A and A.2.B shows the coefficients on our two variables of interest and the Gini index, respectively.

Interestingly, we find little evidence that selective migration in Spain biases the effect of culture on the likelihood of having a mortgage. Indeed, controlling for country-of-ancestry Gini index has little effect on the coefficient  $\alpha_2$ , which remains positive and statistically significant. Moreover, we find some evidence that selective migration in Spain underestimates the true effect of culture on the present value of mortgage payments as controlling for country-of-ancestry Gini index increases the size of  $\beta_2$  by 26%. This contrasts with Osili and Paulson (2008) who found evidence that selective immigration in the United States overestimated the effect of informal institutions on the likelihood of owning stocks.

Moving now to the effect of inequality in the country of ancestry on mortgages in Spain, we find that immigrants from countries with greater inequality are more likely to have a mortgage and a greater present value of mortgage payments than those coming from more equal countries. In particular, immigrants who come from countries where the Gini index is one-standard deviation above the mean are 1.11 percentage points (or 6%) more likely to have a mortgage and have 174.7 percentage points (or 9%) higher present value of mortgage payments in Spain.

To further explore whether selection of immigrants is affecting our results, Columns 3 to 6 in Appendix Tables A.2.A and A.2.B re-estimate our preferred specification after dropping a particular group of immigrants, one at a time. Column 3 drops second-generation immigrants whose parents were born in Spain or for whom we lacked their parents' country-of-birth information (representing a total of 538 individuals in our sample). While  $\alpha_2$  remains

practically unchanged,  $\beta_2$  is now about one third smaller than in our baseline specification? Crucially, both coefficients remain positive and statistically significant, corroborating that culture affects mortgage-finance decisions.

Columns 4, 5 and 6 present estimates of our baseline specification after dropping one of the three main groups of immigrants in Spain, namely Moroccans, Ecuadorians and Romanians, one at a time (see Rodríguez-Planas and Vegas, 2014, for differences in labor-market and immigration-status assimilation between these three groups in Spain). Even though the size of  $\beta_2$  varies slightly across these sub-samples of immigrants, this is not the case for  $\alpha_2$ . Most importantly, both  $\alpha_2$  and  $\beta_2$  remain positive and statistically significant, indicating that our finding that culture matters is not driven by one of these three nationalities.

### *Alternative Specifications*

Column 8 in Appendix Tables A.1.A and A.1.B displays results when using a univariate probit model to estimate the effect of housing-loan penetration on the likelihood of having a mortgage, and a univariate Tobit model with a left-censor limitation at zero to estimate the effect of mortgage-depth on the present value of mortgage payments.<sup>27</sup> Notice that now both estimates are separately estimated. Although the size of  $\alpha_2$  and  $\beta_2$  changes as the empirical specification has changed, the main result remains as both estimates remain positive and statistically significant, suggesting that culture matters in explaining the decision of having a mortgage and the amount.

### *Immigrant Networks*

Alba and Logan (1992), Krivo (1995) and Painter and Yu (2010) find evidence suggesting that immigrant networks play a role in homeownership attainment. To explore the extent to which immigrant networks influence our estimates of the strength of the country-of-ancestry mortgage finance environment, for each immigrant  $i$  in our sample we estimated her *Ethnic Concentration* as the percentage of people in her province of residence who come from the same country as the immigrant in question. We then re-estimated our SUR model adding

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<sup>27</sup> The use of probit models in the research of the extensive margin of asset ownership is well-established (Seto and Bogan, 2012). Seto and Bogan (2012) also use a univariate Tobit model with a left-censor limitation at zero to estimate the intensive margin of financial asset allocation. Barakova *et al.* 2003 also use a similar Tobit model to estimate the intensive margin or preferred house value.

*EthnicConcentration<sub>i</sub>* as an additional control in equations (1) and (2) and replacing the two variables of interest, *LoanPenetration<sub>j</sub>* *MortgageDepth<sub>j</sub>*, with the interaction between *LoanPenetration<sub>j</sub>* and *EthnicConcentration<sub>i</sub>* in equation (1) and the interaction between *MortgageDepth<sub>j</sub>* and *EthnicConcentration<sub>i</sub>* in equation (2). Consistent with earlier findings, we find that living in areas with greater ethnic concentration significantly increases the likelihood of having a mortgage and the amount of the mortgage. Moreover, the coefficients on ethnic concentration interacted with the country-of-origin mortgage finance environment is also positive and statistically significant at the 1 percent level suggesting that the persistence of culture is greater among those immigrants who have a greater tendency to cluster with their ethnic community (as Fernández and Fogli, 2009, and Luttmer and Singhal, 2011, have found).<sup>28</sup>

## 7. Heterogeneity

Panels A and B in Table 4 explore whether the transmission of social norms regarding mortgage debt varies across different types of immigrants by estimating our preferred specification for different subgroups of immigrants. Each column of the table represents the coefficients of interest estimated using a particular subgroup of immigrants. The coefficients in Rows 1 and 2 measure the average effect of culture on the likelihood of having a mortgage ( $\alpha_2$ ), and the present value of monthly mortgage payments ( $\beta_2$ ), respectively.

Columns 1 to 4, Panel A, Table 4 explore whether the effect of culture on mortgage debt differs by the immigrant's educational attainment and the skill-level of the immigrant's job, respectively. Columns 1 and 2 show that culture matters regardless of immigrants' education level, but the extent to which it matters differs by whether we are analyzing the intensive or extensive margin. The effect of culture on the extensive margin is twice as large for the low- than the high-education group (low-education is defined as having at most a high-school degree). However, the effect of culture on the intensive margin is about 25% larger for the high-educated group. Similar results emerge when we estimate the effect of culture by the immigrants' occupation skill level (shown in Columns 3 and 4).<sup>29</sup> The finding that the extensive margin effect is larger for the less-educated or lower-skilled immigrants is consistent with findings of Osili and Paulson (2008) and Guiso, Sapienza, and Zingales (2004, 2006) on

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<sup>28</sup> Estimates on the ethnic concentration variable are 0.0893 (standard error 0.0027) and 1,974.06 (standard error 31.08) in equations 1 and 2, respectively. Estimates on the interactions are 0.7028 (standard error 0.017) and 1,993.91 (standard error 97.81) in equations 1 and 2, respectively.

<sup>29</sup> High-skilled occupations include professional and technical or executive, and managerial categories. Low-skilled occupations include low-administrative level occupations, handlers, cleaners, or service occupations.

the immigrants' decision to own stocks. Interestingly, we find that the intensive-margin effect is stronger for the more-educated or higher-skilled immigrants. A possible explanation for this may well be that the borrowing constraints may be affecting the intensive margin for low-educated and low-skilled individuals to a larger extent, especially given the loose lending taking place in Spain and documented in Section 2.

Columns 5 and 6 analyze the effect by whether there are children in the household. We find, again, that the effect of country-of-ancestry culture matters in either case. Nonetheless, the effect on the extensive margin is larger in households with children, although the opposite is true for the intensive margin. Again, it is likely that individuals with children may well have greater borrowing constraints at the intensive margin than those without family responsibilities. The effect that immigrants with children in the household have stronger culture effects resembles findings from Luttmer and Singhal (2011) on the effects of country-of-ancestry preferences on preferences for redistribution.

