

Banking Crises and Investor Confidence:
An Empirical Investigation

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Abstract

In addition to their direct effects, banking crises may decrease investor confidence; lead some investors to withdraw funds from the formal financial sector, and thereby exacerbate the impact of crises. We quantify the effects of financial crises on investor confidence by studying the investment behavior of immigrants in the U.S. who vary in their exposure to systemic banking crises prior to arriving in the U.S. We find that individuals who have experienced a systemic banking crisis in their countries of origin are 11 percentage points less likely to use banks in the U.S. compared to otherwise similar individuals from the same country that have not lived through a crisis. This finding is robust to including country-decade of migration fixed effects and other methods to address potential unobserved heterogeneity. Consistent with the view that personal experience plays an important role in decision-making, we also find that the effects of living through a crisis are larger for individuals who are adults at the time of the crisis and for people who experience crises in countries without deposit insurance.

Key words: systemic banking crises, investor confidence, deposit insurance, reinforcement learning, immigrants

JEL codes: G01, G11, O16, D83

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1. Introduction

Confidence in the stability of the banking sector is crucial element for well-functioning financial markets. The fallout from the 2008 subprime crisis has led to decreased confidence in financial institutions. Indeed, 2008 saw old-fashioned bank runs with depositors lined up outside the doors of institutions like Indy Mac in the United States and Northern Rock in the United Kingdom hoping to withdraw their savings from those failing institutions. Speaking on the government's response to the U.S. banking crisis in late February and early March of 1933, President Franklin Roosevelt stressed "there is an element in the readjustment of our financial system more important than currency, more important than gold, and that is the confidence of the people." His words remain relevant today.

Increased confidence in the banking sector can promote recovery and increase the perceived credibility of post-crisis reforms. However, "crises ... leave citizens wary of entrusting their savings to the official banking sector. This diversion of savings is likely one of the great and unmeasured costs of banking crises" (Gerard Caprio, World Bank, 2005). Measuring the impact of a crisis on investor confidence is complicated by the fact the difficulty of disentangling whether financial decisions change due to decreased confidence or because of decreased wealth and income as a result of the crisis.

Despite the importance of investor confidence in determining the costs of a crisis and paths to recovery, it remains largely unstudied.¹ We make progress in estimating the impact of crises on investor confidence, by examining the financial decisions of otherwise similar individuals who differ exogenously in their exposure to financial crises. Information on the investment behavior of immigrants in the U.S., together with measures of their exposure to systemic banking crises prior to migration, provides this opportunity. If episodes of financial instability have long-lasting effects on investor confidence, then individuals who have experienced a crisis may make different financial choices than otherwise similar individuals who have not lived through a crisis. In particular, reduced investor confidence may manifest

¹ Researchers have investigated the consequences of banking crises for firms. Dell'Ariccia, Detragiache, and Rajan (2008) find that growth in externally dependent sectors tends to be lower during banking crises. Kroszner, Laeven, and Klingebiel (2007) find that firms that are more dependent on external finance perform relatively worse during banking crises in countries with well-developed financial systems.

itself in lower usage of U.S. financial institutions among individuals who have experienced a systemic banking crisis prior to arriving in the U.S.

Focusing on the investment behavior of individuals who have migrated to the U.S. offers distinct advantages for understanding investor confidence. First, by studying investment decisions in a common institutional, economic and financial environment, we minimize the potential impact of confounding cross-country differences, including the success and credibility of post-crisis reforms. Examining investment decisions in the U.S. also helps to isolate factors that influence the demand for financial products rather than the supply, since the supply of financial services in the U.S. is likely to be independent of banking crises in other countries. In addition, because individuals from the same country vary in their exposure to crises, we can include country of origin fixed-effects in our empirical specifications. By doing this we hold constant country-level variation in economic, financial, institutional and cultural factors.² Variability in the severity and the origins of financial crises allows us to explore how investor confidence is shaped by these features of crises as well. In addition, the availability of detailed individual level data allows us to control for factors like income and wealth that are likely to influence financial choices and also be directly impacted by exposure to a systemic banking crisis.³ The availability of these data also permits an examination of how the impact of a crisis varies with individual characteristics, like education and years in the U.S. Finally, individuals who move to the U.S. are naturally aware that there are differences in the safety and soundness of U.S. financial institutions compared to those in their countries of origin. As a result, our estimates of how investor confidence is influenced by exposure to systemic banking crises may be conservative.

Our findings indicate that experiencing a systemic banking crisis has important long-term effects on behavior. Individuals who have lived through a crisis are significantly less likely to participate in U.S. financial markets compared to otherwise similar individuals from the same country. In particular,

² A number of studies demonstrate that country of origin characteristics impact a wide variety of immigrant and immigrant offspring behavior., including savings, stock market participation, banking and fertility. See Carroll, Rhee and Rhee (1994 and 1999), Osili and Paulson (2008a and 2008b) and Fernandez and Fogli (2009), for example.

³ McKenzie (2004) documents substantial and widespread declines in real incomes in the wake of the 2002 Argentine financial crisis, for example.

individuals who have experienced a systemic banking crisis are 11 percentage points less likely to have a checking account in the U.S. According to our estimates it is only after about two decades in the U.S. that experiencing a crisis ceases to impact behavior. While we cannot separately identify the impact of additional time to learn about U.S. financial markets and passage of time since the crisis, this provides some insights into how long it may take investor confidence to recover following a crisis episode. Consistent with the hypothesis that direct experience of a crisis is important, we also find that the effect of living through a crisis is larger for individuals who experience a crisis as adults and for individuals who experience a crisis in a country without deposit insurance.

We take a number of steps to ensure that these findings are robust. The empirical issue that is the largest concern is unobserved heterogeneity. Immigrants choose to migrate, so they are not random representatives of their countries of origin. This could bias estimates of investor confidence if unobserved factors that influence financial decisions are correlated with both exposure to banking crises and with the decision to migrate following a crisis. We reduce the potential role for unobserved heterogeneity by choosing checking account ownership as the main outcome variable. Because the decision to use checks is essentially a decision about what sort of payment technology to use, it is unlikely to be influenced by unobservables (such as risk aversion or time preference) that could be correlated with exposure to banking crises. In addition to alleviating concerns about unobservables, we focus on checking accounts because they are the most common means by which individuals entrust funds to banks, so they provide an appropriate way to benchmark the effects of decreased investor confidence following a banking crisis. Nearly 90 percent of households have a checking account according to recent data from the Survey of Consumer Finances, much higher than the 48 percent who have savings accounts.⁴ We also expect estimates of checking account ownership to produce conservative estimates if investor confidence has a larger impact on riskier investments.

⁴ Alternatives to checks would include some combination of check-cashers, money orders and cash. Although the costs of checking accounts are quite low, they may be significant for some lower income immigrants. We control for this possibility by including income and wealth in the estimation. Perceived legal barriers to opening a checking account may also deter some individuals from opening an account. We address this concern by making sure that the results are robust to dropping individuals who come from countries that are thought to generate the most undocumented immigrants. In addition, we confirm that the effect of crisis exposure is the same for permanent residents and naturalized citizens compared to other immigrants.

