# I (Don't) Owe You: Sovereign Default and Borrowing Behavior*

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**Abstract**

Using microdata from a U.S. household survey, we document that immigrants who lived through a sovereign default episode are 6% less likely to hold debt relative to otherwise similar immigrants who reside in the same U.S. state and come from the same foreign country but who did not experience a default. Conditional on holding debt, consumers in the former group borrow less and service lower debt burdens. The negative effect on borrowing behavior of having experienced a sovereign default increases with family size and declines with education. These findings highlight the role of personal experience in shaping households' financial decisions.

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# 1 Introduction

The experiences we have lived through often shape our economic behavior. A number of studies have investigated the role of experiences of economic events (usually crisis episodes) on consumers' spending, savings and investment in risky financial and real assets (see Malmendier, 2021 for a comprehensive literature review). On the other hand, the empirical evidence on the effects of such experiences on household borrowing and indebtedness is quite limited. This is all the more surprising given the undisputed importance of access to credit for both individual risk sharing and consumption smoothing (e.g., Zeldes, 1989) and for aggregate economic growth (e.g., King and Levine, 1993; Beck et al., 2000; Black and Strahan, 2002).

The present paper examines the effect of the experience of sovereign default on consumers' borrowing behavior and sheds light on the links between public and household debts. Identifying the effects of a distressful episode such as sovereign default on borrowing behavior poses (at least) two empirical challenges. First, major adverse economic events typically change the economic landscape in which economic agents operate, for example by changing the credit standards and credit availability as well as labour and financial markets. Second, given how pervasive these events are, it is hard to find a segment of consumers who are not affected by the event and use it as a "control" group in a comparison with consumers who have been affected.

We use data from the 2004 Survey of Income and Program Participation (SIPP) and utilize a sample of immigrants to the US from 92 countries, in 36 of which (some) immigrants have lived through (at least one) episode of sovereign default. We base our inference on comparing the borrowing behavior of immigrants who, prior to their migration, experienced the sovereign default in their country of origin against similar immigrants who live in the same state and come from the same country but did not live through such a stressful event. One distinct feature of our set up is that both immigrant groups face similar credit supply conditions in a new economic environment

that has not been directly influenced by the sovereign default episode in their country of origin. Moreover, the new environment offers new opportunities for borrowing and in fact the US credit market conditions have been shown to be much more conducive to household borrowing compared to, e.g., euro area economies (e.g., Gomez-Salvador et al., 2011; Christelis et al., 2021). This set up allows for distinguishing the role of individual experiences that mainly underpin a demand-driven mechanism from supply-side conditions that are typically tighter for those who have experienced an adverse shock.

We report a number of novel findings. First, individuals who have experienced a sovereign default are on average 7 percent less likely to hold debt than otherwise similar individuals who emigrated from the same country to the same U.S. state but did not live through a default episode. Moreover, the former group's overall indebtedness is on average one-third lower compared to the latter group. These results hold for both unsecured and secured types of borrowing, a finding that provides, as we will argue, further evidence to the role of demand mechanisms.

Second, we show that experiencing a traumatic event such as sovereign default not only discourages borrowing later in life but it also makes these consumers to shoulder a lower debt burden. After accounting for country of origin, state of residence in the US, and various socio-economic characteristics, these consumers should face similar supply credit conditions and new opportunities for borrowing. In principle, operating in a new economic environment and confronted with ample opportunities to adjust their debt levels, these immigrants should optimally borrow (in line with their economic fundamentals and credit standards) against future earnings to enhance their potential and finance their activities (e.g., many decide to set up their own small business). Still, we find that among immigrants, those who experienced sovereign default are more cautious with borrowing. They choose a lighter debt burden possibly because they are more adverse to, or overrate the likelihood of, another negative shock and in such a case they would like to be in a better position to service their debt.

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Third, we shed light on the mechanism driving such a behaviour, and on the link between public and household debts more generally. We confirm that experiencing an actual sovereign default, and not just growing in a highly indebted country, is critical for consumers' future borrowing behaviour. We show that those who grew up in a country with chronically high levels of sovereign debt are more prone to borrowing in the US as long as their country did not default on its debt obligations. Instead, if high sovereign indebtedness is accompanied by a default episode that also individuals have lived through, this decreases significantly their debt holdings and the debt burden they choose to service.

Taken together, our findings highlight the long-lasting impact that government borrowing and default episodes have on individual borrowing behaviour. Having witnessed the setbacks of sovereign default that is often associated with prolonged periods of economic hardship and social unrest strongly discourages individuals from borrowing. This is true even in an environment that is little affected by the default episode per se and that provides ample new borrowing opportunities.

We make sure that our results are not driven by a particular sample selection or modelling choice. First, we control for country of origin and state of residence, making sure that the results are not biased by different cultural predispositions that immigrants bring along, or by differences in the local credit supply that immigrants face after arriving to the US. Second, we control for demographic characteristics – such as age, gender, marital status, education or number of children – and for financial and labor market characteristics – such as income, wealth, and employment status. Thereby we make sure that the differences in behavior between those who experienced a sovereign default and those who did not are not driven by changes in the composition of emigrants to the US after the sovereign default episode. Moreover, we show that the immigrants in our sample and in particular those who migrated before and after experiencing a default in their home country do not come from different distributions based on observable characteristics. Thus, changes in the composition of immigrants

over time do not appear significant and are unlikely to drive our results.

Finally, we show that the main finding of the paper still obtains when we only compare immigrants from the same country who arrived in the US immediately before and immediately after the sovereign default. Arguably, this test is best suited to tightly identifying the main effect. At the same time, we do not make this our primary test because the sample is reduced by 94%. Therefore, in the main test we keep all immigrants, regardless of when they arrived to the US and if they are coming from a country that experienced a sovereign default or not. The justification to work with the entire sample is that we want to use a representative sample of immigrants to the US, and that we need enough observations to also identify heterogeneous treatment effects that shed light on the underlying mechanism.

Our findings contribute to an extensive and still growing literature that investigates the effect of personal experiences on various household decisions. Malmendier (2021) provides a recent review of this literature and highlights three main findings that are broadly consistent across the various studies. First, experiences of economic events can have powerful influences on household choices, whether they be through infrequent, large macro shocks or simple, repeated signals in daily lives. Second, experiences over one's lifetime so far have long-lasting effects on choices for years to come. Third, economic agents show a strong recency bias in experience effects. Much of this literature (briefly reviewed below with reference to some of the existing studies) has mainly examined the effects of economic experiences on financial and real investing, saving and spending, while the evidence on borrowing behaviour is scarce.

Consumers in the U.S. who have experienced low stock market returns throughout their lifetime report lower willingness to undertake financial risk, are more pessimistic about future stock returns, and invest less in stocks at both the intensive and extensive margins. Similarly, individuals who have experienced low bond returns are less likely to own bonds (Malmendier and Nagel, 2011). Ampudia and Ehrmann (2017) reproduce these findings in the euro area and further show that the negative effect of a stock

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market crash on stock market participation is more persistent than the positive effects of a stock market boom.

This line of research is extended by Knüpfer et al. (2017) who find that workers who have been adversely affected by a macroeconomic depression are less likely to invest in risky assets. Neighbors and family members of these adversely affected workers exhibit similar propensity to avoid holding risky assets. Households that have experienced hyperinflation as young adults are also found to show lower willingness to invest in stocks and are less likely to save for the future (Fajardo and Dantas, 2018). Exposure to natural disasters have similarly been linked with reduced stock market participation (Bharath and Cho, 2022; Ersan et al., 2023), while personal exposure to COVID-19 has been found to unexpectedly increase investment among U.S. retail investors (Niculaescu et al., 2023). Laudenbach et al. (2020) find that, decades after reunification, East Germans still invest significantly less in the stock market compared to West Germans, suggesting long-term effects of living under communism on investment behaviour. Consumers who have lived through times of high unemployment spend significantly less years later and have more pessimistic beliefs about their future financial situation, a result which is not explained by their actual future income. Due to their lower spending, these consumers build up more wealth (Malmendier and Shen, 2023). In a similar vein, consumers who have had higher exposure to early-life famine experiences waste less food than other households in later life (Ding et al., 2022).

Higher personal exposure to historical inflation predicts higher home ownership rates. This relationship is strongest in countries with predominantly fixed-rate mortgages (Malmendier and Wellsjo, 2023). A positive, albeit weaker relationship is also found between experiences of house price inflation and home ownership. Job preference has been found to vary systematically with experienced macroeconomic conditions during young adulthood: recessions create cohorts that give higher priority to income, whereas booms make cohorts care more about meaningful jobs for the rest of their lives (Cotofan et al., 2023).