Columns 7 and 8 present estimates for second- versus first-generation immigrants, respectively. We find that the extensive effect is larger among first-generation immigrants, and that the opposite is true for the intensive margin. Again, it is likely that borrowing constraints are affecting the intensive margin to a greater extent for first-generation immigrants. Crucially, the fact that the transmission of beliefs holds even for second-generation immigrants suggests that culture is persistent and may be transmitted through vertical transmission (from parents to children). Like us, Antecol (2000), Fernandez and Fogli (2006), Giuliano (2004) and Nollenberger, Rodríguez-Planas, and Sevilla (2016) also find evidence that culture persist across generations. In contrast, Osili and Paulson (2008) did not find evidence that country-of-ancestry quality of the institutions affected second-generation immigrants' decision to invest in stocks in the US.

Columns 9 and 10 focus on the differential effect by whether the immigrant is naturalized or permanent resident, or not. Interestingly, the home-country mortgage financing system affects both immigrants who have become citizens or are in the process of being able to become citizens (column 9), and those who have a temporary situation in Spain or are undocumented (column 10). This finding strengthens our results as it shows that the relevance of country-of-ancestry mortgage finance is not driven by undocumented immigrants' greater difficulties to get a mortgage *and* coming from countries with weaker mortgage financing systems. Moreover, it highlights that the effect of culture persist even among those immigrants who are strongly rooted in the home country (column 9).

Panel B examines the effect of country-of-ancestry mortgage finance by the length of time the immigrant has been in the country (columns 1 and 2), and the age at migration (columns 3 and 4). One would expect the effect of country-of-ancestry culture to fade with tenure in the country. Similarly, one would expect the effect of country-of-ancestry culture to be stronger among those who emigrated as adults as opposed to those who did so as children or adolescents. In either case, we focus on immigrants who are naturalized or permanent residents to mitigate concerns that including undocumented immigrants or those with temporary residence permits is adding noise to our estimates. Columns 1 and 2 shows that the effect of country-of-ancestry mortgage finance is considerably larger for those who have been in the country for 10 years or less. Nonetheless, we continue to find that country-of-ancestry beliefs matter *even* for the mortgage-finance decisions of those who have been in the country for more than 10 years, suggesting that the effect of culture is very persistent. We also find in columns 3 and 4 that the country-of-ancestry effects are stronger for those who immigrated as adults (measured as 25-year old or older).<sup>30</sup> Having said that, it is important to note that, even among those who immigrated as children or young adults, the effect of culture persist. Findings that the effect of culture diminishes with the time of exposure to country-of-ancestry resemble those of Haliassos *et al.*, 2016, who find that the effect of culture diminishes with the time of exposure to host-country institutions.

## 8. Institutional Channels from the Country of Ancestry Shaping Culture

In this section, we use variables related to a country's strength of the housing finance system, as well as variables reflecting a country's institutional quality as alternative proxies for social norms related to a country's housing finance system. In addition to check the sensitivity of our findings to alternative proxies of culture, comparison of the effects across different measures will provide guidance on which country-of-ancestry informal institutions matter the most for mortgage demand (both at the extensive and intensive margin). To the extent that culture affects institutions and vice-versa (Alesina and Giuliano, *forthcoming in Journal of Economic Literature*), exploring which institutional channels in the country of ancestry shape the social norms regarding mortgage debt ought to provide some policy guidance.

Tables 5.A and 5.B replicate estimates from equations (1) and (2) but using alternative measures of culture (defined below and in Appendix Table A.1). Column 1 presents our

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<sup>30</sup> Note that columns 1 and 2 control for age at arrival and columns 3 and 4 control for years in the country, hence presenting more conservative estimates.

baseline specification (shown in column 3 in Tables 3.A and 3.B). Column 2 presents the effects of country-of-ancestry property-rights index on the likelihood of having a mortgage (Table 5.A) and the present value of the mortgage payments (Table 5.B). This index is obtained from the Index of Economic Freedom and measures the degree to which a country's laws protect private property rights and the degree to which its government enforces those laws. It also assesses the likelihood that private property will be expropriated and analyzes the independence of the judiciary, the existence of corruption within the judiciary, and the ability of individuals and businesses to enforce contracts. This index varies between 0 and 100, with greater values representing higher property rights. We use the average value for the period 2000-2005. Column 3 identifies those countries that have English Common Law origin. Its source is "The Quality of Government" from LaPorta *et al.* 1999. As explained by Osili and Paulson (2008), "*LaPorta et al. (1998, 2000) show that greater protection is provided to shareholders in countries with British legal tradition and that financial development is accelerated in these countries.*" The next two columns present estimates using indices from Warnock and Warnock (2008). Column 4 uses strength of legal rights index, which measures the degree to which collateral and bankruptcy laws protect the rights of borrowers and lenders and thus facilitate lending. This index ranges from 0 to 10, with higher scores indicating that these laws are better designed to expand access to credit. Column 5 uses the depth-of-credit-information index instead, which measures rules affecting the scope, accessibility, and quality of credit information available through public or private credit registries. The index ranges from 0 to 6, with higher values indicating the availability of more credit information, from either a public registry or a private bureau, to facilitate lending decisions.

Even though these variables are correlated with each other, as they capture different aspects of culture, they may well have independent power to explain immigrant's mortgage decisions in the host country.<sup>31</sup> While all these variables may reflect, in part, social norms regarding the mortgage finance system; the property rights index may also capture social norms regarding the ability of individuals to accumulate private property, which is secured by clear laws, fully enforced by the state; the English Common Law indicator may also capture social norms on protection given to shareholders and financial development; and the credit information index may also capture social norms on the amount and quality of credit information.

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<sup>31</sup> Table 2.B displays the correlation across these different variables. The smallest correlation is 0.26 between the English Common Law indicator and the credit information index. The largest correlation is 0.88 between property rights index and mortgage depth.



All of the  $\alpha_2$  estimates shown in Table 5.A are positive and statistically significant suggesting that higher reliability in these different institutions in the country of origin is associated with a higher likelihood of having a mortgage among immigrants in the host country. In particular, if an individual from a country with “average” property rights index had instead come from a country that had the property rights index one-standard deviation above the mean, the likelihood of having a mortgage in Spain would have increased by 1.9 percentage points, a 10% increase in the likelihood of having a mortgage.<sup>32</sup> This represents three fifths of the culture effect measured with the housing-loan penetration (see results in Section 5), and one third of the country-of-origin property rights effect on the likelihood that immigrants in the US invest in stocks (Osili and Paulson, 2008).

Similar results emerge with the English Common Law dummy. The likelihood of having a mortgage in the host country is 1.89 percentage points higher for immigrants from countries with an English Common Law tradition than that of immigrants from different legal tradition. Since the average likelihood of having a mortgage among immigrants in Spain is 19 percent, this represents a 10% increase. As a comparison, this estimate is about one fourth the effect of coming from a country with British legal tradition on the likelihood that immigrants in the US invest in stocks (Osili and Paulson, 2008).

While social norms regarding legal rights or credit information explain a smaller effect of the decision of having a mortgage, they are far from negligible. A one-percentage point increase in the standard deviation of either of these indices is associated with a 4.46% and a 1.14% increase in the likelihood of having a mortgage in the host country, respectively. This represents one fourth and one fifteenth of the culture effect measured with the housing-loan penetration.