Bias induced by unobserved heterogeneity at the country level is eliminated by including country of origin fixed effects in all of the estimates.⁵ We also ensure that the results are robust to the possibility of time-varying unobserved heterogeneity by including country-decade fixed effects in some specifications.⁶ Additional tests also point to the strength of our results. For example, the findings are the same when we drop countries, notably Mexico, where it would be relatively easy for migration patterns to change in response to financial market instability.⁷

Although we rule out many forms of potential unobserved heterogeneity by including country fixed effects and country-decade fixed effects, as well as the other explanatory variables, it remains possible that more recent migrants, even within a decade, are somehow different than earlier migrants. This is a concern because more recent immigrants are more likely to have experienced a banking crisis prior to coming to the U.S. One possibility is that more recent migrants have larger networks in the U.S., and these networks provide informal financial services that serve as alternatives to checking accounts. If these networks were not as readily available to earlier migrants, earlier migrants may make greater use of checking accounts as a result.⁸ To investigate this possibility, we constructed a placebo treatment that randomly assigns individuals into early and late migrant groups. The placebo treatment variable has no systematic relationship with checking account ownership, giving us further confidence in the strength of our findings.

Additional estimates show that individuals who experience a crisis in a country that had deposit insurance in place prior to the crisis are nearly as likely to participate in U.S. financial markets as their counterparts from the same country who migrated before the crisis. There is an important policy debate about the costs and benefits of deposit insurance, focusing particularly on the concern that deposit insurance could destabilize the financial sector by increasing moral hazard, particularly in countries with

⁵ See Borjas (1987).

⁶ See Borjas and Friedberg (2009) for a recent discussion of this issue.

⁷ Borjas and Katz (2007) show that there are important differences in Mexican immigrants to the U.S. compared to immigrants from other countries.

⁸ Another possibility is that more recent immigrants are more likely to send remittances (and more likely to have experienced a banking crisis) and that they prefer non-bank remittance sending arrangements. However, our tabulations of data from the New Immigrant Survey suggest that immigrants who send remittances are *more* likely to have bank accounts relative to those who do not send remittances.

weak institutions or less developed financial systems. See for example, Demirgüç-Kunt and Detragiache (2002), Demirgüç-Kunt and Huizinga (2004), Demirgüç-Kunt and Kane (2002), Laeven (2002) and Hovakimian et al. (2003). Our findings suggest that these concerns should be weighed carefully against deposit insurance's potential to maintain investor confidence in the wake of financial turmoil. The deposit insurance results also point to the importance of direct experience of losses being important for future changes in behavior, consistent with the literature on reinforcement learning.

This study is related to a growing body of research that investigates how experience with particular institutions or economic conditions impacts future attitudes and behavior. Important examples of work in this area include: Fernandez, Fogli and Olivetti (2004) who show that men who grew up with mothers who worked are more likely to have spouses who also work, potentially because their preferences were influenced by growing up in a home with a working mother; Guiso, Sapienza and Zingales (2004) who use data from Italy to document that the level of social capital that an individual is exposed to in their region of birth has persistent effects on their financial behavior and that these effects persist even when they migrate within Italy; Graham and Narasimhan (2005) who find that corporate managers that have lived through the Great Depression in the U.S. choose a more conservative capital structure with less leverage even after economic conditions improve; Fernandez and Fogli (2006) who find that fertility is influenced by experience (the number of siblings that a woman has) as well as by culture; Alesina and Fuchs-Schündeln (2007) who find that exposure to Communism influences East German attitudes toward redistribution and state intervention after German reunification; Kaustia and Knüpfer (2008) who show that IPO returns experienced by individual investors influence their future investment in IPOs; Malmendier and Nagel (2009) who document that an individual's early experience of stock and bond returns impacts subsequent investment behavior; and Giuliano and Spilimbergo (2009) who find that individuals who grew up during periods of macroeconomic volatility are more likely to support government redistribution and to believe that luck has more to do with success than effort.

Because of our interest in how experiencing a banking crisis impacts future behavior, work in behavioral economics and psychology that examines the role that personal experience plays in decision-

making is also very relevant. In models of reinforcement learning, information gained from personal experience has a greater effect on behavior relative to other sources of information (see Cross, 1973, Arthur, 1991, Ellison and Fudenberg, 1993 and Roth and Erev 1995, for example). Mookherjee and Sopher (1994 and 1997), Erev and Roth (1998) and Charness and Levin (2005) provide experimental evidence in favor of reinforcement learning. In Camerer and Ho (1999) reinforcement learning is combined with belief learning to create an “experience-weighted attraction” model of learning. In experimental evaluations of this model, actual payoffs are weighted about twice as heavily as foregone payoffs. Choi et al. (2009) provide evidence that individuals over-extrapolate from their personal experience when making savings decisions.

The next section describes the framework we use to derive the predicted relationship between banking crises and financial decisions. In section 3, we describe the country and individual level data that we analyze. Section 4 outlines the empirical strategy, discusses our main findings and presents our findings on how the impact the impact of living through a crisis varies with individual, country and financial crisis characteristics. This section also explores the robustness of the findings. Section 5 presents conclusions.

2. Framework

Theoretical studies of bank fragility often emphasize investor confidence as a potential contributor to bank runs. In particular, Diamond and Dybvig’s (1983) canonical model shows that a self-fulfilling loss of confidence in the banking system may lead depositors to try to withdraw their funds from banks, causing widespread failure of the banking system. An important insight from their model is that systemic banking crises will be more likely in places where investor confidence is low. The literature on bank fragility does not provide much guidance into the origins of investor confidence, however.

The mechanisms through which experiencing a banking crisis might influence future interactions with financial institutions include preferences, beliefs and generalized trust.⁹ The available data do not permit us to cleanly distinguish between these three mechanisms, but we will discuss some suggestive evidence in favor of the beliefs channel. To motivate the empirical work and make the hypotheses that we test clear, we sketch out a simple reduced form framework to describe how an individual's demand for bank services would be affected by exposure to a banking crisis. The framework emphasizes the beliefs channel as a matter of convenience.

Consider an individual, i , from country j who is considering whether to open a bank account. The individual's demand for bank services is represented by:

$$S_{ij} = f(R, X_{ij})$$

where S_{ij} is the amount that individual i invests in the bank account, R is the expected return from the investment, and X_{ij} is a vector of individual characteristics (wealth, income, education, years in the U.S., age, for example) and country characteristics that affect the demand for bank services.

The effect of banking crises is modeled by assuming that the investor believes there is some probability, π_{ijc} , of a banking crisis that will impact returns to bank services. The subscript c indicates whether person i from country j experienced a systemic banking crisis or not. Given her beliefs, the investor's expected return on the investment will not be R , the expected return on the bank account, but $\pi_{ijc} \times 0 + (1 - \pi_{ijc}) \times R$. This assumes that the return in the event of a crisis is zero. Assuming that returns are negative, or positive, but lower than if there were not a crisis, does not change the analysis.

We imagine that individuals live for three periods (time 0, 1 and 2). At time 0 individuals are endowed with a prior about the likelihood of a banking crisis. This prior may differ with individual and country characteristics. At time 1, the country that individuals are living in either experiences a crisis or not, and beliefs about the likelihood of a crisis are updated, taking this new information into account. Updated beliefs about the likelihood of a crisis are represented by π_{ijc} . At time 2, we observe individuals

⁹ Alesina and La Ferrara (2002) find that individuals who have recently suffered a trauma or a financial loss are less trusting.

living in the U.S., along with their decisions about how much (or whether) to invest in a bank account. We assume that individuals live in their country of birth at the beginning of time 0. They may move to the U.S. at either the end of time 0 or at the end of time 1. That is, some individuals will arrive in the U.S. without having lived through a financial crisis, even though they come from a country that experiences a financial crisis at time 1. The goal of the analysis is to determine how exposure to banking crises influences investment decisions in the U.S., controlling for individual and country characteristics.