In the Netherlands, customers of troubled banking institutions during the financial crisis were subsequently more likely to spread their savings across multiple accounts and multiple banks (Van der Cruijsen et al., 2012). Osili and Paulson (2014) document that immigrants who have experienced a systemic banking crisis in their country of origin are significantly less likely to use U.S. banks than other similar individuals. However, having lived through a banking crisis is not found to impact subsequent stock market participation or investment through retirement accounts. We use a set up similar to that in Osili and Paulson (2014) to examine the effects of experiencing sovereign default on borrowing behaviour.

As regards the effects of lifetime experiences on borrowing, Ornelas and Fajardo (2020) find evidence that being fired in an unexpected recession negatively impacts both the probability of taking credit and the volume of credit taken. Malmendier and Nagel (2016) show that past exposure to higher inflation realizations predicts higher fixed-rate mortgage balances. Last, a number of studies examine the broader socio-economic consequences of sovereign default, mainly using aggregate data (e.g., Asonuma and Trebesch, 2016; Reinhart and Rogoff, 2010). Yet, to the best of our knowledge there is no other study that examines the effects of such an adverse event on household borrowing behaviour.

## 2   Data

### 2.1   Sovereign default and sovereign debt

We use data from the Bank of Canada-Bank of England Sovereign Default Database which we cross-check using Reinhart and Rogoff (2009) to determine the year of the first occasion of sovereign default over the period during which immigrants in our sample arrived in the United States. These datasets give us information not only on the actual default event, but also on the amount of sovereign debt that is in arrears vis-

a-vis the main international creditors, such as the International Monetary Fund (IMF), the International Bank for Reconstruction and Development (IBRD), the International Development Association (IDA), and the Paris Club. Appendix Table 1 reports this information.

In the main analysis, we adopt a binary measure of sovereign default. Thereby, the main explanatory variable in the paper is an indicator variable equal to one if the immigrant arrived in the United States after a sovereign default took place in their country. Table 1 reports that around 48 percent of the immigrants in the sample came to the United States after their country experienced a sovereign default. In additional tests, we also account for the size of the shock by incorporating information on the amount of sovereign default in arrears.

## 2.2 Other country-level data

We also examine the role of a number of other features of the financial and economic environment in the country of the immigrant's origin. Table 1 provides summary information about these variables. Data on sovereign debt as a share of GDP come from the IMF's International Financial Statistics (IFS). This allows us to control for the effect of sovereign indebtedness on borrower behavior, controlling for whether the country experienced an actual sovereign default or not. High sovereign debt absent default may have the opposite effect to a default, as in the former case the country (and its citizens) may reap the benefits of sovereign indebtedness (such as increased public investment) without incurring the costs thereof (e.g., in the form of debt restructuring and subsequent austerity).

Furthermore, we make use of standard country-level measures of financial development. These include private credit as a share of GDP and stock market capitalization as a share of GDP. These variables come from the Financial Structure Database by Beck et al. (2000; last updated in September 2019). By providing ex-post risk sharing,

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higher levels of domestic credit development may dampen the effect of a financial crisis, such as one triggered by a sovereign default. The same applies for equity market development, as stock markets have been shown to serve as a "spare tyre" during systemic crises (Levine et al., 2016).

## 2.3  Individual data

The micro level data that we use come from the 2004 Survey on Income and Program Participation (SIPP), which is a nationally representative survey of U.S. households conducted by the U.S Census Bureau. As is standard in the literature, the sample we analyze is restricted to immigrants who are over 18 years old. This gives us an initial total of 12,412 individuals from a total of 92 countries of origin. We do not restrict the sample in terms of date of arrival to the United States, but we do account for the number of years since the individual moved to the US. We also incorporate information on the state of residence. These variables are drawn from confidential, internal SIPP files. We also include demographic information on gender, age, race, marital and employment status, fertility, and education. Furthermore, we include financial information on each individual (debt, income, assets, and overall indebtedness).

Tables 2 and 3 summarize these data. In Table 2 Panel A, we report demographic characteristics in the full sample. The median immigrant in the SIPP sample is female, 44-years old, white, non-married, employed, has one child and 13 years of schooling, and moved to the US 17 years ago. Table 2 Panel B gives the same summary information after splitting the individuals into four immigrant groups: (1) immigrants from countries that experienced a sovereign default, (2) immigrants from countries that did not experience a sovereign default, (3) immigrants from countries that experienced a sovereign default, but the immigrant arrived to the US before that, and (4) immigrants from countries that experienced a sovereign default, and the immigrant arrived to the US afterwards.

One important comparison regards the characteristics of immigrants from countries that experienced a sovereign default, but the immigrant arrived in the US before that (the 'control' group), and immigrants from countries that experienced a sovereign default and the immigrant arrived in the US afterwards (the 'treatment' group). This comparison is summarized by the p-values that are reported in the last column of Table 2A. For the sample of individuals from countries that experienced a sovereign default, each characteristic is regressed on an indicator variable that is equal to one if the individual arrived after the default and to zero otherwise. The p-value in the last column of the table is for the t-test of whether the coefficient on this indicator variable is significantly different from zero. The regressions also include country-of-origin, state of residence, and period of arrival to the US dummies (as in our baseline specification that we discuss below).

The results of this exercise indicate that with the exception of age, the key demographic variables of interest do not differ significantly depending on whether an individual arrived after or before the sovereign default. This is important because any differences in the propensity to borrow between two types of immigrants may be driven by changes in the composition of immigrants over time. The evidence reported in Table 2 Panel B strongly suggests that such concerns are misplaced: immigrants do not appear to differ – based on demographic characteristics – across time, especially before and after the sovereign default in their home country.

Table 3 summarizes the information on the respondent's financial situation. The main dependent variable is the immigrant's propensity to accumulate personal debt, both on the extensive and on the intensive margin. The data suggest that indebtedness is relatively widespread among immigrants. 73.1 percent of the immigrants in the sample have some form of debt, and conditional on having debt, the median immigrant has total debt amounting to 22,600 USD. To get a fuller picture of the respondent's finances, we also look at other financial characteristics. The data suggest that the same individual has an income of 1,473 USD, and 1,000 USD worth of assets.

We also look at other measures of indebtedness, namely debt in ratio to total assets or total income. The evidence shows that the median debt-to-assets ratio is 9.6, and the median debt-to-income ratio is 15.2.

# 3    Empirical model and identification

We investigate whether experiencing a sovereign default affects an individual's decision to hold personal debt. In particular, we consider three margins of borrowing decisions: (i) extensive margin (i.e., probability of holding any debt); (ii) intensive margin (i.e., the amount of debt outstanding); (iii) margin of indebtedness (i.e., indicators of debt burden such as ratio of debt to assets and income). Moreover, we distinguish between total as well as secured and unsecured debt.

To that end, we estimate the following linear model:

$$Debt_{ics} = \beta_1 Default_{ic} + \beta_2 X_{ics} + \phi_c + \theta_s + \varepsilon_{ics} \tag{1}$$

The variable $Debt_{ics}$ represents the debt holdings by consumer $i$ who emigrated from country $c$ and lives in U.S. state $s$. In our specifications we use different variables to capture each of the three margins of decisions under study. The first is a dummy variable that is equal to one if individual $i$ has borrowed from financial markets and as a result holds any personal debt, and to zero otherwise. The second is the (natural logarithm of) individual $i$'s total outstanding debt. The third is one of two popular measures of indebtedness defined for each consumer, such as loan-to-value (LTV) and debt-service-to-income (DSR) ratios. In our case, we divide total debt by total assets or by total income.

The variable $Default_{ic}$ measures each respondent's exposure to sovereign default. It is equal to one if individual $i$ experienced a sovereign default in her country of origin $c$ prior to emigrating to the U.S., and to zero otherwise. For example, a consumer $i$

from Argentina who emigrated to the US in 1983 experienced the sovereign default episode in 1982 and is assigned a value of 1, while her compatriot $j$ who emigrated in 1981 did not, and is assigned a value of 0. As is standard in the literature, we use in our estimation the sample of immigrants aged 18 years or more who originally come from one of the 92 countries (excluding the U.S. states and territories) that are represented in the 2004 vintage of the SIPP dataset. (Some of the) immigrants coming from 36 of these countries had experienced a sovereign default episode prior to their arrival to the U.S.

The vector $X_{ics}$ incorporates a standard set of socio-economic characteristics that studies in household finance typically account for (see, e.g., Christelis et al., 2021). In particular, it includes controls for gender, age, race, marital status, employment status, number of children, education as well as household total income and total assets (both by means of natural logarithm). Moreover, we include the number of years since the individual moved to the U.S. to account for possible differences in assimilation. The inclusion of these observable characteristics controls for standard individual characteristics that may have an independent effect on the propensity to acquire and accumulate debt. It also makes it less likely that the estimated coefficient on exposure to a sovereign default will be biased due to a correlation between unobserved individual attributes and unobservable such attributes, like ability and risk taking, which tend to be correlated with observable characteristics such as education or finances.