Moving now to the effects of social norms regarding the reliability of institutions on the present value of the mortgage payments. Estimates from Table 5.B reveal that all but one of the  $\beta_2$  coefficients are positive and statistically significant, again suggesting that higher reliability in these different institutions in the country of origin is associated with a higher present value of mortgage among immigrants in the host country. Table 5.B shows that the present value of the monthly mortgage payments in the host country is 291 euros (or 16%) higher for immigrants coming from countries with English Common Law origin than for those coming from countries with different legal tradition. Interestingly, Table 5.B reveals that social norms on credit information are quite relevant when explaining the present value of monthly

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<sup>32</sup> This is calculated as  $(\alpha_2 = 0.0009) * (Property\ Rights\ Index_{StDev} = 21.15) = 0.019$

mortgage payments. For instance, if an individual from a country with “average” credit information index had instead come from a country that had mortgage depth one-standard deviation above the mean, the present value of his or her monthly mortgage in the host country would have increased by 79.45 euros, a 4.3% increase in the present value monthly mortgage.<sup>33</sup> Social norms regarding legal rights explain about half of this effect. Hence, social norms regarding credit information and legal rights explain one half and one fourth of the effect estimated regarding beliefs on the depth of the mortgage system, respectively. Social norms regarding property rights have no effect on the amount of the mortgage.

## 9. Conclusion

This paper explores the role of social norms regarding mortgage debt on individuals’ demand for a mortgage and the amount borrowed. Using a nationally representative sample of 12,344 immigrants from 41 different countries of ancestry living in Spain in 2007, we find solid evidence that mortgage culture from the country of ancestry affects immigrants’ mortgage demand in the host country *both* in the extensive and intensive margins. Persistence of these results among second-generation immigrants, naturalized and permanent residents, those with a tenure in the host country greater than ten years, or those who arrived as children or young adults corroborates the relevance of beliefs in shaping individuals behavioral outcomes. Although we find that the transmission of culture on mortgage finance is stronger in the extensive than the intensive margin, evidence from subgroup analysis seems to suggest that the weaker effect on the extensive margin may be related to borrowing constraints in the host country for certain groups, namely the low-educated individuals, low-skilled workers, those with children in the household, and first-generation immigrants. Interestingly, we find that social norms regarding property rights are most relevant when explaining immigrants’ decision to get a mortgage, but those about credit information matter most when explaining the amount of the mortgage, providing insightful information for policy makers.

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<sup>33</sup> This is calculated as  $(\beta_2 = 54.79) * (Credit\ Information\ Index_{StDev} = 1.45) = 79.45$

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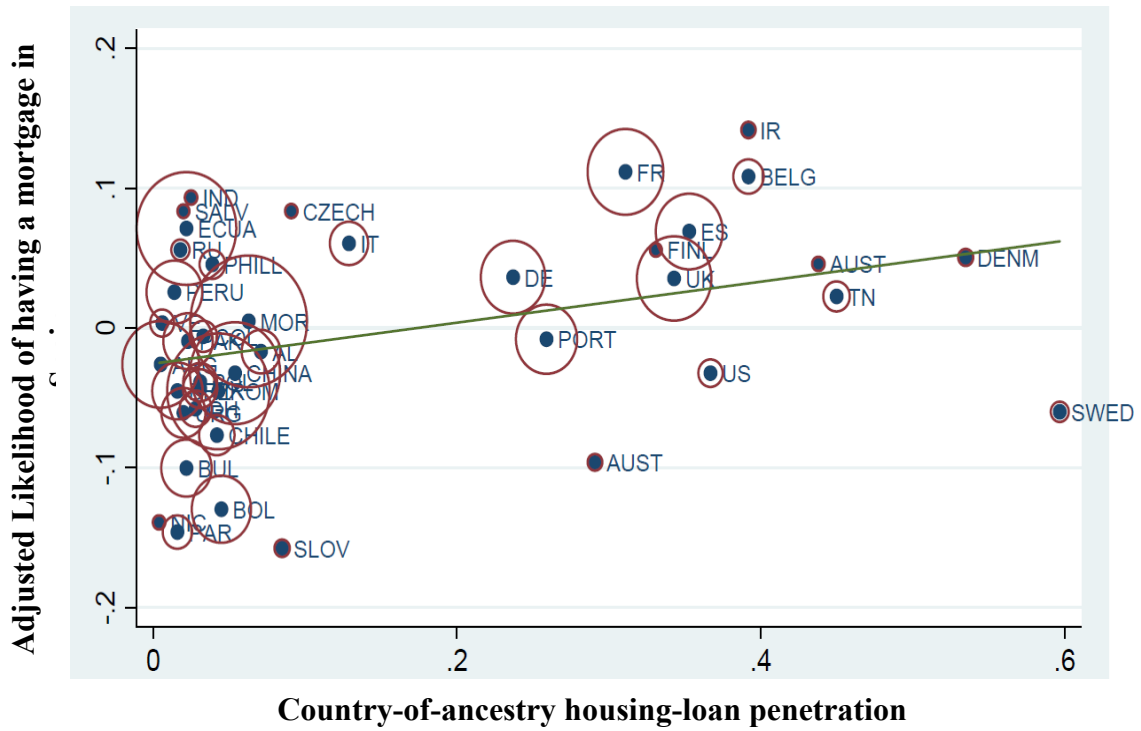
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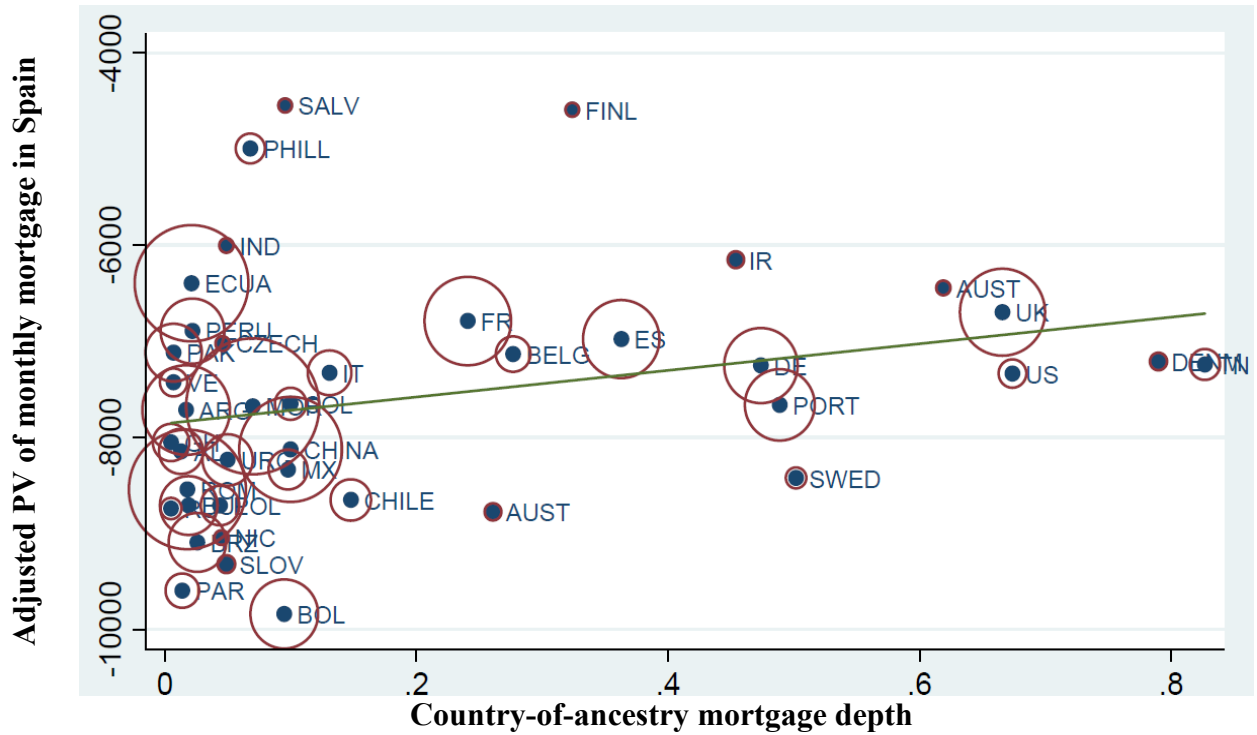
Figure 1. Likelihood of Having a Mortgage After Controlling for Individual Characteristics by Country-of-Ancestry Housing-Loan Penetration