Among similar individuals from the same country, we expect π_{ijc} to be higher and, consequently, demand for bank services in the U.S. to be lower, for individuals who have lived through a crisis. An individual's estimate of the likelihood of a banking crisis, π_{ijc} , is also expected to be higher for individuals who come from countries with particularly unstable financial systems and may be decreasing with years spent in the U.S. To put the emphasis on the effect of living through a systemic bank crisis, we include country of origin fixed effects in all of the empirical estimates. The fixed effects address time-invariant country level differences in π_{ijc} . This would include variation that is due to differences in the level of economic and financial development as well as the quality of governance in the country of origin. The country of origin fixed effects also control for the possibility that the level of investor confidence in a country could itself impact the frequency of banking crises due to the self-fulfilling dynamics that lead to bank runs in the Diamond and Dybvig (1983) framework. We also explore whether the effect of π_{ijc} varies with the age at which an individual experienced a crisis, with how long an individual has lived in the U.S. and with characteristics of the country of origin economic and financial environment.

3. Data

Individual Data

The individual data that we use come from the 1996 Survey on Income and Program Participation (SIPP), which is a nationally representative survey of U.S. households conducted by the U.S. Census Bureau. We restrict our attention to the first annual survey wave where financial market participation and

wealth data are available.¹⁰ The sample we analyze is restricted to individuals who are over eighteen and who migrated to the U.S. after 1975 for a total of 3,609 individuals representing 80 countries. High quality data on banking crises are available for the post-1975 period.

Table 2A summarizes these data for immigrants and the native-born. Although the empirical analysis includes only immigrants, it is useful to understand the characteristics of this population relative to individuals who were born in the U.S. Compared to the native-born, immigrants are younger, more likely to be married, non-white and have more children. Immigrants also tend to be less educated than the native-born. Thirty-seven percent of the immigrant sample has not completed high school compared to only 16.7 percent of the native-born sample. However, the percentage of immigrants and the native-born who have an advanced degree is about seven percent for both groups.

Monthly per capita household income is significantly lower for immigrants compared to the native born. For immigrants, average monthly per capita household income is \$1,666, compared to \$2,423 for the native-born. In addition to having lower incomes, immigrant households have also accumulated less wealth compared to households headed by individuals who were born in the U.S. The median immigrant household has wealth of \$12,160, compared to \$67,615 for the native-born.

The main dependent variable in our analysis is the use of checks in the U.S. Checking account ownership is relatively widespread compared with the usage of other financial assets: 42 percent of the immigrants have a checking account compared with 64 percent of the native-born.¹¹ Thirty-six percent of immigrants have a savings account, compared with 53 percent of the native-born (see Table 2A). Six percent of the immigrant sample owns stock outside of a retirement account, compared with 18 percent of the native-born. More than three times as many (18 percent) native-born households have an IRA or Keogh account compared to immigrant households. About 41 percent of immigrants own their own homes compared to 72 percent of the native-born.

¹⁰ Other SIPP data are collected quarterly for four years. Because of the short length of the panel and concerns about sample attrition, particularly among immigrants, we have not attempted to analyze changes in financial behavior.

¹¹ The Survey of Consumer Finance figures are higher because they define checking accounts more broadly and look at ownership at the household level, rather than at the level of an individual.

Additional immigrant characteristics are described in Table 2B. Just over one-third of the immigrants arrived in the U.S. between 1990 and 1996, 17 percent arrived between 1975 and 1979 and the remainder arrived during the 1980s. Just over half of the immigrants were born in a North American country (including one-third in Mexico) and about 7 percent were born in Europe. Most of the immigrants arrived in the U.S. as adults, with nearly 90 percent arriving at age twenty years or older.

Banking Crisis Measures

We use data provided in Honahan and Laeven (2005) to identify and date episodes of systemic banking sector crises. The data cover the period 1975 to 2002 and include 98 countries and 60 systemic crisis episodes. Because the individual data come from interviews conducted in the U.S. in 1996, we focus on crises that occurred between 1975 and 1995. Appendix Table 1 summarizes the crisis periods that we examine for each country. We adopt Honhan and Laeven's definition of a systemic banking crisis. Episodes of banking sector distress are considered systemic if any of the following occur: non-performing assets reach at least 10% of total assets at the peak of the crisis; the cost of rescue operations is at least 2% of GDP; emergency measures (bank holidays, deposit freezes, blanket guarantees to depositors or other bank creditors) are taken; large-scale nationalizations take place. A little less than one-half of the countries in the sample experienced a systemic banking crisis between 1975 and 1995.

We create two measures of exposure to systemic banking crises. The first uses information on the country of origin of individual migrants together with data on when they arrived in the U.S. to create a bivariate measure of whether an individual was exposed to a banking crisis or not. The variable, Z_{ij} , for individual i from country j , is equal to one if the individual lived in their birth country during the crisis period and is equal to zero if they were living in the U.S. at the time of the crisis or if they come from a country that did not experience a systemic banking crisis between 1975 and 1995.¹² As an example, consider immigrants from El Salvador, which had one banking crisis in 1989. Salvadorans who arrived in the U.S. between 1975 and 1988 will have Z_{ij} equal to zero. Those who arrived in 1989 or later (and who

¹² We use information on date of arrival from internal SIPP files accessed through the Chicago Census Center to create the crisis exposure variable.

are born before 1989) will have Z_{ij} equal to one. Thirty-nine percent of the sample has Z_{ij} equal to one. For individuals who have experienced multiple banking crises, we use information from the first crisis.¹³

The second method of quantifying exposure to a systemic banking crisis measures how old an individual was at the time they experienced a crisis. This variable, \check{Z}_{ijt} , is equal to individual i 's age at the beginning of the first crisis they were exposed to and is equal to zero if they never lived through a systemic banking crisis. Returning to our Salvadoran example, Salvadorans who arrive in the U.S. after 1989 will have \check{Z}_{ijt} equal to their age in 1989. An individual who was born in 1979 is assigned \check{Z}_{ijt} equal to ten, for example. Among individuals who have experienced a crisis, the average age at crisis is 19.4 with a standard deviation of 12.2 years.

This measure has empirical as well as substantive advantages. From an empirical perspective, age at crisis creates additional variation among migrants from a given country. This additional variation allows us to include fixed effects which remove bias due to time varying heterogeneity among immigrants from a particular country. In particular, we include country of origin interacted with decade of arrival fixed effects. From a substantive perspective, the age at crisis measure provides a glimpse into the role of reinforcement learning through direct experience as people who were older at the time of a banking crisis are more likely to have had bank accounts and are therefore more likely to have lost money during the crisis.

Other Country-Level Data

In addition to information on banking crises, we also examine the role of a number of other features of the financial and economic environment in the country of origin. The country-level variables and their sources are described in detail in Table 1. Tables 3A and B provide summary information about these variables and their correlation with one another. Country-level measures of financial development include private credit as a share of GDP (Beck, Demirgüç-Kunt and Levine (2000) and bank branches per

¹³Only a small minority of people in the sample have experienced two or more crises, and their use of checks is very similar to those who have experienced one crisis.

100,000 people (Beck, Demirgüç-Kunt and Peria, 2007). We also include measures of the level of economic development, the quality of institutions (Kauffman, Kraay and Zoido-Lobaton, 1999) and how trusting a country's citizens are, as measured by summaries of responses to World and European Values Survey questions.¹⁴

In an effort to explore how the nature of the crisis impacts investor confidence, we examine several variables that describe the financial crisis. These variables include whether a systemic bank crisis was accompanied by a GDP crisis. We define a GDP crisis as an episode of at least three consecutive years of negative GDP growth. Investors may also respond differently to banking crises that are accompanied by currency or sovereign debt crises. We use information on the dates of currency and sovereign debt crises collected by Laeven and Valencia (2008) to explore this possibility.