In addition, all of the specifications include country-of-origin dummies $\phi_c$. As also discussed by Osili and Paulson (2014), this is important for two distinct reasons. First, there may be country-of-origin factors, that do not vary over time, and may influence household demand for debt. These include cross-country differences in the level of financial and economic development, the prevalence of private indebtedness, the quality of institutions and law enforcement that ensure the rights of both creditors and debtors, as well as long-standing cultural beliefs that may make the accumulation of debt more or less acceptable. Any of these country characteristics could be correlated with the

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experience of sovereign default. By including country-of-origin dummies, we ensure that the effect of a sovereign default on the individual who experienced it is measured holding country-of-origin heterogeneity fixed. Second, by including country-of-origin dummies in the specification, we make sure that the borrowing decisions of those individuals who have experienced a sovereign default (the "treated group") is compared with that of individuals from the same country of origin who have not experienced a sovereign default, making them an appropriate "control group".

We also include in the specifications state-of-residence dummies $\theta_s$. These capture geographic variation in economic conditions and the supply of financial services. In addition, the state-of-residence fixed effects rule out bias due to unobserved characteristics that influence an individual's location choice in the host country that might also be correlated with having experienced a sovereign default. For example, such bias may arise because individuals who were exposed to a sovereign default choose to live in states where there are many other immigrants with similar experiences. In this fashion, immigrants may be reinforcing each other's beliefs about the economic benefits and risks of holding debt.

We note that in the main regression specification, the "control" group consists of all immigrants, including those from countries that did not experience a sovereign default. The main reason for this choice is that we want to use a representative sample of immigrants to the US, and that we need enough observations to also identify heterogeneous treatment effects that shed light on the underlying mechanism. At the same time, this approach may be inflating the control group unnecessarily and making our estimates prone to omitted variable bias due to differences in the composition of immigrants across countries and time, in particularly in terms of unobservable characteristics. To alleviate these concerns, in robustness tests we use a version of Equation (1) where we only compare immigrants from the same country who arrived in the US immediately before and immediately after the sovereign default. In that way, we have very similar populations of "treatment" and "control" immigrants. While the case can be made,

this test is best suited to tightly identifying the main effect, we do not make this our primary test because the sample is reduced to only 6% of its original size. Therefore, in our main specification we use the entire sample of immigrants, regardless of when they arrived to the US and if they are coming from a country that experienced a sovereign default or not. This is also in line with the empirical approach in Osili and Paulson (2014) who retain in their sample the immigrants from countries without a banking crisis to facilitate a sufficient number of observations.

Finally, we double cluster the standard errors by country of origin and period of arriving to the U.S. This allows us to account for the plausible correlation across observations for individuals who come from the same country and migrated during the same period.

The coefficient of interest is $\beta_1$. A negative coefficient $\beta_1$ would imply that all else equal, the propensity to borrow is lower by immigrants who experienced a sovereign default, relative to similar immigrants from the same home country living in the same state and facing the same credit supply conditions who, however, did not experience a sovereign default.

# 4   Empirical evidence

In this section, we report our empirical findings. We first present the main results on borrowing decisions on the extensive and on the intensive margin. Subsequently, we present extensions where we examine differences between secured and unsecured debt, as well as household indebtedness, and evaluate the robustness of our baseline findings. Finally, we look at the potential mechanisms through which experiencing sovereign default influences borrowing behavior.

## 4.1 Main result

The baseline findings on the role of experience of sovereign default on the extensive and intensive margins of borrowing are reported in Tables 4 and 5, respectively. In Table 4, the dependent variable in Equation (1) is a dummy variable equal to 1 if the immigrant has any debt and 0 otherwise. We saturate the model gradually with individual controls and with fixed effects. In column (1), where we estimate a specification without wealth and income controls and without state-of-residence fixed effects, we find that individuals who have experienced a sovereign default are 9.7 percentage points less likely to hold any debt than otherwise similar immigrants from the same country who came to the U.S. before the sovereign default. In column (2), we add state-of-residence fixed effects, to account for state-specific factors. These can be related to the local credit supply – e.g., the ease with which local banks extend credit to those who demand it – or to local borrowing attitudes. We find that the point estimate on $\beta_1$ remains broadly unaffected.

Finally, in column (3)) we report the preferred specification where we also include wealth and income controls. We continue finding that immigrants who experienced sovereign default are less likely to hold any debt, by 5.8 percentage points. Given a sample prevalence of 73.1% (see Table 3), this implies a 7.1% lower overall debt incidence. In all three specifications, the estimated effect is sizeable and statistically significant (at least at the 5% statistical level).

In Table 5, we look at the intensive margin. Consequently, the dependent variable in equation (1) is the natural logarithm of total debt. The sample is now reduced to those consumers who have any non-zero debt; as a result, the number of observations declines by around a quarter. Once again, we saturate the model gradually with individual controls and with fixed effects. In the more parsimonious specification (column (1)), we find that individuals who have experienced a sovereign default hold on average 39.7% lower outstanding debt than otherwise similar individuals from the same country

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of origin who did not experience the default. The coefficient is largely unchanged when we add state-of-residence dummies (column (2)). Finally, when we include wealth and income controls (column (3)), we find that these individuals have 32.1% less outstanding debt. In all three cases, the effect of having experienced a sovereign default on borrowing behaviour is significant at the 1-percent statistical level.

In Appendix Table 2, we report the entire set of results for the demographic and financial variables that we account for. We find that the probability to have any debt is inverse-U-shaped in age, peaking at 32 years.[1] Married individuals are more likely to have outstanding debts, and the likelihood of borrowing also increases with the number of children. More educated immigrants, employed (relative to unemployed) immigrants, and immigrants who have stayed in the US for longer are also more likely to hold debt. Finally, debt prevalence correlates positively with total assets. At the same time, gender and race do not appear to be statistically associated with borrowing behaviour. The effect of demographic and financial factors is very similar in the case of the extensive (column (1)) and the intensive (column (2)) margin.

In Appendix Table 3, we address two possible concerns with our main specification. First, the control group includes, as discussed, immigrants from countries that never defaulted. Second, the treatment and the control group, even when emigrating to the US form the same country, may be drawn from very different distributions. Although the summary statistics reported in Table 2, Panel B suggests that this concern is not supported by the evidence, it may still be the case that those who emigrated before the default are quite different than those who emigrated after in unobservable ways. While there is no perfect strategy to address this concern, we now restrict the sample only to immigrants from countries that experienced a sovereign default, and only to those who arrived in the US immediately before and immediately after the event.[2] As

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[1]Note that the average age in the sample of immigrants is 44; see Table 2.

[2]The SIPP reports the exact year of the immigrant's arrival to the US after 1999, a 2-year period between 1979 and 1998, a 4-year period 1967 and 1978, a 5-year period between 1962 and 1966, and a 7-year period between 1955 and 1961. Therefore, the "before" and "after" periods in this exercise

a result, the number of observations fall to 532 when we study the extensive margin (column (1)) and to 406 when we study the extensive margin (column (2)). While this approach allows for a tighter identification, the significant reduction in sample size and associated loss of statistical power is the principle reason why we only report these results in robustness tests. Nevertheless, even when running this considerably more restrictive specification, we find that those consumers who experienced a sovereign default are less likely to have any debt (column (1)) and if they do, their debt is lower (column (2)), compared with consumers from the same country who did not experience such an event but arrived in the U.S. at more or less the same time.

Finally, in Appendix Table 4 we show that the main results of the analysis still go through when we control for the interaction of country of origin and state of residence dummies, thereby comparing consumers who emigrated from the same country and settled in the same state.

## 4.2   Secured versus unsecured debt

We probe further into these baseline findings by exploring whether there are any differences in the propensity to hold secured and unsecured debt. From the point of view of the creditor, unsecured debt is more risky, and in general creditors tend to be more cautious when granting unsecured loans (Boot and Thakor, 1994). The reason is that if the borrower goes into default, the creditor may seize the underlying asset only when the loan is secured with adequate collateral.

Therefore, repeating our analysis by type of debt provides insights on whether our baseline results are mainly due to a demand-side mechanism or they also reflect a change in credit standards that is triggered by the incidence of sovereign default. For example, one may argue that banks introduce tougher credit standards to immigrants who came to the U.S. from a country after experiencing a sovereign default, compared

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are not necessarily of equal length.

to their fellow immigrants who had migrated prior to the default episode. If this is the case, one should find that our baseline findings are mainly driven from differences in the unsecured rather than secured debt as banks would be, other things equal, much less willing to grant non-collateralised loans to those immigrants who have lived through the sovereign default.