*Notes:* Figure 1 displays the correlation between the raw average likelihood of getting a mortgage among immigrants in Spain and the housing-loan penetration in the country of ancestry. The average likelihood of getting a mortgage in Spain has been adjusted by individual characteristics (all of those in the baseline specification in column 3 Table 3.A excluding the country-of-ancestry housing-loan penetration variable). More specifically, we first estimate a linear regression using all covariates in the baseline specification, but the country-of-ancestry housing-loan penetration variable, as RHS variables. We then take the average residual of each country of ancestry resulting from the previous exercise. These residuals are regressed on the country-of-ancestry housing-loan penetration. The regression line has a slope of 0.15 with a standard error of 0.06. The adjusted  $R^2$  is 0.09. The bubbles are weighted by the number of individuals in our sample (without using population weights).



Figure 2. Present Value of Monthly Mortgage Payments After Controlling for Individual Characteristics by Country-of-Ancestry Mortgage Depth



Notes: Figure 2 displays the correlation between the raw average present value of mortgage payments among immigrants in Spain and the mortgage depth in the country of ancestry. The average present value of mortgage payments among immigrants in Spain has been adjusted by individual characteristics (all of those in the baseline specification in column 3 Table 3.B excluding the mortgage depth). More specifically, we first estimate a linear regression using all covariates in the baseline specification, but the country-of-ancestry mortgage depth variable, as RHS variables, conditioning on having a mortgage. We then take the average residual of each country of ancestry resulting from the previous exercise. These residuals are regressed on the country-of-ancestry mortgage depth. The regression line has a slope of 1,387.01 with a standard error of 788.56. The adjusted  $R^2$  is 0.04. The bubbles are weighted by the number of individuals in our sample (without using population weights).

Table 1: Characteristics of Immigrants in the ENI Dataset

<i>Characteristics</i>	<b>Mean (unless otherwise indicated)</b>	<b>St. Dev</b>
<b><i>LHS variables</i></b>		
Owens a mortgage	0.189	0.391
Present Value of a mortgage PV	1,838.863	4,612.685
Monthly mortgage payment	631.389	307.206
Median Loan term	25	
Median year of purchase	2002	
Owens a house in Spain	0.316	0.216
<b><i>Socio-demographic Characteristics</i></b>		
Median age	38	
Male	0.520	0.500
Married	0.519	0.500
Children <18 in the HH	0.570	0.961
Number of persons in the HH	3.3327	1.567
Earnings (monthly in Euro)	706.030	798.857
Employed	0.638	0.481
No Fluency in Spanish	0.072	0.258
<b><i>Highest educational attainment</i></b>		
Elementary school	0.173	0.378
High-school degree	0.536	0.499
College degree	0.197	0.398
Missing education	0.081	0.274
<b><i>Legal Status</i></b>		
Temporary residents	0.293	0.455
Permanent residents	0.126	0.332
Conditional residents permit	0.041	0.198
No documents dummy	0.088	0.283
Naturalized dummy	0.271	0.444
<b><i>Bond with country of ancestry</i></b>		
Sends remittances	0.388	0.487
Remittance amount	615.448	1,708.175
Owned dwelling prior to emigrating	0.324	0.468
<b><i>Immigration details</i></b>		
Median Age at migration	26	
Median years since arrival	7	
<b><i>Continents</i></b>		
Africa	0.148	0.356
Asia	0.037	0.188
Europe	0.405	0.491
North America	0.016	0.126
Australia & Oceania	0.001	0.038
South America	0.392	0.488
<b><i>Sample Size</i></b>		12,344
<b><i>Population Size</i></b>		3,600,099

*Notes:* About 8.5% of the immigrants do not report education or report it as “don’t know.” To avoid dropping them from our sample, we code these answers with a dummy variable indicating education is missing

Table 2.A: Mortgage Depth, Housing-Loan Ratio, and Other Variables by Country of Ancestry

Country of Ancestry	Mortgage dummy	PV monthly mortgage	Mortgage depth	Housing-loan penetration	British Legal Ancestry	Property Rights	Legal Rights	Credit Info	<i>N</i>
Ghana	0.131	1,519.9	0.005	0.028	1	50	5	1	40
Russia	0.222	1,374	0.005	0.018	0	37	3	0	123
Pakistan	0.188	2,569.7	0.007	0.023	1	30	4	3.7	69
Venezuela	0.219	2,156.9	0.007	0.006	0	33	4	4	293
Algeria	0.164	917.08	0.013	0.071	0	33	3	0	181
Paraguay	0.018	160.1	0.0139	0.016	0	30	.	.	105
Argentina	0.196	1,873.7	0.017	0.005	0	43	3	6	704
Romania	0.149	1,743.4	0.018	0.043	0	30	4	3.7	1,258
Bulgaria	0.105	1,054.3	0.019	0.022	0	43	6	2.7	303
Ecuador	0.263	3,381.3	0.0214	0.022	0	33	.	.	1,193
Peru	0.23	2,795.4	0.022	0.014	0	37	2	6	375
Brazil	0.122	939.7	0.026	0.016	0	50	2	5	305
Poland	0.169	1,513.4	0.044	0.031	0	63	3	4	138
Nicaragua	0.027	1,37.2	0.0452	0.004	0	30	.	.	19
Czech Rep.	0.309	2,912.8	0.046	0.091	0	70	6	4.3	19
Slovakia	0.057	706.2	0.049	0.085	0	50	9	3	19
India	0.287	2,644.7	0.049	0.025	1	50	4	0.7	29
Uruguay	0.139	1,257.5	0.05	0.02	0	70	.	.	234
Philippines	0.271	4,317.1	0.068	0.039	0	47	3	3	80
Morocco	0.188	1,414	0.07	0.063	0	37	.	.	1,625
Bolivia	0.037	393.9	0.095	0.045	0	37	3	3.3	420
El Salvador	0.241	4,145	0.0957	0.02	0	53	.	.	17
Mexico	0.17	1,651.6	0.098	0.031	0	50	2	6	141
China	0.158	1,486.2	0.1	0.054	0	30	2	3	91
Colombia	0.178	2,095.8	0.1	0.033	0	37	3	4	970
Italy	0.223	1,684.4	0.131	0.129	0	70	3	6	176
Chile	0.144	1,495	0.148	0.042	0	90	4	6	152
France	0.317	2,427.2	0.241	0.311	0	70	3	3	688
Austria	0.085	510.3	0.261	0.291	0	90	5	6	27
Belgium	0.254	1,801.7	0.277	0.392	0	90	5	4	112
Finland	0.198	3,029.1	0.324	0.331	0	90	6	5	17
Spain	0.283	1,823	0.363	0.353	0	70	5	6	538
Ireland	0.278	2,453	0.454	0.392	1	90	8	5	26
Germany	0.216	1,704.7	0.474	0.237	0	90	8	6	497
Portugal	0.162	1,001.7	0.489	0.259	0	70	4	4	450
Sweden	0.077	650.9	0.502	0.597	0	87	6	4	39
Australia	0.326	2,787.5	0.619	0.438	1	90	9	5	19
United Kingdom	0.174	1,449.9	0.666	0.343	1	90	10	6	668
U.S.A	0.199	2,275.4	0.674	0.367	1	90	7	6	71
Denmark	0.171	1,515.5	0.79	0.535	0	90	7	4	28
The Netherlands	0.183	1,632.8	0.827	0.45	0	90	7	5	85
Mean	0.19	1,838.86	0.15	0.10	0.09	49.26	4.42	4.40	
St. Dev.	0.39	4612.69	0.21	0.13	0.29	21.15	2.29	1.45	
<i>Sample Size</i>	12,344	12,344	12,344	13,124	12,344	12,344	9,151	9,151	12,344
<i>Pop. Size</i>	3,600,099	3,600,099	3,600,099	3,600,099	3,600,099	3,600,099	2,664,633	2,664,633	3,600,099