Exposure to a GDP, currency or debt crisis is measured much the same way as exposure to a banking crisis, with individuals categorized as having experienced a crisis of a particular type if they arrived in the U.S. after their country of origin experienced such a crisis. Individuals are defined to have experienced overlapping crises, a twin crisis of a banking crisis and a currency crisis, for example, if they lived through a systemic banking crisis and a currency crisis that began while the banking crisis was ongoing. Concurrent bank and GDP crises and bank and sovereign debt crises are defined analogously.

Deposit insurance is designed to protect account holders from losses in the event of a crisis. Exploring differences in the financial choices of individuals who have experienced a systemic banking crisis depending on whether they were protected by deposit insurance helps to shed light on whether direct experience of a loss in bank assets is an important channel through which investor confidence can be shaken. We examine the role of having enacted deposit insurance prior to, or after, a bank crisis (combining information on the timing of the crisis from Honohan and Laeven, 2005, with information on deposit insurance from Demirgüç-Kunt, Kane and Laeven, 2008). Among the countries that experienced

¹⁴ In particular, we calculate the fraction of respondents who answer the question "Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people?" with "Most people can be trusted". We do this for countries where European or World Value Surveys were completed between 1981 and 2004. Trust is defined to be one for countries whose average response is in the upper third of the distribution and zero otherwise.

a systemic banking crisis between 1975 and 1995, and where there were individuals that migrated both before and after the crisis, 30% had deposit insurance in place prior to the crisis and the remaining 70% enacted it after the crisis. The severity of a financial crisis may also influence investor confidence. One measure of the severity of a crisis is whether deposit insurance was enacted in the aftermath of the crisis. We also use the information on the duration of banking crises from Honohan and Laeven (2005) to see if responses vary with the length of the crisis.

4. Empirical Findings

In this section, we report our empirical findings. We present our main results and then address potential empirical issues. Next, we discuss how the impact of banking crises varies with individual characteristics, with country of origin characteristics, with characteristics of the crisis and with the financial decision in question. This section ends with a discussion of what the findings imply about the mechanism by which investor confidence is altered following exposure to a systemic banking crisis.

Main results

We estimate an individual's decision to have a checking account using the following linear probability model:

$$S_{isj} = \alpha + \beta_1 X_i + \beta_2 Z_{ij} + \delta_j + \delta_s + \varepsilon_{isj},$$

where S_{isj} is the decision of individual i who lives in county s and comes from country j to use a checking account. Individual controls are incorporated in X_i and include age, age squared, wealth quartiles, income, labor force status, education, sex, marital status, number of children in the household, and race. The sample is restricted to immigrants who are at least 18 years of age and come from one of the 80 countries (excluding the U.S.) which are represented in the SIPP data. The variable Z_{ij} measures crisis exposure and is equal to one if the individual experienced a bank crisis in their country of origin and zero otherwise.

All of the specifications include country of origin fixed effects, δ_j . There are two important reasons for including country of origin fixed effects. First, there are many time-invariant country of origin characteristics that might influence the demand for various financial products. These include the level of financial and economic development in the country of origin as well as the quality of institutions that protect private property and provide incentives for investment (see Osili and Paulson, 2008a and 2008b). Many of these variables are likely to be correlated with the experience of banking crises. Table 3B shows the correlation between the banking crisis variables and other country of origin characteristics. By including country of origin fixed effects, we ensure that the effect of banking crises is measured holding these (and other) country level variables fixed.

The second reason for including country of origin fixed effects is to control for unobserved individual heterogeneity. Immigrants are not random representatives of their country of origin. They choose to migrate and that decision may be influenced by characteristics that are not observable. By including country of origin fixed effects, we eliminate the possibility that the estimated coefficient of interest will be biased due to correlation between unobserved individual attributes and country of origin.

In addition to country of origin fixed effects all of the estimates also include a full set of county of residence fixed effects, δ_s . The county fixed effects capture geographic variation in the supply of banking services. In addition, the county fixed effects rule out bias due to unobserved characteristics that influence an individual's location choice that are also correlated with having lived through a banking crisis. The reported standard errors have been corrected to account for the heteroscedasticity that is implicit in the linear probability model and are also clustered to allow for correlation across observations for individuals who come from the same country and migrated during the same period.¹⁵

The relationship between checking account ownership and exposure to systemic banking crises is explored in Table 4. Recall that we focus on checking account usage because it is a conservative proxy

¹⁵ Non-linear estimation methods, such as probit or logit, generate similar results. We use a linear probability model because it is computationally attractive given the large number of fixed effects, is consistent under weak assumptions and because the coefficient estimates are easy to interpret. In particular, the coefficients on interaction terms are straightforward to interpret (see Ai and Norton, 2003).

for investor confidence and because it is likely to be unrelated to unobservable individual attributes, including risk aversion and time preference. Looking first at the estimates of owning a checking account (column [1]) without wealth and income controls, we find that individuals who have experienced a banking crisis are 13 percentage points less likely to have a U.S. bank account. When we include wealth and income controls in column [2], individuals who have experienced a banking crisis are 11 percentage points less likely to own a checking account compared to otherwise similar individuals. This is 26 percent lower than the observed percentage of individuals who have a checking account of 41 percent.¹⁶ The effects of the other control variables included in the regressions are reported in Appendix Table 2. These findings suggest that investor confidence is significantly altered by experiencing a systemic banking crisis and that the effects of this experience persist even after migration to the U.S.

Robustness checks

In order to explore the robustness of the findings, we take advantage of the fact that whether or not a given individual will have had direct experience with a banking crisis depends on the country of origin, when that individual migrated to the U.S., and also on the age of the individual at the time of the crisis. Individuals who are adults at the time of a banking crisis are more likely to have directly experienced the effects of the crisis compared to younger individuals. They are more likely to have had bank accounts and other financial assets whose values were impacted by the crisis, for example.

Because “age at crisis” varies by country, by year of migration and by age, we can also include controls for the decade of migration interacted with country origin in specifications which use age at crisis. Specifically, we estimate:

$$S_{isjdt} = \alpha + \beta_1 X_i + \beta_2 \check{Z}_{ijt} + m_d + \delta_j + \delta_s + \delta_j \times m_d + \varepsilon_{isjdt},$$

where S_{isjdt} represents the decision of individual i who lives in county s , comes from country j , migrated in decade d and who was born in year t to have a checking account. Age at crisis is represented by \check{Z}_{ijt} , m_d captures controls for the decade of migration and $\delta_j \times m_d$ are country and decade of migration fixed effects.

¹⁶ The effects of the other control variables are reported in Appendix Table 2.

Individuals from the same country who migrated to the U.S. during a particular time period may share common characteristics such as unobserved ability, risk tolerance, or face similar labor market conditions in the U.S.¹⁷ These “cohort” effects may affect the decision to own a bank account and be correlated with having experienced a banking crisis. By including decade of migration controls in the regression, we eliminate correlation between the age at crisis variable and unobserved immigrant characteristics that vary with the timing of migration. As in the rest of the analysis, we include country of origin and county of residence fixed effects in all of the specifications.

Columns [3] – [6] of Table 4 report on the relationship between checking account ownership and age at crisis for various specifications. In Column [3], the indicator variable that captures whether an individual has experienced a crisis is simply replaced with “age at crisis.” In column [4] we add decade of migration fixed effects, and in column [5] we add decade of migration controls interacted with country of origin fixed effects. When we add these controls, we are effectively comparing the effect of a crisis on similar individuals from the same country of origin who all arrived in the U.S. in the same decade.¹⁸ This addresses concerns that the findings are driven by time varying unobserved ability or motivation, as emphasized in the literature on migration. According to this estimate, the effect of living through a crisis is larger for those who were adults than for those who were children at the time of the crisis, as one might expect. An individual who was 30 years old at the start of the crisis would be 6 percentage points less likely to have a checking account compared to someone from the same country who had not been exposed to the crisis. Someone who was 45 at the time of the crisis would be 9 percentage points less likely to have a checking account.¹⁹

¹⁷ An extensive literature discusses how unobserved individual characteristics (such as ability) may vary with the timing of migration for a given country (see Borjas, 1994 and Borjas and Friedberg, 2009 for reviews). This literature emphasizes the impact that unobserved factors have on labor market outcomes. Because our estimates include labor force status and income, unobserved factors that work through those channels are accounted for.