We report the estimates by type of debt in Table 6. We observe that individuals who experienced a sovereign default are less likely to have both secured and unsecured debt. This effect is observed both on the extensive and on the intensive margin and is significant at least at the 5-percent statistical level. If anything, the estimated effect is stronger in relative terms in the case of secured debt. This suggests that the effect we document is not necessarily driven by changes in credit standards, and it is likely driven by lower demand for debt by immigrants who experienced a sovereign default.

## 4.3   Debt burden

In Table 7, we undertake another extension where instead of debt, we look at relative indebtedness. The propensity to borrow as well as the level of outstanding debt may correlate with the financial position of the household, but at the same time it does not tell us much about the debt burden in servicing such debts.

To address this question, we utilise two popular indicators of indebtedness. The first is the ratio of total debt to total assets (LTV). The second is the ratio of total debt to total income (DIR). As in the case of debt, income, and assets, these ratios are skewed (see Table 3), and we use the natural logarithm of the respective ratios as the dependent variable. Once again, we estimate the regression on the sub-sample of immigrants who have strictly positive outstanding debt.

The evidence reported in column (1) of Table 7 suggests that immigrants who experienced a sovereign default do not only hold less debt, but they also choose to service a lower debt burden. Immigrants who experienced a sovereign default have a

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25% lower ratio of debt-to-assets, relative to immigrants from the same country who did not. The evidence in column (2) suggests that these same immigrants have a 45% lower ratio of debt-to-income. In both cases, the point estimates are precisely estimated (significant at least at the 10% level of confidence).

These results corroborate the baseline findings on the longer lasting effects of a disturbing experience on borrowing behaviour. Even in a new economic environment with new credit access opportunities where borrowing may help immigrants to utilise their potential in full, those who lived through a sovereign default crisis are averse to assuming a higher debt burden.

# 5 Mechanisms and heterogeneity

## 5.1 Sovereign debt versus sovereign default

The evidence so far is consistent with the idea that a sovereign default is an adverse economic experience which has long-lasting discouragement effects on consumer borrowing behaviour. Consequently, when individuals who experience a sovereign default move abroad, they are significantly less likely to accumulate debt than similar individuals who did not experience a sovereign default, including those who live in the same local market in the host country and come from the same country of origin but did not experience the default episode.

A natural question is whether the adverse effect we estimate mainly reflects the experience of growing up in a country with traditionally high levels of sovereign debt or from having experienced the default episode pe se and the economic hardship and sanctions that usually accompany it. While governments typically default when the public debt reaches unsustainable levels, often governments do not default even when they are highly indebted. This allows us to distinguish between sovereign indebtedness

and sovereign default, and to shed more light on the underlying mechanism.

In view of the above, we modify equation (1) to include a measure of the sovereign debt-to-GDP ratio in the country of origin immediately before every immigrant arrived to the U.S. (i.e., irrespective of whether this was a pre- or post-default episode, if any). Table 8 reports these results. The evidence makes it clear that immigrants from more indebted countries are on average more likely to hold debt (column (1)), with the effect being marginally insignificant at the 10% statistical level. However, conditional on the immigrant having borrowed, the level of outstanding debt is not relatively higher (column (2)).

Importantly, these results are broadly similar when controlling in addition for whether the immigrant experienced or not an actual sovereign default (columns (3)) and (4)). In other words, we continue finding that having experienced such a disturbing event is associated with a lower propensity to borrow once the immigrant has settled in the U.S. Yet, high sovereign debt levels at the country of origin, when the home government did not have to default on its debt, has the opposite effect, at least in the case of the extensive margin of borrowing.

Another demand-side mechanism that has been recently emphasized, is that consumers are more willing to borrow in order to emulate the living standards of their peers and thus "keep up with the Joneses" by assuming more debt (Georgarakos et al., 2014; Agarwal et al., 2020). In our set up, such a mechanism would serve to attenuate our baseline finding. That is, the propensity of local non-immigrants or longer-staying immigrants to live on credit and improve their living conditions should induce a similar borrowing behavior among the more recent immigrants who likely experienced the sovereign default.

Taken together, our results strongly point to a cultural mechanism at work. When consumers are familiar with an environment of high indebtedness but have not witnessed the sanctions and the setbacks of sovereign default, they are more prone to

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borrow and to become indebted. However, when governments are forced into costly default and consumers have witnessed these adverse economic episodes, they are discouraged from taking up more debt even in a new economic environment.

## 5.2 The role of financial markets in the country of origin

We now examine whether the effect of experiencing a sovereign default on borrowing behavior is not just an artefact of other country-of-origin factors, such as the extent of financial development. These estimates are presented in Table 9. In each regression, we include the main explanatory variable denoting whether the individual has experienced a sovereign default along with two variables that measure financial development at the time the individual immigrated to the U.S.

The first one is average credit to the private sector, normalized by GDP. This variable is typically used as a measure of broad financial development (e.g., Rajan and Zingales, 1998; Beck et al., 2000a,b). The second variable is average stock market capitalization, normalized by GDP. This variable is used to measure equity market development (Levine and Zervos, 1998), and is an important factor in spare-tyre theories of financial development (Levine et al., 2016).

We first examine how the impact of living through a sovereign default is affected by the two types of behavior on the intensive margin (column (1)). We find that individuals who came from countries with higher level of financial development, proxied by credit to the private sector, are more likely to borrow and as a result have any debt. This confirms the intuition that financial development promotes borrowing. The effect of stock market development goes in the opposite direction, however, suggesting perhaps unsurprisingly that banks may be more important for the consumers in our sample than capital markets when it comes to borrowing. The effect on borrowing behaviour of having experienced a sovereign default, while negative, is not significant in this specification.

When we examine this question on the intensive margin (column (2)), we find that the effect on borrowing behavior of having experienced a sovereign default is once again significant, at the 1% statistical level. In numerical terms, it is broadly similar to that reported in Table 5, column (3). Once again, individuals who came from countries with higher level of financial development, are more likely to borrow and as a result have any debt, but in this case, the effect is insignificant.

The estimates presented in Table 9 suggest that financial development in the country of origin can have an important independent effect on borrowing behavior. While immigrants to the U.S. who experienced a sovereign default in their country of origin are prone to accumulating less debt than immigrants from the same country who did not live through a sovereign default, financial development – especially in banking markets – appears to have the opposite effect.

## 5.3 Individual heterogeneity

Given that we use micro-level data in our analysis, we can investigate further how our baseline results are likely differ across demographic groups. In Table 10, we examine how the impact of a banking crisis varies with some key demographic characteristics, such as age, race, marital status, fertility, and education. We do so both for the extensive margin (Panel A) and for the intensive margin (Panel B) of borrowing. These estimates help to gain some additional insights into the channels through which sovereign crises and defaults come to influence behavior, and to also provide some further robustness checks on our baseline results. These estimates rely on comparisons among post-default immigrants, so they are not biased by potential selection between pre- and post-default migrants.

We first examine how the impact of experience with a sovereign default varies with age. We find that age implies a dampening effect: individuals who experienced a sovereign default have lower debt, but this effect declines with age (column (1)).

This is the case both on the extensive and on the intensive margin. Such a trend is consistent with the underlying mechanism that we uncover as the older an immigrant is the longer the time that has elapsed since the experience of sovereign default and the less the associated emotional distress. At the same time, because we control for time in the U.S., this is not just an artefact of having a better credit history or being better assimilated, but reflects an age effect whereby experiencing a default at a younger age leaves a stronger impression and thus moves preferences more forcefully.

Next, we find that conditional on having experienced a sovereign default, white immigrants are relatively more likely to have debt (column (2)). Given that some studies have found traces of racial discrimination in borrowing markets (e.g., Blanchflower et al., 2003), our estimates may point to the presence of supply-side factors. However, this is not the case on the intensive margin (Panel B), suggesting that any such factors have at most a limited effect.

We do not find heterogeneous responses due to marital status (column (3)). At the same time, immigrants with more children who have experienced a sovereign default are relatively less likely to borrow, both on the extensive and on the intensive margin (column (4)). Typically, families with more children are more likely to become indebted, especially when it comes to mortgages (see also Table A2). However, given that our evidence is consistent with the notion that the emotional stress induced by sovereign default discourages borrowing, it would be natural to assume that such effects will be stronger for those with more children as they would likely choose to protect their offspring from inheriting debts.

Last, we find that education has a dampening effect on borrowing behavior, at least on the extensive margin (Panel A, column (5)). In particular, we find that having lived through a sovereign default has a significantly lower impact on immigrants with (at least) some college than on their less well-educated counterparts. More educated individuals, as they compare to less educated, typically face steeper future income profiles and lower background income risk. Moreover, they are likely to be better aware

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of borrowing opportunities, shop around for the best credit terms, and appreciate the benefits of borrowing in a new economic environment against their future earnings to utilise their potential. Given that all these factors are conducive to higher demand for debt, it is natural to estimate a relatively less strong effect on the borrowing behaviour of the more educated due to the experience of sovereign default. Still, high levels of formal education are not sufficient to fully offset the strong discouragement effects of sovereign default on borrowing behaviour.