Notes: Columns 1 and 2 display the mean likelihood of having a mortgage and the present value of the mortgage by country of ancestry estimated using our sample of immigrants from 2007 ENI. The other columns present country-of-ancestry measures (described in Appendix Table A.1 and in the main text). Countries are ordered from the least to the highest

mortgage depth indicator.

Table 2.B: Correlation between Country-of-Ancestry Institutional Quality Measures

	Mortgage depth	Housing-loan penetration	British Legal Ancestry	Property Rights	Legal Rights	Credit Info
Mortgage depth	1					
Housing-loan penetration	0.876***	1				
British Legal Ancestry	0.616***	0.411***	1			
Property Rights	0.876***	0.821***	0.449***	1		
Legal Rights	0.817***	0.601***	0.690***	0.679***	1	
Credit Info	0.543***	0.365***	0.259***	0.546***	0.407***	1

Sources: See Appendix Table A.1. \* p<0.05, \*\* p<0.01, \*\*\* p<0.001

Table 3.A: Effect of Culture on Having a Mortgage

	[1]	[2]	[3]	[4]	[5]	[6]
<b>Housing-loan penetration</b>	<b>0.2658***</b> <b>(0.0014)</b>	<b>0.2589***</b> <b>(0.0014)</b>	<b>0.2467***</b> <b>(0.0014)</b>	<b>0.2098***</b> <b>(0.0014)</b>	<b>0.1718***</b> <b>(0.0015)</b>	<b>0.1605***</b> <b>(0.0015)</b>
Age	0.0140*** (0.0001)	0.0100*** (0.0001)	0.0082*** (0.0001)	0.0077*** (0.0001)	0.0070*** (0.0001)	0.0069*** (0.0001)
Age squared	-0.0002*** (0.0000)	-0.0001*** (0.0000)	-0.0001*** (0.0000)	-0.0001*** (0.0000)	-0.0001*** (0.0000)	-0.0001*** (0.0000)
Male indicator		-0.0113*** (0.0004)	-0.0148*** (0.0004)	-0.0123*** (0.0004)	-0.0139*** (0.0004)	-0.0137*** (0.0004)
Married indicator		0.1016*** (0.0004)	0.0971*** (0.0004)	0.0947*** (0.0004)	0.0895*** (0.0004)	0.0910*** (0.0004)
Children in the household		0.0424*** (0.0002)	0.0424*** (0.0002)	0.0574*** (0.0002)	0.0362*** (0.0002)	0.0350*** (0.0002)
Lack of Spanish fluency indicator			-0.0397*** (0.0008)	-0.0387*** (0.0008)	-0.0147*** (0.0008)	-0.0152*** (0.0008)
Highest educational attainment: Elementary school			0.0812*** (0.0018)	0.0711*** (0.0018)	0.0758*** (0.0018)	0.0774*** (0.0018)
Highest educational attainment: High-school degree			0.0979*** (0.0018)	0.0823*** (0.0018)	0.0875*** (0.0018)	0.0888*** (0.0018)
Highest educational attainment: College degree			0.1152*** (0.0018)	0.0904*** (0.0018)	0.0981*** (0.0018)	0.0981*** (0.0018)
Earnings			0.0001*** (0.0000)	0.0001*** (0.0000)	0.0001*** (0.0000)	0.0001*** (0.0000)
Working indicator			0.0025*** (0.0006)	0.0034*** (0.0006)	0.0049*** (0.0006)	0.0080*** (0.0006)
Number of people living in household				-0.0224*** (0.0001)		
Temporary resident indicator					-0.0265*** (0.0006)	-0.0227*** (0.0006)
Permanent resident indicator					0.0722*** (0.0007)	0.0735*** (0.0007)
Conditional residence permit indicator					0.0219*** (0.0010)	0.0228*** (0.0010)
No legal documents indicator					-0.1370*** (0.0008)	-0.1353*** (0.0008)
Naturalized citizen indicator					0.0980*** (0.0005)	0.0961*** (0.0005)
Sends remittance indicator						-0.0029*** (0.0005)
Amount of the remittance						-0.0000*** (0.0000)
Province controls	Yes	Yes	Yes	Yes	Yes	Yes
R squared	0.042	0.077	0.106	0.114	0.133	0.134
<i>Sample Size</i>	12,344	12,344	12,344	12,344	12,344	12,344
<i>Population Size</i>	3,600,099	3,600,099	3,600,099	3,600,099	3,600,099	3,600,099

Notes: Results from estimating equations 1 and 2 using seemingly unrelated linear regressions. Each column lists all RHS variables in the specification. Specification in column (3) is our baseline specification. Standard Errors are clustered at the country-of-ancestry level. All estimates are weighted to be representative of the immigrant population in Spain as indicated by ENI.