¹⁸ The decade of migration controls also capture the effect of additional time in the U.S. To maintain consistency across the estimates in Table 4 and to avoid over-controlling for time in the U.S., years in the U.S. is not included as an explanatory variable. When years in the U.S. is included in the specification, the estimated effect of living through a crisis remains negative and significant and the point estimate falls in absolute value by about 30%.

¹⁹ We have also explored non-linearities in the effect of age at crisis. We find that the impact of living through a crisis is smallest for individuals who were less than fifteen at the time of the crisis (checking account ownership is 7 percentage points lower compared to otherwise similar individuals) and largest for individuals who were 26 to 35 years old at the time of the crisis (19

Migrating to the U.S. in response to a financial crisis is more plausible for people from some countries than from others. In particular, it may be relatively easy for people from Mexico to adapt their migration and return migration plans in response to a crisis because of Mexico's geographic proximity to the U.S. To make sure that the findings are not driven by systematic differences among individuals from Mexico based on the timing of migration or return migration, we exclude individuals from Mexico in column [6]. The results are unchanged. We have also experimented with dropping additional individuals from the Caribbean and Latin America with similar results. In addition, we have analyzed Department of Homeland Security data on immigration flows into the U.S. by year and by country for major immigration source countries to examine whether the immigration flows to the U.S. respond to crisis conditions in the country of origin.²⁰ We find no systematic relationship between migration flows from a particular country in a given year and crisis conditions in that country.

More generally, the estimation strategy compares people from the same country who migrated earlier (no crisis exposure) to similar people who migrated more recently (crisis exposure) either in general or within a decade. Although we rule out many forms of potential unobserved heterogeneity by including country fixed effects and country-decade fixed effects, as well as the other explanatory variables, it remains possible that more recent migrants, even within a decade, are somehow different than earlier migrants. One alternative explanation for our findings might operate through immigrant networks. Perhaps more recent migrants have larger networks in the U.S. and these networks are large enough to supply informal substitutes to formal financial products. If these networks were smaller when earlier migrants arrived, these individuals may make greater use of checking accounts because fewer substitutes were available.

To investigate the likelihood of alternative explanations that rely on differences between early and more recent migrants, even within the narrow window of a decade, we construct a placebo treatment that randomly divides individuals into early and recent migrant groups. The placebo treatment procedure

percentage points less likely to have a checking account). These differences are not statistically significant, however. These estimates are available from the authors.

²⁰ These estimates are available from the authors.

randomly assigns a year to each of the countries in our sample that experienced a banking crisis. “Placebo banking crisis” and “placebo age at crisis” variables are created using the randomly assigned year rather than the actual year of the banking crisis, and the regressions in Table 4 are recreated using the placebo treatments. This procedure was repeated for 500 randomly assigned years. The results of this exercise indicate that there is no systematic tendency for more recent arrivals to be less likely to have a checking account. The average coefficient on the “placebo banking crisis” variable is -0.011, with a standard deviation of 0.04 using the specification from Table 4, column [2]. The average coefficient on the “placebo age at crisis” variable is -0.001 with a standard deviation of 0.009 using the specification with country interacted with decade of arrival fixed effects (Table 4, column [5]). This gives us additional confidence that the results presented in Table 4 are driven by exposure to systemic banking crises and not by unobserved differences related to the timing of migration.

The Effect of Banking Crises on Different Types of People

We turn now to analyzing how banking crises impact different groups of individuals. In Table 5, we examine how the impact of a banking crisis varies with education, citizenship and time in the U.S. These estimates help to identify the potential channels through which crises come to influence behavior and also serve as further robustness checks on our main results.

We first examine how the impact of experience with a banking crisis varies with education. Columns [2] and [3] present these results. In Table 5, we include the interaction of having experienced a banking crisis with low education (in column [2]) and with high education (column [3]). Low education is equal to one if the individual in question has not completed high school and zero otherwise. High education is equal to one if the individual has a college degree or more schooling and zero otherwise. We find that living through a crisis has a much larger impact on individuals with less than a high school degree and that the effect of living through a crisis largely disappears for individuals with a college degree or more. It is interesting to note that education appears to play a role in mitigating the impact of experiencing a bank crisis. This mirrors the findings in Guiso, Sapienza and Zingales (2004) who show that the effect of social capital on financial behavior is muted for those with greater education.

Columns [4] – [6] examine how the effect of living through a crisis changes with additional exposure to the U.S. In column [4], we look at how the effect of living through a crisis varies with years in the U.S. Each additional year in the U.S. lowers the effect of living through a crisis on checking account ownership by 0.80 percentage points. After being in the U.S. for 21 years, the effect of living through a crisis disappears. Note that each additional year in the U.S. has two effects. First, it represents an additional year to adapt to the U.S. and learn about U.S. financial institutions, and second, it represents an additional year of time since the crisis. The estimated coefficient in column [4] combines these two effects.

In column [5], the interaction between the crisis variable and having lived in the U.S. for three years or less is added. Among recent immigrants, the effect of having experienced a crisis is much larger. For recent immigrants who have experienced a banking crisis, checking account usage is 18 percentage points lower compared to immigrants who have not experienced a financial crisis. For their counterparts who have also experienced a banking crisis but who have lived in the U.S. for more than three years, checking account usage is predicted to be 9 percentage points lower. Finally, in column [6], we restrict the sample to permanent residents and U.S. citizens. This helps to address the concern that the findings could be driven by undocumented immigrants who avoid banks and may be more likely to have been exposed to a banking crisis. Living through a crisis has an essentially the same impact on the checking account ownership of permanent residents and naturalized citizens as it does for the entire sample.

The Effect of Other Country Characteristics

In this section, we discuss how the effect of banking crises is influenced by other country characteristics, including the level of economic and financial development, corporate governance as well as a measure of how trusting the residents of the country are on average. Table 6 presents these results. In each regression we investigate the extent to which the effect of a bank crisis varies with other country of origin characteristics by including the interaction of the “experienced a banking crisis” variable with other country characteristics. Recall that all of these regressions control for direct effect of country of

origin characteristics on checking account ownership through the inclusion of country of origin fixed effects.

We first explore how the impact of living through a crisis varies with the level of economic development by including the interaction of experiencing a bank crisis with average real per capita GDP from 1975 to 1995 in the estimate presented in column [2] of Table 6. We find that the interaction of experience with a banking crisis and average real GDP per capita is positive and statistically significant. According to these results, the effect of living through a banking crisis is smaller, but still negative and significant, for individuals who come from places where the overall level of development is higher. While the impact of living through a financial crisis does vary with the level of overall economic development, as measured by the long-run average GDP per capita, there is no evidence that it varies systematically with the level of financial development, as measured by private credit as a share of GDP (column [3]) or more bank branches per 100,000 people (column [4]).