# 6 Conclusion

A decade of easy money has come to a crashing end as central banks respond to inflationary pressures. As a result, the risk of sovereign default has increased, especially in emerging markets, with potentially dire effects for governments and ultimately households. It is therefore quite topical to revisit the question of the long-term economic consequences of sovereign default and the links between public and households debts more generally. In this paper, we study how living through a sovereign default episode affects borrowing behavior. To identify the effect of interest, we compare immigrants to the U.S. from the same country of origin, some of whom migrated before and some after the sovereign default itself.

Our main finding is that those who have lived through a sovereign default are less likely to borrow, both on the extensive and on the intensive margin. Numerically, such individuals are around 7 percent less likely to have any debt, and conditional on having debt, it is around one-third lower, compared with similar individuals from the same country who did not experience a sovereign default. We also find that for such individuals, the propensity to borrow against collateral is particularly affected, and relative indebtedness is lower. In the absence of default, high levels of sovereign debt in the country of origin have a positive effect on borrowing behavior. Our results thus point to a credit-demand, rather than a credit-supply, effect whereby living through

the adverse consequences of markets' punishing financial profligacy, individuals are less willing to go into debt themselves. At the same time, this effect declines with age and with education, suggesting that the trauma of adverse financial experience decays over time (e.g., Malmendier and Nagel, 2011), and that higher education is perceived as insurance against background risk.

Our evidence is relevant in two ways. First, while a number of studies have examined the long-term implications of turbulence in financial markets on consumer saving and investment behavior, we appear to be the first to link long-term patterns of consumer borrowing behavior to disturbances in sovereign bond markets. This is important because it enriches our understanding of how sovereign stress depresses long-term economic growth. Second, the propensity of consumers to borrow in order to smooth consumption over the life cycle and to hedge against idiosyncratic shocks is a fundamental tenet of financial development. By showing that experiencing sovereign default reduces the propensity to borrow in a new environment, we suggest a new mechanism whereby sovereign stress affects adversely financial markets, beyond the well-established notion of the doom loop between sovereign and bank risk (e.g., Farhi and Tirole, 2018; Bofondi et al., 2018). In times of rising government indebtedness throughout the world, our results provide one more argument to the importance of putting to rest concerns over sovereign debt sustainability.

# References

Agarwal, S, Mikhed, V and Scholnick, B. (2020), "Peers' Income and Financial Distress: Evidence from Lottery Winners and Neighboring Bankruptcies", Review of Financial Studies, 33(1), pp. 433-472.

Ampudia, M. and Ehrmann, M. (2017), "Macroeconomic Experiences and Risk Taking of Euro Area Households", European Economic Review, 91(3), pp. 146-156.

Asonuma, T. and Trebesch, C. (2016), "Sovereign Debt Restructurings: Preemptive or Post-Default," Journal of the European Economic Association, 14(1), pp. 175–214.

Beck, T., Demirgüç-Kunt, A. and Levine, R. (2000, last updated September 2019), "A New Database on the Structure and Development of the Financial Sector", World Bank Economic Review, 14(3), pp. 597–605.

Beck, T., Levine, R. and Loayza, N. (2000a), "Finance and the Sources of Growth", Journal of Financial Economics, 58(1-2), pp. 261-300.

Beck, T., Levine, R. and Loayza, N. (2000b), "Financial Intermediation and Growth: Causality and Causes", Journal of Monetary Economics, 46(1), pp. 31-77.

Bharath, S. and Cho, D. (2023), "Do Natural Disaster Experiences Limit Stock Market Participation?", Journal of Financial and Quantitative Analysis, 58(1), pp. 29-70.

Black, S. and Strahan, P. (2002), "Entrepreneurship and Bank Credit Availability", Journal of Finance, 57(6), pp. 2807-2833.

Blanchflower, D., Levine, P. and Zimmerman, D. (2003), "Discrimination in the Small-Business Credit Market", Review of Economics and Statistics, 85(4), pp. 930-943.

Boot, A. and Thakor A. (1994), "Moral Hazard and Secured Lending in an Infinitely Repeated Credit Market Game", International Economic Review, 35(4), pp. 899-920.

Bofondi, M., Carpinelli, L. and Sette, E. (2018), "Credit Supply During a Sovereign Debt Crisis", Journal of the European Economic Association, 16(3), pp. 696–729.

Christelis, D., Ehrmann, M. and Georgarakos, D. (2021), "Exploring Differences in Household Debt across the United States and Euro Area Countries", Journal of Money, Credit and Banking, 53(2-3), pp. 477-501.

Cotofan, M., Cassar, L., Dur, R. and Meier, S. (2023), "Macroeconomic Conditions When Young Shape Job Preferences for Life", Review of Economic and Statistics, 105(2), pp. 467-473.

Ding, Y., Min, S., Wang, X. and Yu, X. (2022), "Memory of Famine: The Persistent Impact of Famine Experience on Food Waste Behavior", China Economic Review, 73.

Ersan, O. and Kumar, A. and Simsir, S. (2023), "Prenatal Stress and Portfolio Decisions During Adulthood", Mimeo.

Fajardo, J. and Dantas, M. (2018), "Understanding the Impact of Severe Hyperinflation Experience on Current Household Investment Behavior", Journal of Behavioral and Experimental Finance, 17, pp. 60-67.

Farhi, E. and Tirole, J. (2018), "Deadly Embrace: Sovereign and Financial Balance Sheets Doom Loops." Review of Economic Studies, 85(3), pp. 1781-1823.

Georgarakos, D., Haliassos, M. and Pasini, G. (2014), "Household Debt and Social Interactions", Review of Financial Studies, 27(5), pp. 1404-1433.

Gomez-Salvador, R., Lojschova, A. and Westermann, T. (2011), "Household Sector Borrowing in the Euro Area", ECB Occasional Paper 125.

Guiso, L., Sapienza, P. and Zingales, L. (2004), "The Role of Social Capital in Financial Development", American Economic Review, 94(3), 526–556.

King, R. and Levine, R. (1993), "Finance and Growth: Schumpeter Might be Right", Quarterly Journal of Economics, 108(3), pp. 717-737.

Knüpfer, S. and Rantapuska, E. and Sarvimäki, M. (2017), "Formative Experiences and Portfolio Choice: Evidence from the Finnish Great Depression", Journal of Finance, 72(1), pp. 133-166.

Laudenbach, C., Malmendier, U. and Niessen-Ruenzi, A. (2020), "The Long-lasting Effects of Experiencing Communism on Attitudes towards Financial Markets", CEPR Discussion Paper 14939.

Levine, R., Lin, C. and Xie, W. (2016), "Spare Tire? Stock Markets, Banking Crises, and Economic Recoveries", Journal of Financial Economics, 120(1), pp. 81-101.

Levine, R. and Zervos, S. (1998), "Stock Markets, Banks, and Economic Growth", American Economic Review, 88(3), pp. 537-558.

Malmendier, U. (2021), "Exposure, Experience, and Expertise: Why Personal Histories Matter in Economics", Journal of the European Economic Association, 19(6), pp. 2857-2894.

Malmendier, U. and Nagel, S. (2011), "Depression Babies: Do Macroeconomic Experiences Affect Risk-Taking?" Quarterly Journal of Economics, 126(1), pp. 373–416.

Malmendier, U. and Nagel, S. (2016), "Learning from Inflation Experiences", The Quarterly Journal of Economics, 131(1), pp. 53-87.

Malmendier, U. and Shen, L. (2023), "Scarred Consumption", American Economic Journal: Macroeconomics, forthcoming.

Malmendier, U. and Wellsjo, A. (2023), "Rent or Buy? Inflation Experiences and Homeownership Within and Across Countries", Journal of Finance, forthcoming.

Niculaescu, C., Sangiorgi, I. and Bell, A. (2023), "Does Personal Experience with COVID-19 Impact Investment Decisions? Evidence from a Survey of US Retail Investors", International Review of Financial Analysis, 88.

Ornelas, J. and Fajardo, J. (2020), "Personal Experiences in the Labour Market and Household Credit Behaviour", mimeo.

Osili, U. and Paulson, A. (2014), "Crises and Confidence: Systemic Banking Crises and Depositor Behavior", Journal of Financial Economics, 111(3), pp. 646-660.

Rajan, R. and Zingales, L. (1998), "Financial Dependence and Growth", American Economic Review, 88(3), pp. 559-586.