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

Table 3.B: Effect of Culture on Present Value of Mortgage Payments

	[1]	[2]	[3]	[4]	[5]	[6]
<b>Mortgage depth</b>	<b>939.2345***</b> <b>(10.7187)</b>	<b>903.6258***</b> <b>(10.6791)</b>	<b>756.5415***</b> <b>(10.7210)</b>	<b>616.1617***</b> <b>(10.7817)</b>	<b>545.2317***</b> <b>(11.5014)</b>	<b>562.8065***</b> <b>(11.5637)</b>
Age	94.5660*** (0.8443)	56.6550*** (0.8479)	36.1978*** (0.8398)	32.2664*** (0.8398)	28.5264*** (0.8362)	29.1000*** (0.8365)
Age squared	-1.3329*** (0.0087)	-0.9531*** (0.0087)	-0.6704*** (0.0087)	-0.6668*** (0.0086)	-0.6301*** (0.0086)	-0.6342*** (0.0086)
Male indicator		-129.44*** (4.7925)	-170.5220*** (4.7453)	-150.6744*** (4.7387)	-179.1574*** (4.7190)	-176.4757*** (4.7183)
Married indicator		940.7261*** (5.0532)	882.0534*** (5.0022)	862.5611*** (4.995)	799.3611*** (5.0006)	802.0907*** (5.0091)
Children in the household		400.8619*** (2.6408)	409.0533*** (2.6421)	527.9792*** (2.8344)	362.1504*** (2.6346)	358.8412*** (2.6434)
No Spanish fluency indicator			-246.3161*** (9.2657)	-239.1322*** (9.2469)	-100.1151*** (9.2602)	-111.8758*** (9.2632)
Highest educational attainment: Elementary school			824.6484*** (21.9203)	743.2533*** (21.8871)	840.5052*** (21.7817)	844.2726*** (21.7789)
Highest educational attainment: High-school degree			1,134.9842*** (21.4287)	1,009.235*** (21.4132)	1,118.7604*** (21.3012)	1,122.1662*** (21.2980)
Highest educational attainment: College degree			1,316.4649*** (21.9069)	1,114.947*** (21.9326)	1,284.7981*** (21.8036)	1,293.8131*** (21.8006)
Earnings			0.8975*** (0.0041)	0.8741*** (0.0041)	0.8485*** (0.0041)	0.8579*** (0.0041)
Working indicator			-114.57*** (6.8695)	-103.27*** (6.8559)	-127.51*** (6.8930)	-146.5*** (7.0104)
Number of people living in household				-179.033*** (1.5703)		
Temporary resident indicator					29.5700*** (6.8304)	10.4364 (7.0112)
Permanent resident indicator					865.6873*** (8.3456)	838.7486*** (8.4371)
Conditional residence permit indicator					332.6604*** (12.4934)	307.3550*** (12.5403)
No legal documents indicator					-1,336.51*** (9.5688)	-1,362.25*** (9.6526)
Naturalized citizen indicator					388.9871*** (6.1403)	392.8205*** (6.1614)
Sends remittance indicator						175.3698*** (6.0875)
Amount of the remittance						-0.0603*** (0.0015)
Province controls	Yes	Yes	Yes		Yes	Yes
R squared	0.042	0.077	0.106		0.133	0.134
<i>Sample Size</i>	12,344	12,344	12,344		12,344	12,344
<i>Population Size</i>	3,600,099	3,600,099	3,600,099		3,600,099	3,600,099

Notes: Results from estimating equations 1 and 2 using seemingly unrelated linear regressions. Each column lists all RHS variables in the specification. All estimates are weighted to be representative of the immigrant population in Spain as indicated by ENI.

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

Table 4.A: Subgroup Analysis  
(Panel A)

	Low education	High education	Low-skilled occupation	High-skilled occupation	No Children	Has children	Second-generation immigrants	First-generation immigrants	Citizens or permanent residents	Other legal status
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
<b>LHS variable: Mortgage indicator</b>										
Housing-loan Penetration	0.2988*** (0.0017)	0.1770*** (0.0029)	0.4312*** (0.0028)	0.3403*** (0.0031)	0.2078*** (0.0015)	0.2625*** (0.0029)	0.2054*** (0.0034)	0.2692*** (0.0015)	0.2290*** (0.0024)	0.1792*** (0.0018)
<b>LHS variable: Present Value of Mortgage Payments</b>										
Mortgage depth	781.4270*** (12.6878)	1,071.3386*** (24.7670)	774.5382*** (23.4085)	1,361.7776*** (24.9218)	722.2706*** (11.3943)	266.6184*** (22.6822)	1,048.435*** (26.2834)	517.2497*** (11.4887)	341.9394*** (19.4149)	297.9933*** (13.3176)
<i>Pop. Size</i>	2,552,864	709,717	1,415,122	877,978	2,379,632	1,220,467	386,531	3,213,568	1,376,753	2,223,346

*Notes:* Results from estimating equations 1 and 2 using seemingly unrelated linear regressions on our baseline specification for different subgroups of immigrants as explained below. Column 1 uses immigrants with at most a high-school degree. Column 2 uses immigrants with college education. Columns 3 and 4 use immigrants working in low- and high-skilled occupations, respectively. High-skilled occupations include professional and technical or executive, and managerial categories. Low-skilled occupations include low-administrative level occupations, handlers, cleaners, or service occupations. Columns 5 and 6 use immigrants without and with children in the household, respectively. Columns 7 and 8 use second- and first-generation immigrants. Second-generation immigrants were born in the host country to immigrant parents, whereas first-generation immigrants were born outside of Spain. Column 9 uses citizens and permanent residents only, and column 10 uses all other immigrants, including undocumented. Standard errors are clustered at the country-of-ancestry level. All estimates are weighted to be representative of the immigrant population in Spain as indicated by ENI.

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

Table 4.B: Subgroup Analysis  
(Panel B)

	In Spain for 10 years or less	In Spain for more than 10 years	Arrived to Spain before age 25	Arrived to Spain at age 25 or older
	(1)	(2)	(3)	(4)
<b>LHS variable: Mortgage indicator</b>				
Housing-loan Penetration	0.2760*** (0.0107)	0.1712*** (0.0027)	0.1668*** (0.0028)	0.1996*** (0.0080)
<b>LHS variable: Present Value of Mortgage Payments</b>				
Mortgage depth	1,723.6244*** (84.3196)	648.9649*** (19.2287)	615.3674*** (21.1718)	2,429.1623*** (65.8344)
<i>Pop. Size</i>	438,941	937,812	949,984	426,769

*Notes:* Results from estimating equations 1 and 2 using seemingly unrelated linear regressions on our baseline specification for different subgroups of immigrants as explained below. Column 1 and 2 control for age at arrival dummies, and columns 3 and 4 control for years since arrival dummies. All estimates in panel B are restricted to immigrants who reported being naturalized or permanent residents. Column 1 uses immigrants with a tenure in Spain of 10 years or less. Column 2 uses immigrants who have been in Spain for more than 10 years. Columns 3 and 4 use immigrants who arrived to Spain before the age of 25 or after turning 24 years old, respectively.

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001



Table 5.A: What Country-of-Origin Institution Matter?  
(LHS: Mortgage Indicator)

	[1]	[2]	[3]	[4]	[5]
Housing-loan Penetration	0.2467*** (0.0014)				
Property Rights index		0.0009*** (0.0000)			
English Common Law indicator			0.0189*** (0.0007)		
Legal Rights index				0.0037*** (0.0001)	
Credit Information Index					0.0069*** (0.0002)
Province controls	Yes	Yes	Yes	Yes	Yes
R squared	0.106	0.107	0.106	0.103	0.103
<i>Sample Size</i>	12,344	13,714	13,714	9,327	9,327
<i>Pop. Size</i>	3,600,099	3,999,044	3,999,044	2,714,970	2,714,970

*Notes:* Results from estimating equations 1 and 2 using seemingly unrelated linear regressions on our baseline specification. Column 1 is the baseline specification (also shown in Table 3.A, column 3). Column 2 replaces the country-of-origin housing-loan penetration for the country-of-origin property right index. Column 3 uses an indicator for whether the country of origin had English Common Law tradition, instead. Columns 4 and 5 use the legal right index and the credit information index, respectively, instead of the housing-loan penetration. Standard errors are clustered at the country-of-origin level. All estimates are weighted to be representative of the immigrant population in Spain as indicated by ENI.