Coming from a country that has good governance appears to mitigate the effect of living through a crisis substantially, however (see column [5]). A one standard deviation increase in governance, as measured by the KKZ index, is associated with a 10 percentage point increase in the likelihood of having a checking account after living through a crisis. The net effect is that individuals who have experienced a bank crisis are 2 percentage points less likely to have a checking account ($-12.3 + 10 = -2.3$ percentage points). These findings suggest that economic development and good governance may play an important role in maintaining and/or restoring investor crisis during and following a systemic banking crisis. For example, investor confidence may be restored even in the face of a systemic banking crisis if credible government action is taken to resolve the crisis and this credible government intervention is associated with high standards of institutional effectiveness (see Demirgüç-Kunt, Detragiache, and Gupta, 2006).

The impact of living through a banking crisis is also smaller for individuals from countries where “trust” is higher (see column [6]). For individuals who come from a place where individuals are very trusting, where average trust is in the upper third of the distribution of trust across countries, the impact of living through a crisis is completely offset and their checking account usage is estimated to be the

same, or possibly even a bit higher, than their counterparts from the same country who did not live through a banking crisis.

Of course, economic and financial development, good governance and trust are likely be correlated. When we include all of the country variables in one regression, experiencing a bank crisis remains significant and negative. The only other variable that is significantly different from zero is private credit, which has a positive effect on the likelihood of having a checking account. A one standard deviation increase in private credit is associated with a 40 percent decrease in the impact of experiencing a banking crisis.

Does the Severity of the Banking Crisis Matter?

Banking crises vary in their severity. Some are prolonged and others are resolved quickly. In addition, the severity of a financial crisis may vary depending on whether it is accompanied by other shocks. For example, Kaminsky and Reinhart (1999) examine the relationships between banking crises and currency crises and discuss how currency crises can exacerbate banking crises making “twin crises” particularly severe. In Table 7, we investigate how various characteristics of a bank crisis impact subsequent investor behavior.

We begin by examining the effect of experiencing a GDP crisis at the same time as a banking crisis in column [2] of Table 7. A country is defined to have had a GDP crisis if it experienced a period of three consecutive years of negative per capita GDP growth during the time period 1975-1995. Individuals who live through a GDP crisis at the same time they experience a systemic bank crisis are about 4 percentage points less likely to have a checking account compared to otherwise similar individuals who did not live through a GDP crisis at the time of the banking crisis. While experiencing a banking crisis accompanied by a GDP crisis exacerbates the impact of the banking crisis on investor confidence, the coefficient on the banking crisis variable remains negative and significant. In column [3] and [4], we examine the impact of experiencing a currency crisis or a sovereign debt crisis at the same

time as a banking crisis.²¹ Controlling for coincident currency crises or sovereign debt crises has little impact on the estimated coefficient for experiencing a banking crisis, and there is no statistically significant difference in the behavior of individuals who also experienced a currency or a debt crisis at the same time as a banking crisis. In column [5], we examine how the length of the systemic banking crisis influences investor behavior. The length of the financial crisis does not have a significant impact on the likelihood of having a checking account in the U.S.²²

In Table 8, we investigate how deposit insurance affects subsequent investor behavior. Individuals who experienced a banking crisis in a country that has explicit deposit insurance in place *prior* to the crisis are nearly as likely to have a bank account in the U.S. as individuals who never experienced a banking crisis prior to moving to the U.S. (column [2]). The estimates suggest that having deposit insurance *prior* to the crisis undoes the negative effect of living through a crisis on investor confidence. In contrast, individuals who live through a banking crisis in a country that enacts deposit insurance after the crisis experience no mitigating effects. The enactment of deposit insurance in the wake of a crisis may be a measure of the severity of the crisis and reflect policymakers' conclusions that investor confidence has been sufficiently shaken by the crisis that it is desirable to enact deposit insurance to restore confidence in an effort to bring savings back into the formal financial sector.

Do Bank Crises Matter for Other Behavior?

Finally, we consider the effect of experiencing a banking crisis on other investment behavior. In Table 9, we present estimates of experiencing a bank crisis on the decision to have any bank account, a savings account, to own stock, to own an IRA or Keogh account, to own a home and to be self-employed. These estimates help us to understand the channel through which banking crises impacts behavior. One possibility is that exposure to bank crises affects an individual attribute – generalized trust, risk aversion,

²¹ For comparison purposes, we have also examined the impact of living through a GDP, currency or sovereign debt crisis that is *not* accompanied by a systemic banking crisis. We find that individuals who have lived through a GDP crisis prior to coming to the U.S. are 8 percentage points less likely to have a checking account compared to otherwise similar individuals. However, there is no significant difference in checking account usage between individuals who have experienced a debt crisis or a currency crisis and those who have not.

²² We have also examined the impact of other measures of the severity of banking crises including the fiscal costs of recovery measures and the share of non-performing loans. These factors do not play a significant role in explaining differences in checking account ownership among individuals from the same country who have and have not experienced a crisis.

or time preference, for example -- that is important for many financial decisions not just those involving banks. Alternatively, exposure to a banking crisis may primarily impact an individual's perception of the expected returns to having a bank account, through an increase in the perceived likelihood of a future banking crisis, for example.

We find that experiencing a banking crisis has a significant impact on investment decisions that are mediated through banks: having any bank account, a savings account or purchasing a home (most people borrow from banks to purchase a home). Compared to otherwise similar individuals from the same country, people who lived through a banking crisis in their country of origin are 8.2 percentage points less likely to have a savings account and 7.5 percentage points less likely to own a home. Interestingly, exposure to systemic banking crises does not appear to have a significant impact on stock market participation, IRA/Keogh ownership or self-employment. Although investor confidence in banks appears to be shaken by banking crises, this experience does not seem to translate to investment decisions that are not mediated through banks.

These findings are consistent with the view that living through a banking crisis impacts investor behavior by changing their beliefs about the future stability of banks. Survey evidence from Bulgaria bolsters this view. In their analysis of 2008 survey data from Bulgaria, Mudd and Valev (2009) find that people who lost money in during the 1996 Bulgarian banking crisis believe that a future episode of bank instability is significantly more likely, compared to similar people who did not lose money in 1996.

Interpreting the Findings: The Role of Direct Experience

The literature on reinforcement learning emphasizes the role played by direct experience. While the data do not allow us to examine this hypothesis directly, the results do suggest that it is important that losses were experienced during the banking crisis for it to have an impact on financial behavior in the U.S. For example, we find no effect of experiencing a banking crisis for individuals from countries that had deposit insurance in place prior to the crisis. The finding that the impact of living through a crisis increases with age at the time of the crisis is also consistent with the view that direct experience is important.

As further checks on the importance of direct experience, we have examined whether banking crises in the country of origin have an impact on people from that country who are living in the U.S. at the time of the crisis. We have also examined whether banking crises affect the likelihood that individuals from countries that border a crisis country have checking accounts in the U.S. These individuals may have learned about the crisis from friends and relatives, or through the media, for example. We find no impact of a crisis in the country of origin on individuals already living in the U.S. or on individuals who were living in countries that share a border with the crisis country and subsequently migrate to the U.S. These findings suggest that direct experience of the banking crisis, in the sense of living in the country when it happens, changes future behavior.

5. Conclusions

Our findings indicate that systemic banking crises have important effects on investor confidence. Individuals who have experienced a banking crisis in their countries of origin are significantly less likely to have bank accounts in the U.S. This finding is robust to including important individual controls like wealth, education, income, and age, as well as country of origin fixed effects and decade of migration controls. The results cannot be explained by time-varying individual-level heterogeneity that is correlated with exposure to a banking crisis. In addition, because we focus on checking account ownership and study individuals who have chosen to migrate to the U.S., the estimates that we present are likely to be conservative. One can take the perspective, for example, that differences between the financial and regulatory environment in the country of origin and the U.S. represent very credible institutional reforms.