Reinhart, C. and Rogoff, K. (2010), "Growth in a Time of Debt", American Economic Review, 100(2), pp. 573-578.

Van Der Cruijsen, C., De Haan, J., Jansen, D.-J. and Mosch, R. (2012), "Households' Decisions on Savings Accounts After Negative Experiences with Banks During the Financial Crisis," Journal of Consumer Affairs, 46(3), pp. 436-456.

Zeldes, S. (1989), "Consumption and Liquidity Constraints: An Empirical Investigation", Journal of Political Economy, 79(2), pp. 305–346.

Table 1. Summary statistics, home-country variables

| Variable | # | Mean | Median | St. dev. | Min | Max |
|---|---|---|---|---|---|---|
| Sovereign default | 12,412 | 0.454 | 0 | 0.498 | 0 | 1 |
| Sovereign debt / GDP | 3,108 | 0.175 | 0.117 | 0.171 | 0.002 | 1.642 |
| Private credit / GDP | 9,331 | 0.287 | 0.200 | 0.264 | <0.001 | 3.859 |
| Stock market capitalization / GDP | 5,164 | 0.242 | 0.190 | 0.305 | <0.001 | 3.734 |

*Notes*: 'Sovereign default' is a dummy variable equal to one if the respondent's home country had experienced a sovereign default prior to his or her arrival in the US. 'Sovereign debt / GDP' is average sovereign debt, normalized by GDP, in the respondent's home country during the decade prior to his or her arrival in the US. 'Private credit / GDP' is average credit to the private sector, normalized by GDP, in the respondent's home country during the decade prior to his or her arrival in the US. 'Stock market capitalization / GDP' is average stock market capitalization, normalized by GDP, in the respondent's home country during the decade prior to his or her arrival in the US. The sample is restricted to those born in a foreign country.

Table 2. Summary statistics, individual demographics characteristics

Panel A. Full sample

| Variable | # | Mean | Median | St. dev. | Min | Max |
|---|---|---|---|---|---|---|
| Male | 9,016 | 0.473 | 0 | 0.499 | 0 | 1 |
| Age | 9,016 | 43.866 | 43.866 | 15.579 | 18 | 85 |
| Non-white | 12,412 | 0.490 | 0 | 0.500 | 0 | 1 |
| Married | 12,412 | 0.466 | 0 | 0.499 | 0 | 1 |
| Unemployed | 9,016 | 0.298 | 0 | 0.458 | 0 | 1 |
| # children | 9,016 | 1.071 | 1 | 1.239 | 0 | 8 |
| Years of schooling | 9,016 | 12.525 | 13 | 3.890 | 0 | 20 |
| Years since move to US | 12,412 | 16.613 | 17 | 15.491 | 0 | 50+ |

Panel B. By country of origin

| | Mean | | | | |
|---|---|---|---|---|---|
| | No-default in home country | Default in home country | Default in home country, did not experience | Default in home country, experienced | P-value of F-test pre-default / post-default |
| Male | 0.449 | 0.486 | 0.464 | 0.496 | 0.682 |
| Age | 48.095 | 41.419 | 52.461 | 36.541 | 0.026 |
| Non-white | 0.663 | 0.305 | 0.278 | 0.317 | 0.798 |
| Married | 0.328 | 0.614 | 0.612 | 0.614 | 0.568 |
| Unemployed | 0.328 | 0.281 | 0.346 | 0.253 | 0.939 |
| # children | 0.771 | 1.245 | 0.915 | 1.391 | 0.530 |
| Years of schooling | 13.858 | 11.754 | 11.805 | 11.732 | 0.165 |
| Years since move to US | 18.783 | 15.239 | 28.312 | 10.026 | 0.000 |

*Notes*: 'Male' is a dummy variable equal to one if the respondent is male. 'Age' denotes the respondent's age, in years. 'Non-white' is a dummy variable equal to one if the respondent is not white. 'Married' is a dummy variable equal to one if the respondent is married. 'Unemployed' is a dummy variable equal to one if the respondent is currently unemployed. '# children' denotes the number of respondent's children. 'Years of schooling' denotes the respondent's number of years of formal education. 'Years since move to US' denotes the number of years since the respondent moved to the United States. The sample is restricted to the first wave of the 2004 Survey on Income and Program Participation (SIPP) with wealth information, to individuals 18 years of age and over, to those who report living in a U.S. county. Summary statistics are from the public version of the 1996 SIPP. *F*-tests in the last column test whether the characteristic in question differs pre- and post- crisis among individuals from the same country. For a sample of individuals from crisis countries, a regression is run for each characteristic on an

indicator variable equal to one if the individual arrived post-crisis. The reported $F$-test statistic is for whether the coefficient on this indicator variable is equal to zero. Each regression also includes country-of-origin and decade-of-migration fixed effects.

Table 3. Summary statistics, individual financial characteristics

| Variable | # | Mean | Median | St. dev. | Min | Max |
|---|---|---|---|---|---|---|
| Has debt | 9,016 | 0.731 | 1 | 0.443 | 0 | 1 |
| Debt ('000) | 8,997 | 89.124 | 22.600 | 147.679 | 0 | 5,806.500 |
| Total income ('000) | 9,016 | 2.285 | 1.473 | 3.509 | 0 | 56.534 |
| Total assets ('000) | 9,016 | 15.798 | 1 | 112.887 | 0 | 8788.436 |
| Debt / Assets ('000) | 6,557 | 383.597 | 9.615 | 5,805 | 0 | 259,000 |
| Debt / Income ('000) | 7,865 | 3,035.8 | 15.228 | 23,221 | 0 | 470,600 |

*Notes*: 'Has debt' is a dummy variable equal to one if the respondent has any debt. 'Debt ('000)' denotes the respondent's debt, in thousands of USD. 'Total income ('000)' denotes the respondent's income, in thousands of USD. 'Total assets ('000)' denotes the respondent's assets, in thousands of USD. 'Debt / Assets ('000)' denotes the respondent's debt normalized by assets, in thousands of USD. 'Debt / Income ('000)' denotes the respondent's debt normalized by income, in thousands of USD. The sample is restricted to those born in a foreign country.

Table 4. Sovereign default in home country and borrowing behavior: Extensive margin

| | Has debt | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| Sovereign default | -0.0972*** | -0.0987*** | -0.0580** |
| | (0.0274) | (0.0268) | (0.0232) |
| Individual demographic controls | Yes | Yes | Yes |
| Individual financial controls | No | No | Yes |
| Country of origin dummies | Yes | Yes | Yes |
| State of residence dummies | No | Yes | Yes |
| R-squared | 0.05 | 0.08 | 0.22 |
| Observations | 8,978 | 8,978 | 8,967 |

*Notes*: The table reports estimates of individual propensity to accumulate personal debt. The dependent variable is a dummy variable equal to one if the respondent has any debt. 'Sovereign default' is a dummy variable equal to one if the respondent's home country had experienced a sovereign default prior to his or her arrival in the US. 'Individual demographic controls' are 'Male', 'Age', 'Age squared', 'Non-white', 'Married', 'Unemployed', '# children', 'Years of schooling', and 'Years since move to US' (see Table 2). 'Individual financial controls' are 'Log (Total income ('000))' and 'Log (Total assets ('000))' (see Table 3). The sample is restricted to those born in a foreign country. The model is estimated using OLS. All regressions include fixed effects as specified. Standard errors clustered at the country of origin-period level are included in parentheses, where ***, **, and * indicate significance at the 1, 5, and 10 percent statistical level, respectively.

Table 5. Sovereign default in home country and borrowing behavior: Intensive margin

| | Log (Debt) | | |
| --- | --- | --- | --- |
| | (1) | (2) | (3) |
| Sovereign default | -0.5047*** | -0.4731*** | -0.3870*** |
| | (0.1032) | (0.1020) | (0.0985) |
| Individual demographic controls | Yes | Yes | Yes |
| Individual financial controls | No | No | Yes |
| Country of origin dummies | Yes | Yes | Yes |
| State of residence dummies | No | Yes | Yes |
| R-squared | 0.07 | 0.11 | 0.21 |
| Observations | 6,560 | 6,560 | 6,560 |

*Notes*: The table reports estimates of individual propensity to accumulate personal debt. The dependent variable is the natural logarithm of the respondent's total debt. 'Sovereign default' is a dummy variable equal to one if the respondent's home country had experienced a sovereign default prior to his or her arrival in the US. 'Individual demographic controls' are 'Male', 'Age', 'Age squared', 'Non-white', 'Married', 'Unemployed', '# children', 'Years of schooling', and 'Years since move to US' (see Table 2). 'Individual financial controls' are 'Log (Total income ('000))' and 'Log (Total assets ('000))' (see Table 3). The sample is restricted to those born in a foreign country. Only respondents with strictly positive debt are included in the regressions. The model is estimated using OLS. All regressions include fixed effects as specified. Standard errors clustered at the country of origin-period level are included in parentheses, where ***, **, and * indicate significance at the 1, 5, and 10 percent statistical level, respectively.