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

Table 5.B: What Country-of-Origin Institution Matter?  
(LHS: Present Value of Mortgage Payments)

	[1]	[2]	[3]	[4]	[5]
Mortgage depth	756.5415*** (10.7210)				
Property Rights index		-0.1979 (0.1153)			
English Common Law indicator			291.0781*** (8.1445)		
Legal Rights index				15.2912*** (1.3173)	
Credit Information					54.7883*** (1.9584)
Province controls	Yes	Yes	Yes	Yes	Yes
R squared	0.106	0.107	0.106	0.103	0.103
<i>Sample Size</i>	12,344	13,714	13,714	9,327	9,327
<i>Pop. Size</i>	3,600,099	3,999,044	3,999,044	2,714,970	2,714,970

*Notes:* Results from estimating equations 1 and 2 using seemingly unrelated linear regressions on our baseline specification. Column 1 is the baseline specification (also shown in Table 3.A, column 3). Column 2 replaces the country-of-origin mortgage depth for the country-of-origin property right index. Column 3 uses an indicator for whether the country of origin had English Common Law tradition, instead. Columns 4 and 5 use the legal right index and the credit information index, respectively, instead of the housing-loan penetration. Standard errors are clustered at the country-of-origin level. All estimates are weighted to be representative of the immigrant population in Spain as indicated by ENI.

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

# Appendix

**Appendix Table A.1: Definitions and Sources of Country-Level Variables**

<b>Variable</b>	<b>Definition and source</b>
<b>Mortgage depth</b>	The mortgage depth is defined as the ratio of the mortgage debt to the Gross Domestic Product (GDP), and it has been collected from difference sources. Most of the mortgage depth information in our data set comes from Table 2 in Warnock and Warnock (2008), and is the average mortgage debt-to-GDP ratio for the 2001-2005 period. In addition, for five Latin American countries in our sample (Ecuador, El Salvador, Nicaragua, Paraguay and Uruguay), we collected the mortgage depth from the Housing Finance Information Network ( <a href="http://www.hofinet.org">www.hofinet.org</a> ) as information was unavailable in Warnock and Warnock (2008).
<b>Housing-loan penetration</b>	The housing-loan penetration is defined as the percentage of adult population with an outstanding loan to purchase a home, and it comes from Table A.2 in Badev et al. 2014. These authors obtained the housing-loan penetration indicator from the Global Financial Inclusion (FINDEX) database. <a href="#">Source: Global Financial Inclusion (FINDEX) database (2011).</a>
<b>Property rights index</b>	The property rights component is an assessment of the ability of individuals to accumulate private property, secured by clear laws that are fully enforced by the state. It varies between 0 and 100, and it measures the degree to which a country's laws protect private property rights and the degree to which its government enforces those laws. It also assesses the likelihood that private property will be expropriated and analyzes the independence of the judiciary, the existence of corruption within the judiciary, and the ability of individuals and businesses to enforce contracts. Here we average the values for the period 2000-2005. <a href="#">Source: Index of Economic Freedom</a>
<b>English legal ancestry</b>	Constructed using Laporta et al. (1999) legal origin index, which identifies the legal origin of the Company Law or Commercial Code of each country. There are five possible originancestries: (1) English Common Law; (2) French Commercial Code; (3) German Commercial Code; (4) Scandinavian Commercial Code; and (5) Socialist/Communist laws. <a href="#">Source: "The Quality of Government" LaPorta et al. (1999)</a>
<b>Legal rights index</b>	Strength of legal rights index measures the degree to which collateral and bankruptcy laws protect the rights of borrowers and lenders and thus facilitate lending. The index ranges from 0 to 10, with higher scores indicating that these laws are better designed to expand access to credit. We use the 2004-2005 average index. <a href="#">Source: Warnock &amp; Warnok (2008)</a>
<b>Credit information index</b>	Depth of credit information index measures rules affecting the scope, accessibility, and quality of credit information available through public or private credit registries. The index ranges from 0 to 6, with higher values indicating the availability of more credit information, from either a public registry or a private bureau, to facilitate lending decisions. We use the 2003-2005 average index. <a href="#">Source: Warnock &amp; Warnok (2008)</a>
<b>Literacy rate</b>	Percentage of the population age 15 and above who can, with understanding, read and write a short, simple statement on their everyday life. Generally, 'literacy' also encompasses 'numeracy', the ability to make simple arithmetic calculations. This indicator is calculated by dividing the number of literates aged 15 years and over by the corresponding age group population and multiplying the result by 100. The values between 2000 and 2007 were averaged and the result was formatted as a number between 0 and 1. <a href="#">Source: World Bank Development Indicators, CIA factbook and <a href="http://world.bymap.org/LiteracyRates.html">http://world.bymap.org/LiteracyRates.html</a></a>
<b>HDI</b>	The HDI measures the level of development of a country, combining information on people's life expectancies, adult literacy rates, gross enrollment ratios in different educational levels and the GDP. The index range from 0 to 100. Here I calculate HDI as the average of 2000 and 2005 HDI values. <a href="#">Source: <a href="http://hdr.undp.org/en/statistics/hdi">http://hdr.undp.org/en/statistics/hdi</a></a>
<b>GINI index</b>	Gini index measures the extent to which the distribution of income (or, in some cases, consumption expenditure) among individuals or households within an economy deviates from a perfectly equal distribution. a Gini index of 0 represents perfect equality, while an index of 100 implies perfect inequality. The average of all the GINI coefficients available from 2001 to 2005 is used. <a href="#">Source: World Bank Development Indicators.</a>
<b>log(GDP per capita)</b>	PPP Converted GDP Per Capita (Laspeyres), derived from growth rates of c, g, i, at 2005 constant prices measured in 2005 International \$ per person. The real GDP per capita is averaged over the period 2000-2005 and then its log is taken. <a href="#">Source: Alan Heston, Robert Summers and Bettina Aten, Penn World Table Version 7.1 Center for International Comparisons of Production, Income and Prices at the University of Pennsylvania, November 2012.</a>
<b>Avg per capita remittances</b>	Average per capita remittances received in 2005 International \$. Total remittances received in US dollars is transformed to constant U.S. dollars using 2005 as a base year. Each value from each year between 2000-2005 is divided with its respective population also found on the World Bank, in order to get average per capital remittances. <a href="#">Source: World Bank Indicators for remittances and <a href="http://www.multpl.com/cpi/table">http://www.multpl.com/cpi/table</a> for CPI data.</a>
<b>Religion controls</b>	Identifies the percentage of the population of each country that belonged to the three most widely spread religions in the world. For countries of recent formation, the data is available for 2000. The numbers are in percent (scale from 0 to 1). The three religions identified here are: (1) Roman Catholic; (2) Protestant; and (3) Muslim. The residual is called "other religions". <a href="#">Sources: CIA World Factbook 2000</a>
<b>Spanish speaking country</b>	This variable is equal to 1 if Spanish is one of the official languages in the country of ancestry, and 0 otherwise. <a href="#">Source: World FactBook CIA</a>