Overall, the findings suggest that reduced investor confidence following a crisis is an important component of the cost of a systemic banking crisis and can make recovery more challenging. Once investor confidence is shaken, it appears quite difficult to restore. On a more optimistic note, having deposit insurance in place prior to the onset of a banking crisis appears to be an effective way to protect investor confidence. This is an important finding, given policy debates on deposit insurance and moral hazard problems. We find that the impact of living through a crisis is larger for people from countries

with less developed economies and with weaker institutions. In addition, we find that the effect of banking crises does not impact stock market participation. This suggests that, although investors are unable to ignore their past bad experiences with banks in interacting with U.S. banks, these experiences do not spill over to non-bank investments.

The results in this paper shed light on the significance of reinforcement learning for investment decisions. We find that *direct* experience of a systemic banking crisis in a country without deposit insurance has long-lasting consequences for investment decisions. First-hand experience of a banking crisis has a greater effect on behavior compared to hearing about a crisis in a neighboring country through the media, or learning about a crisis from friends and relatives who are living through it, for example. Individuals who experienced a banking crisis as adults are more likely to be impacted compared to those who experienced a crisis as children. Given the role of direct experience with banking crises in shaping investor confidence, deposit insurance seems to be an important mechanism to prevent the destructive dynamics that can arise if a banking crisis decreases investor confidence and thereby increases the likelihood of subsequent banking crises.

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Table 1: Definitions and Sources of Country and Crisis Variables

Variable	Definition and Source
Experienced Banking Crisis	An indicator variable equal to one if an individual has experienced a systemic financial crisis prior to coming to the U.S and zero otherwise. Financial crises defined to be systemic if non-performing assets reached at least 10% of total assets at the peak of the crisis, if the cost of rescue operations was at least 2% of GDP, if emergency measures (bank holidays, deposit freezes, blanket guarantees to depositors or other bank creditors) were taken, or if large-scale nationalizations took place. Source: authors' calculations using 1996 SIPP data and information from Honohan and Laeven (2005).
Age at Banking Crisis	Equal to an individual's age at the beginning of the first systemic banking crisis they experienced prior to coming to the U.S. Equal to zero for individuals who did not experience a crisis. Source: authors' calculations using 1996 SIPP data and information from Honohan and Laeven (2005).
Experienced a Banking Crisis and a GDP Crisis	An indicator variable equal to one if an individual experienced a banking crisis and a GDP crisis simultaneously and zero otherwise. A "GDP crisis" is defined as three consecutive years of negative real per capita GDP growth before migrating to the U.S. The first year of each GDP crisis episode is the third year of negative growth. For example, Turkey experienced negative per capita GDP growth in 1978, 1979 and 1980, so it is defined to have a GDP crisis beginning in 1980. Source: Author's calculations using World Bank World Development Indicators.
Experienced a Banking and a Currency Crisis	An indicator variable equal to one if an individual experienced a banking crisis and a currency crisis simultaneously and zero otherwise. A "currency crisis" is defined as a nominal depreciation of the currency of at least 30 percent that is also at least a 10 percent increase in the rate of depreciation compared to the year before. Source: authors' calculations using 1996 SIPP data and data on currency crises from Laeven and Valencia (2008).
Experienced a Banking and a Debt Crisis	An indicator variable equal to one if an individual experienced a banking crisis and a sovereign debt crisis simultaneously. A "sovereign debt crisis" is defined as a period in which a country either defaults or is forced to restructure its sovereign debt. Source: authors' calculations using 1996 SIPP data and information on sovereign debt crises from Laeven and Valencia (2008).
Length of Bank Crisis	Length of bank crisis in years. Source: Honohan and Laeven (2005).
Average GDP	Average real GDP per capita 1975 - 1995 (2000 dollars). Source: Authors' calculations using World Bank World Development Indicator data.
Private Credit	A broad measure of financial intermediary development. It is calculated as the value of credits by financial intermediaries to the private sector divided by GDP. Source: Beck, Demirgüç-Kunt, and Levine (2000).
Bank Branches per 100,000 people	Number of bank branches per 100,000 people. Source: Beck, Demircuc-Kunt and Peria (2007).
KKZ Index	A composite of six governance indicators from 1998: voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, and corruption. Higher values correspond to better governance. Source: Kaufman, Kray and Zoido-Lobaton, (1999).
Deposit Insurance at Time of Crisis	An indicator variable equal to one if a country had formal regulation requiring deposit insurance through central bank law, banking law, or the country's constitution before the time of the country's first crisis, and zero otherwise. Source: Demirgüç-Kunt, Kane and Laeven (2008).
Trust in upper 1/3rd	An indicator variable equal to one for countries whose average response to a question about trust in the European or World Values Survey is in the upper third of the trust distribution and zero otherwise. For each country, the fraction of respondents who answer the question "Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people?" with "Most people can be trusted" is calculated. This calculation is performed for countries where European or World Value Surveys were completed between 1981 and 2004. Source: Authors calculations using data from European and World Value Survey data.

Table 2A: Characteristics of Immigrants and the Native Born in the SIPP Data

Characteristic	Native Born	Immigrant
Individual Characteristics		
Age	45.73 (17.24)	37.71 (13.50)
% Male	46.00	46.69
% Married	58.51	67.04
% non-white	19.73	81.12
% unemployed or out of the labor force	33.04	33.57
# of children < 18 in household	0.731 (1.113)	1.413 (1.444)
Average monthly per capita household income	2423.05 (3081.70)	1666.06 (2594.10)
Median monthly per capita household income	1707.82	1085.11
Average household wealth	171644.6 (692172.9)	74798.61 (204566.3)
25 th percentile of household wealth	13552.81	1233.08
Median household wealth	67614.86	12160.4
75 th percentile of household wealth	180613.3	63182.57
Educational Attainment (%)		
Less than High School	16.71	37.22
High School Graduate	32.09	23.46
Some College	29.92	18.99
Bachelor Degree	14.31	13.06
Advanced Degree	6.97	7.27
Financial Market Participation (%)		
% with banking relationship	75.36	54.63
% with a checking account (interest or non-interest)	64.11	42.02
% with a savings account	53.50	36.04
% own stock	18.04	5.71
Other characteristics (%)		
% own home	72.27	40.98
% IRA/Keogh	18.41	5.47
% Self-Employed	9.76	7.80
Number of Observations	48105	3729

Notes: Unless otherwise noted, mean values are reported. Standard deviations are in parentheses. Sample is restricted to the one wave of the 1996 Survey on Income and Program Participation with wealth information and to individuals 18 and over.

Table 2B: Immigrant Characteristics

Characteristic	Immigrant
Year of Arrival in the U.S. (%)	
1975 – 1979	17.48
1980 – 1984	22.82
1985 – 1989	25.40
1990 – 1996	34.30
Age at Migration (%)	
five years or younger	2.46
six to ten years	0.97
Eleven to fifteen years	2.24
sixteen to twenty years	4.57
over twenty years	89.75
Continent of Origin (%)	
North America	52.78
Europe	6.92
Asia	32.45
Africa	1.18
South America	6.17
Australia and Oceania	0.51

Notes: Unless otherwise noted, mean values are reported. Standard deviations are in parentheses. The unit of observation is a person-wave. Sample is restricted to the one wave of the 1996 Survey on Income and Program Participation with wealth information and to individuals 18 and over.