Table 6. Sovereign default in home country and borrowing behavior: Secured vs. unsecured debt

| | Secured debt | | Unsecured debt | |
|---|---|---|---|---|
| | Has debt | Log (Debt) | Has debt | Log (Debt) |
| | (1) | (2) | (3) | (4) |
| Sovereign default | -0.0743*** | -0.6345*** | -0.0677** | -0.5823** |
| | (0.0225) | (0.2331) | (0.0290) | (0.2654) |
| | | | | |
| Individual demographic controls | Yes | Yes | Yes | Yes |
| Country of origin dummies | Yes | Yes | Yes | Yes |
| State of residence dummies | Yes | Yes | Yes | Yes |
| R-squared | 0.23 | 0.15 | 0.14 | 0.10 |
| Observations | 8,967 | 6,550 | 8,967 | 6,550 |

*Notes*: The table reports estimates of individual propensity to accumulate personal debt. The dependent variable is a dummy variable equal to one if the respondent has any secured debt (column (1)), the natural logarithm of the respondent's secured debt (column (2)), a dummy variable equal to one if the respondent has any unsecured debt (column (3)), and the natural logarithm of the respondent's unsecured debt (column (4)). The sample is restricted to those born in a foreign country. 'Sovereign default' is a dummy variable equal to one if the respondent's home country had experienced a sovereign default prior to his or her arrival in the US. 'Individual demographic controls' are 'Male', 'Age', 'Age squared', 'Non-white', 'Married', 'Unemployed', '# children', 'Years of schooling', and 'Years since move to US' (see Table 2). 'Individual financial controls' are 'Log (Total income ('000))' and 'Log (Total assets ('000))' (see Table 3). The sample is restricted to those born in a foreign country. The model is estimated using OLS (columns (1) and (2)) and Tobit (columns (3) and (4)). All regressions include fixed effects as specified. Standard errors clustered at the country of origin-period level are included in parentheses, where ***, **, and * indicate significance at the 1, 5, and 10 percent statistical level, respectively.

Table 7. Sovereign default in home country and borrowing behavior: Indebtedness

| | Log (Debt / Assets) | Log (Debt / Income) |
|---|---|---|
| | (1) | (2) |
| Sovereign default | -0.2472* | -0.4492*** |
| | (0.1275) | (0.1104) |
| Individual demographic controls | Yes | Yes |
| Country of origin dummies | Yes | Yes |
| State of residence dummies | Yes | Yes |
| R-squared | 0.12 | 0.25 |
| Observations | 5,295 | 5,802 |

*Notes*: The table reports estimates of individual propensity to accumulate personal debt. The dependent variable is the natural logarithm of the respondent's debt normalized by assets, in thousands of USD (column (1)), and the natural logarithm of the respondent's debt normalized by income, in thousands of USD (column (2)). The sample is restricted to those born in a foreign country. 'Sovereign default' is a dummy variable equal to one if the respondent's home country had experienced a sovereign default prior to his or her arrival in the US. 'Individual demographic controls' are 'Male', 'Age', 'Age squared', 'Non-white', 'Married', 'Unemployed', '# children', 'Years of schooling', and 'Years since move to US' (see Table 2). 'Individual financial controls' are 'Log (Total income ('000))' and 'Log (Total assets ('000))' (see Table 3). The sample is restricted to those born in a foreign country. The model is estimated using OLS (columns (1) and (2)) and Tobit (columns (3) and (4)). All regressions include fixed effects as specified. Standard errors clustered at the country of origin-period level are included in parentheses, where ***, **, and * indicate significance at the 1, 5, and 10 percent statistical level, respectively.

Table 8. Sovereign debt versus sovereign default in home country and borrowing behavior

| | Has debt | Log (Debt) | Has debt | Log (Debt) |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Sovereign debt / GDP | 0.0031 | -0.0022 | 0.0032 | -0.0005 |
| | (0.0020) | (0.0077) | (0.0021) | (0.0077) |
| Sovereign default | | | -0.0673*** | -0.3960*** |
| | | | (0.0261) | (0.1126) |
| Individual demographic controls | Yes | Yes | Yes | Yes |
| Country of origin dummies | Yes | Yes | Yes | Yes |
| State of residence dummies | Yes | Yes | Yes | Yes |
| R-squared | 0.20 | 0.21 | 0.20 | 0.22 |
| Observations | 6,071 | 4,451 | 6,071 | 4,451 |

*Notes*: The table reports estimates of individual propensity to accumulate personal debt. The dependent variable is the natural logarithm of the respondent's debt. In column (1), only respondents from countries that experienced a sovereign default are included. In column (2), only respondents from countries that experienced a sovereign default are included. The sample is restricted to those born in a foreign country. 'Sovereign debt / GDP' is average sovereign debt, normalized by GDP, in the respondent's home country during the decade prior to his or her arrival in the US. ''Sovereign default' is a dummy variable equal to one if the respondent's home country had experienced a sovereign default prior to his or her arrival in the US.' 'Individual demographic controls' are 'Male', 'Age', 'Age squared', 'Non-white', 'Married', 'Unemployed', '# children', 'Years of schooling', and 'Years since move to US' (see Table 2). 'Individual financial controls' are 'Log (Total income ('000))' and 'Log (Total assets ('000))' (see Table 3). The sample is restricted to those born in a foreign country. All regressions include fixed effects as specified. Standard errors clustered at the country of origin-period level are included in parentheses, where ***, **, and * indicate significance at the 1, 5, and 10 percent statistical level, respectively.

Table 9. Sovereign default in home country and borrowing behavior: Country-of-origin heterogeneity

|  | Has debt | Log (Debt) |
|---|---|---|
|  | (1) | (2) |
| Sovereign default | -0.0290 | -0.3939*** |
|  | (0.0250) | (0.1077) |
| Private credit / GDP | 0.2238*** | 0.3863 |
|  | (0.0591) | (0.2915) |
| Stock market capitalization / GDP | -0.1458** | -0.5959** |
|  | (0.0619) | (0.2837) |
|  |  |  |
| Individual demographic controls | Yes | Yes |
| Individual financial controls | Yes | Yes |
| Country of origin dummies | Yes | Yes |
| State of residence dummies | Yes | Yes |
| R-squared | 0.22 | 0.21 |
| Observations | 7,629 | 5,552 |

*Notes*: The table reports estimates of individual propensity to accumulate personal debt. The dependent variable is the natural logarithm of the respondent's total debt. 'Sovereign default' is a dummy variable equal to one if the respondent's home country had experienced a sovereign default prior to his or her arrival in the US. 'Private credit / GDP' is average credit to the private sector, normalized by GDP, in the respondent's home country during the decade prior to his or her arrival in the US. 'Stock market capitalization / GDP' is average stock market capitalization, normalized by GDP, in the respondent's home country during the decade prior to his or her arrival in the US. 'Individual demographic controls' are 'Male', 'Age', 'Age squared', 'Non-white', 'Married', 'Unemployed', '# children', 'Years of schooling', and 'Years since move to US' (see Table 2). 'Individual financial controls' are 'Log (Total income ('000))' and 'Log (Total assets ('000))' (see Table 3). The sample is restricted to those born in a foreign country. The model is estimated using OLS. All regressions include fixed effects as specified. Standard errors clustered at the country of origin-period level are included in parentheses, where ***, **, and * indicate significance at the 1, 5, and 10 percent statistical level, respectively.