Appendix Table A.1.A: Robustness Checks  
(LHS variable: Mortgage indicator)

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
<b>Housing-loan</b>	<b>0.2467***</b>	<b>0.2653***</b>	<b>0.2760***</b>	<b>0.2602***</b>	<b>0.2254***</b>	<b>0.3144***</b>	<b>0.2667***</b>	<b>0.9448***</b>
<b>Penetration</b>	<b>(0.0014)</b>	<b>(0.0015)</b>	<b>(0.0018)</b>	<b>(0.0015)</b>	<b>(0.0021)</b>	<b>(0.0016)</b>	<b>(0.0015)</b>	<b>(0.2597)</b>
Muslim indicator		0.0354*** (0.0007)						
Catholic indicator		0.0584*** (0.0006)						
Protestant indicator		-0.0207*** (0.0024)						
Asia indicator			0.0238*** (0.0012)					
Europe indicator			-0.0194*** (0.0007)					
North America indicator			-0.0400*** (0.0017)					
Australia & Oceania indicator			0.0004 (0.0052)					
South America Indicator			0.0119*** (0.0007)					
SPANISH official language indicator				0.0255*** (0.0005)	0.0244*** (0.0005)	0.0278*** (0.0005)	0.0178*** (0.0004)	
log(GDP/CAPITA)					0.0139*** (0.0008)			
Literacy rate						-0.0896*** (0.0014)		
Owned dwelling in Home country							-0.0485*** (0.0004)	
Province controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R squared	0.106	0.109	0.107	0.107	0.107	0.107	0.108	0.104
<i>Sample Size</i>	12,344	12,344	12,344	12,344	12,344	12,344	12,344	12,344
<i>Pop. Size</i>	3,600,099	3,600,099	3,600,099	3,600,099	3,600,099	3,600,099	3,600,099	3,600,099

Notes: Results from estimating equations 1 and 2 using seemingly unrelated linear regressions (columns 1 to 7). Column 8 estimates equation 1 using a univariate Probit model. Specification in column (1) is our baseline specification. All other specifications are built from baseline specification plus the RHS variables indicated in each case in the Table. Standard errors are clustered at the country-of-ancestry level. All estimates are weighted to be representative of the immigrant population in Spain as indicated by ENI.

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

Appendix Table A.1.B: Robustness Checks  
(LHS variable: Present Value of Mortgage Payments)

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
<b>Mortgage depth</b>	<b>756.54***</b>	<b>736.97***</b>	<b>975.38***</b>	<b>985.84***</b>	<b>1064.82***</b>	<b>763.86***</b>	<b>684.03***</b>	<b>385.85***</b>
	(10.7210)	(11.5131)	(12.0169)	(11.0751)	(13.4984)	(11.3018)	(10.781)	(1798.75)
Muslim indicator		-114.9606*** (8.8856)						
Catholic indicator		551.53*** (7.3104)						
Protestant indicator		-344.1946*** (29.1970)						
Asia indicator			1124.5322*** (13.8903)					
Europe indicator			194.3191*** (8.0999)					
North America indicator			114.03*** (20.0782)					
Australia & Oceania indicator			488.63*** (61.7364)					
South America Indicator			653.28*** (7.9105)					
SPANISH official language indicator				451.41*** (5.2801)	450.73*** (5.3019)	452.66*** (5.351)	422.70*** (5.1877)	
log(GDP/CAPITA)					-65.7937*** (9.0596)			
Literacy rate						-292.78*** (17.106)		
Owned dwelling in Home country							-300.37*** (5.1709)	
Province controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R squared	0.106	0.109	0.107	0.107	0.107	0.107	0.108	0.020
<i>Sample Size</i>	12,344	12,344	12,344	12,344	12,344	12,344	12,344	12,344
<i>Pop. Size</i>	3,600,099	3,600,099	3,600,099	3,600,099	3,600,099	3,600,099	3,600,099	3,600,099

*Notes:* Results from estimating equations 1 and 2 using seemingly unrelated linear regressions (columns 1 to 7). Column 8 estimates equation 1 using a univariate Tobit model with left-censor limitation at zero. Specification in column (1) is our baseline specification. All other specifications are built from baseline specification plus the RHS variables indicated in each case in the Table. Standard errors are clustered at the country-of-ancestry level. All estimates are weighted to be representative of the immigrant population in Spain as indicated by ENI.

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

**Appendix Table A.2.A: Sample Selection Robustness Checks**  
(LHS variable: Mortgage indicator)

	Baseline	GINI	W/out Spain	W/out Morocco	W/out Ecuador	W/out Romania
Housing-loan Penetration	0.2467*** (0.0014)	0.2623*** (0.0017)	0.2492*** (0.0014)	0.2582*** (0.0014)	0.2640*** (0.0014)	0.2425*** (0.0015)
Gini index		0.1079*** (0.0023)				
Province controls	Yes	Yes	Yes	Yes	Yes	Yes
R squared	0.106	0.107	0.0881	0.108	0.108	0.107
<i>Sample Size</i>	12,344	12,344	11,806	10,719	11,151	11,086
<i>Pop. Size</i>	3,600,099	3,600,099	3,496,457	3,124,850	3,260,577	3,190,171

*Notes:* Results from estimating equations 1 and 2 using seemingly unrelated linear regressions. Specification in column (1) is our baseline specification. Column 2 adds the country-of-ancestry Gini index as an additional RHS variable control. Columns 3 to 6 estimate the baseline specification by dropping second-generation immigrants whose parents were born in Spain or for whom we lacked parents' country-of-birth information (column 3); Moroccans (column 4); Ecuadorians (column 5); or Romanians (column 6). Standard errors are clustered at the country-of-ancestry level. All estimates are weighted to be representative of the immigrant population in Spain as indicated by ENI.  
\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

**Appendix Table A.2.B: Sample Selection Robustness Checks**  
(LHS variable: Present Value of Mortgage Payments)

	Baseline	GINI	W/out Spain	W/out Morocco	W/out Ecuador	W/out Romania
Mortgage depth	756.54*** (10.72)	959.47*** (11.36)	515.6255*** (10.691)	740.78*** (11.235)	910.9*** (10.39)	804.15*** (11.02)
Gini index		1,695.75*** (25.01)				
Province controls	Yes	Yes	Yes	Yes	Yes	Yes
R squared	0.106	0.107	0.0663	0.108	0.108	0.107
<i>Sample Size</i>	12,344	12,344	11,806	10,719	11,151	11,086
<i>Pop. Size</i>	3,600,099	3,600,099	3,496,457	3,124,850	3,260,577	3,190,171

*Notes:* Results from estimating equations 1 and 2 using seemingly unrelated linear regressions. Specification in column (1) is our baseline specification. Column 2 adds the country-of-ancestry Gini index as an additional RHS variable control. Columns 3 to 6 estimate the baseline specification by dropping second-generation immigrants whose parents were born in Spain or for whom we lacked parents' country-of-birth information (column 3); Moroccans (column 4); Ecuadorians (column 5); or Romanians (column 6). Standard errors are clustered at the country-of-ancestry level. All estimates are weighted to be representative of the immigrant population in Spain as indicated by ENI.  
\* p<0.05, \*\* p<0.01, \*\*\* p<0.001