Table 10. Sovereign default in home country and borrowing behavior: Individual heterogeneity

Panel A. Extensive margin

| | Has debt | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| Sovereign default | -0.2670*** | -0.0724** | -0.0459* | -0.0250 | -0.1731*** |
| | (0.0498) | (0.0253) | (0.0276) | (0.0276) | (0.0431) |
| Sovereign default × Age | 0.0052*** | | | | |
| | (0.0011) | | | | |
| Sovereign default × Non-white | | 0.0616** | | | |
| | | (0.0290) | | | |
| Sovereign default × Married | | | -0.0187 | | |
| | | | (0.0218) | | |
| Sovereign default × # of children | | | | -0.0237** | |
| | | | | (0.0107) | |
| Sovereign default × Years of schooling | | | | | 0.0100*** |
| | | | | | (0.0031) |
| | | | | | |
| Individual demographic controls | Yes | Yes | Yes | Yes | Yes |
| Individual financial controls | Yes | Yes | Yes | Yes | Yes |
| Country of origin dummies | Yes | Yes | Yes | Yes | Yes |
| State of residence dummies | Yes | Yes | Yes | Yes | Yes |
| R-squared | 0.22 | 0.22 | 0.22 | 0.22 | 0.28 |
| Observations | 8,967 | 8,967 | 8,967 | 8,967 | 8,967 |

Panel B. Intensive margin

| | Log (Debt) | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| Sovereign default | -0.8229*** | -0.4512*** | -0.3666*** | -0.2307* | -0.6061** |
| | (0.2502) | (0.1049) | (0.1342) | (0.1353) | (0.2375) |
| Sovereign default × Age | 0.0111* | | | | |
| | (0.0059) | | | | |
| Sovereign default × Non-white | | 0.2513 | | | |
| | | (0.1538) | | | |
| Sovereign default × Married | | | -0.0295 | | |
| | | | (0.1187) | | |
| Sovereign default × # of children | | | | -0.1072** | |
| | | | | (0.0506) | |
| Sovereign default × Years of schooling | | | | | 0.0185 |
| | | | | | (0.0185) |
| Individual demographic controls | Yes | Yes | Yes | Yes | Yes |
| Individual financial controls | Yes | Yes | Yes | Yes | Yes |
| Country of origin dummies | Yes | Yes | Yes | Yes | Yes |
| State of residence dummies | Yes | Yes | Yes | Yes | Yes |
| R-squared | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 |
| Observations | 6,550 | 6,550 | 6,550 | 6,550 | 6,550 |

*Notes*: The table reports estimates of individual propensity to accumulate personal debt. The dependent variable is the natural logarithm of the respondent's total debt. 'Sovereign default' is a dummy variable equal to one if the respondent's home country had experienced a sovereign default prior to his or her arrival in the US. 'Individual demographic controls' are 'Male', 'Age', 'Age squared', 'Non-white', 'Married', 'Unemployed', '# children', 'Years of schooling', and 'Years since move to US' (see Table 2). 'Individual financial controls' are 'Log (Total income ('000))' and 'Log (Total assets ('000))' (see Table 3). The sample is restricted to those born in a foreign country. The model is estimated using OLS. All regressions include fixed effects as specified. Standard errors clustered at the country of origin-period level are included in parentheses, where ***, **, and * indicate significance at the 1, 5, and 10 percent statistical level, respectively.

Appendix Table 1. Sovereign defaults in the sample

| Country | Year of earliest sovereign default in sample |
|---|---|
| Argentina | 1982 |
| Bolivia | 1980 |
| Brazil | 1983 |
| Chile | 1983 |
| Costa Rica | 1981 |
| Dominican Republic | 1975 |
| Ecuador | 1982 |
| Egypt | 1976 |
| El Salvador | 1981 |
| Ghana | 1979 |
| Guatemala | 1986 |
| Guyana | 1982 |
| Honduras | 1981 |
| Indonesia | 1966 |
| Iran | 1990 |
| Jamaica | 1978 |
| Jordan | 1989 |
| Kenya | 1994 |
| Mexico | 1982 |
| Morocco | 1983 |
| Myanmar | 1985 |
| Nicaragua | 1979 |
| Nigeria | 1982 |
| Panama | 1983 |
| Peru | 1969 |
| Philippines | 1983 |
| Poland | 1981 |
| Russian Federation | 1998 |
| Thailand | 1997 |
| Trinidad and Tobago | 1989 |
| Turkey | 1978 |
| Ukraine | 1998 |
| Uruguay | 1983 |
| Venezuela | 1982 |
| Vietnam | 1975 |

*Notes*. The table lists those immigrant home countries in the SIPP dataset which experienced a sovereign default over the period during which immigrants arrived in the United States. The second column lists the year of the first occasion on which the country records non-zero debt in default. Data come from the Bank of Canada – Bank of England Sovereign Default Database and from Reinhart and Rogoff (2009).

Appendix Table 2. Sovereign default in home country and borrowing behavior: Full model

|  | Has debt | Log (Debt) |
|---|---|---|
|  | (1) | (2) |
| Sovereign default | -0.0580** | -0.3870*** |
|  | (0.0232) | (0.0985) |
| Male | -0.0089 | -0.0582 |
|  | (0.0097) | (0.0514) |
| Age | 0.0096*** | 0.0319*** |
|  | (0.0023) | (0.0114) |
| Age squared | -0.0002*** | -0.0005*** |
|  | (0.0000) | (0.0001) |
| Non-white | 0.0222 | -0.0900 |
|  | (0.0197) | (0.0982) |
| Married | 0.0833*** | 0.4859*** |
|  | (0.0118) | (0.0620) |
| # of children | 0.0110* | 0.1321*** |
|  | (0.0057) | (0.0257) |
| Education | 0.0088*** | 0.0364*** |
|  | (0.0017) | (0.0109) |
| Unemployed | -0.1171*** | -0.2067** |
|  | (0.0165) | (0.0914) |
| Year when moved to the U.S. | -0.0114*** | -0.0314*** |
|  | (0.0018) | (0.0081) |
| Log (Total assets) | 0.0269*** | 0.1174*** |
|  | (0.0019) | (0.0096) |
| Log (Total income) | -0.0096*** | -0.0016 |
|  | (0.0022) | (0.0129) |
| Country of origin dummies | Yes | Yes |
| State of residence dummies | Yes | Yes |
| R-squared | 0.22 | 0.21 |
| Observations | 8,967 | 6,550 |

*Notes*: The table reports estimates of individual propensity to accumulate personal debt. The dependent variable is a dummy variable equal to one if the respondent has any debt (column (1)) and the natural logarithm of the respondent's total debt (column (2)). See Tables 2 and 3 for variable definitions. The sample is restricted to those born in a foreign country. The model is estimated using OLS. All regressions include fixed effects as specified. Standard errors clustered at the country of origin-period level are included in parentheses, where ***, **, and * indicate significance at the 1, 5, and 10 percent statistical level, respectively.

Appendix Table 3. Sovereign default in home country and borrowing behavior: Shorter window around default

| | Has debt | Log (Debt) |
|---|---|---|
| | (1) | (2) |
| Sovereign default | -0.0693*** | -0.3720* |
| | (0.0240) | (0.1919) |
| Individual demographic controls | Yes | Yes |
| Individual financial controls | Yes | Yes |
| Country of origin dummies | Yes | Yes |
| State of residence dummies | Yes | Yes |
| R-squared | 0.44 | 0.33 |
| Observations | 532 | 406 |

*Notes*: The table reports estimates of individual propensity to accumulate personal debt. The dependent variable is a dummy variable equal to one if the respondent has any debt (column (1)) and the natural logarithm of the respondent's total debt (column (2)). 'Sovereign default' is a dummy variable equal to one if the respondent's home country had experienced a sovereign default prior to his or her arrival in the US. 'Individual demographic controls' are 'Male', 'Age', 'Age squared', 'Non-white', 'Married', 'Unemployed', '# children', 'Years of schooling', and 'Years since move to US' (see Table 2). 'Individual financial controls' are 'Log (Total income ('000))' and 'Log (Total assets ('000))' (see Table 3). The sample is restricted to those born in a foreign country and experienced a sovereign default. The sample is further restricted to those who arrived in the period immediately before and in the period immediately after the sovereign default. The model is estimated using OLS. All regressions include fixed effects as specified. Standard errors clustered at the country of origin-period level are included in parentheses, where ***, **, and * indicate significance at the 1, 5, and 10 percent statistical level, respectively.

Appendix Table 4. Sovereign default in home country and borrowing behavior:
Including Country of origin X State of residence dummies

|  | Has debt | Log (Debt) |
|---|---|---|
|  | (1) | (2) |
| Sovereign default | -0.0562** | -0.4097*** |
|  | (0.0245) | (0.1169) |
| Individual demographic controls | Yes | Yes |
| Individual financial controls | Yes | Yes |
| Country of origin X State of residence dummies | Yes | Yes |
| R-squared | 0.35 | 0.36 |
| Observations | 8,875 | 6,550 |

*Notes*: The table reports estimates of individual propensity to accumulate personal debt. The dependent variable is a dummy variable equal to one if the respondent has any debt (column (1)) and the natural logarithm of the respondent's total debt (column (2)). 'Sovereign default' is a dummy variable equal to one if the respondent's home country had experienced a sovereign default prior to his or her arrival in the US. 'Individual demographic controls' are 'Male', 'Age', 'Age squared', 'Non-white', 'Married', 'Unemployed', '# children', 'Years of schooling', and 'Years since move to US' (see Table 2). 'Individual financial controls' are 'Log (Total income ('000))' and 'Log (Total assets ('000))' (see Table 3). The sample is restricted to those born in a foreign country. The model is estimated using OLS. All regressions include fixed effects as specified. Standard errors clustered at the country of origin-period level are included in parentheses, where ***, **, and * indicate significance at the 1, 5, and 10 percent statistical level, respectively.