Table 3A: Summary of Country and Crisis Variables

Characteristic	N	Mean	Standard Deviation	Min	Median	Max	U.S. Value
Banking Crisis	80	0.463	0.502	0	0	1	0
GDP Crisis	65	0.569	0.499	0	1	1	0
Currency Crisis	80	0.625	0.487	0	1	1	0
Debt Crisis	80	0.363	0.484	0	0	1	0
Average GDP	66	8241	10077	106	3036	42873	24831
Private Credit	53	0.557	0.389	0.046	0.508	1.69	0.460
KKZ Index	55	0.497	0.713	-1	0.33	1.72	1.29
Deposit Insurance	75	0.173	0.381	0	0	1	1
Branches/100,000 People	61	16.56	17.59	0.41	9.59	95.87	30.86
Trust	52	0.288	0.150	0.028	0.274	0.653	0.350
Length of Crisis (yrs)	37	4.73	2.58	1	4	11	N/A

Table 3B: Correlation between Country Characteristics

Characteristic	Banking Crisis	GDP Crisis	Currency Crisis	Debt Crisis	Length of Crisis	Av. GDP	Priv. Credit	KKZ Index	Deposit Insurance	Branches/ 100,000	Trust
Banking Crisis	1.000										
GDP Crisis	0.040	1.000									
Currency Crisis	0.408***	0.228*	1.000								
Debt Crisis	0.396***	0.393***	0.423***	1.000							
Length of Crisis	N/A	-0.270	-0.018	-0.329**	1.000						
Average GDP	-0.271**	-0.252**	-0.607***	-0.510***	0.219	1.000					
Private Credit	-0.321**	-0.463***	-0.515***	-0.426***	0.075	0.665***	1.000				
KKZ Index	-0.390***	-0.332**	-0.586***	-0.543***	0.019	0.814***	0.653***	1.000			
Deposit Insurance	0.112	-0.147	-0.111	-0.135	0.056	0.332***	0.010	0.139	1.000		
Branches/100,000	-0.274**	-0.270**	-0.329***	-0.448***	0.222	0.584***	0.415***	0.613***	0.193	1.000	
Trust	-0.223	-0.143	-0.398***	-0.366***	0.105	0.486***	0.351**	0.527***	0.111	0.188	1.000

Notes: *** indicates significance at at least the 1% level, ** at at least the 5% level, * at at least the 10% level.

Table 4: Experiencing a Banking Crisis and Checking Account Ownership

Explanatory Variable	[1] No Wealth or Income Controls	[2] With Wealth and Income Controls (Baseline)	[3] Age at Crisis	[4] Age at Crisis Decade of Migration Controls	[5] Age at Crisis Decade of Migration * Country Controls	[6] Age at Crisis Decade of Migration * Country Controls No Mexico
Experienced Banking Crisis	-0.134*** (0.030)	-0.110*** (0.028)				
Age at Crisis			-0.003*** (0.001)	-0.003*** (0.001)	-0.002*** (0.001)	-0.002** (0.001)
Decade of Migration Fixed Effects				Yes	Yes	Yes
Decade of Migration*Country Effects					Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-Squared	0.2898	0.3105	0.3099	0.3104	0.3214	0.2892
Number of Observations	3609	3609	3609	3609	3609	2465
Number of Countries	80	80	80	80	80	79

Notes: In addition to those reported on here, regressions [2] – [6] include controls for age, age squared, wealth quartiles, labor force status, income, income squared, marital status, sex, ethnicity, education, number of children, and county controls. Regression [1] does not include income and wealth but does include the other explanatory variables. A linear probability model is used and standard errors are corrected for heteroskedasticity and clustering at the country-cohort level. Standard errors are in parentheses. *** indicates significance at at least the 1% level, ** at at least the 5% level, * at at least the 10% level.

Table 5: Experiencing a Banking Crisis and Individual Attributes
Dependent Variable: Checking Account Ownership

Explanatory Variable	[1] Baseline	[2] Low Education	[3] High Education	[4] Years in the US	[5] Arrived in US in Last 3 years	[6] Permanent Residents and U.S. Citizens ONLY
Experienced Banking Crisis	-0.110*** (0.028)	-0.037 (0.032)	-0.131*** (0.029)	-0.172*** (0.027)	-0.093*** (0.026)	-0.101*** (0.026)
Crisis*Low Education		-0.143*** (0.018)				
Crisis*High Education			0.130*** (0.044)			
Crisis*Years in the U.S.				0.008*** (0.002)		
Crisis*Arrived in U.S. in last 3 years					-0.089*** (0.017)	
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-Squared	0.3105	0.2925	0.2925	0.3120	0.3121	0.2979
Number of Observations	3609	3609	3609	3609	3609	2360
Number of Countries	80	80	80	80	80	77

Notes: In addition to those reported on here, all of these regressions include controls for age, age squared, wealth quartiles, labor force status, income, income squared marital status, sex, ethnicity, education, number of children, and county controls. A linear probability model is used and standard errors are corrected for heteroskedasticity and clustering at the country-cohort level. High education immigrants are those with a bachelor's degree or more education. Low education immigrants are those with less than a high school degree. Standard errors are in parentheses. *** indicates significance at at least the 1% level, ** at at least the 5% level, * at at least the 10% level.

Table 6: Experiencing a Banking Crisis and Country Characteristics
Dependent Variable: Checking Account Ownership

Explanatory Variable	[1] Baseline	[2] GDP	[3] Private Credit	[4] Branches/ 100,000 People	[5] KKZ Index	[6] Trust
Experienced Banking Crisis	-0.110*** (0.028)	-0.129*** (0.032)	-0.147*** (0.045)	-0.120** (0.056)	-0.123*** (0.030)	-0.110*** (0.030)
Crisis*Average GDP per capita [†]		0.518** (0.228)				
Crisis*Private Credit			0.126 (0.105)			
Crisis*Bank Branches/100,000				0.002 (0.006)		
Crisis*KKZ Index of Institutional Quality					0.139** (0.067)	
Crisis*Trust in Upper 3 rd of Distribution						0.144* (0.077)
Country Controls	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-Squared	0.3105	0.3196	0.3273	0.3259	0.3275	0.3122
Number of Observations	3609	3244	2855	2947	3008	3531
Number of Countries	80	66	53	61	55	78

Notes: In addition to those reported on here, all of these regressions include controls for age, age squared, wealth quartiles, labor force status, income, income squared marital status, sex, ethnicity, education, number of children, and county controls. The number of observations differs depending on the number of countries for which a particular measure is available. A linear probability model is used and standard errors are corrected for heteroskedasticity and clustering at the country-cohort level. Standard errors are in parentheses. *** indicates significance at at least the 1% level, ** at at least the 5% level, * at at least the 10% level. [†]Coefficient and standard error are the actual one multiplied by 100,000.

Table 7: Characteristics of the Crisis
Dependent Variable: Checking Account Ownership

Explanatory Variable	[1] Baseline	[2] GDP Crisis at Crisis	[3] Currency Crisis at Crisis	[4] Debt Crisis at Crisis	[5] Length of Crisis
Experienced Banking Crisis	-0.110*** (0.028)	-0.091*** (0.025)	-0.104*** (0.032)	-0.082** (0.032)	-0.098** (0.048)
Experienced GDP Crisis with Bank Crisis		-0.040* (0.021)			
Experienced Currency Crisis with Bank Crisis			-0.009 (0.028)		
Experienced Debt Crisis with Bank Crisis				-0.041 (0.032)	
Bank Crisis*Length of Bank Crisis					-0.001 (0.006)
Country Controls	Yes	Yes	Yes	Yes	Yes
Adjusted R-Squared	0.3105	0.3124	0.3103	0.3105	0.3085
Number of Observations	3609	3579	3609	3609	2495
Number of Countries	80	80	80	80	37

Notes: In addition to those reported on here, all of these regressions include controls for age, age squared, wealth quartiles, labor force status, income, income squared marital status, sex, ethnicity, education, number of children, and county controls. The number of observations differs depending on the number of countries for which a particular measure is available. A linear probability model is used and standard errors are corrected for heteroskedasticity and clustering at the country-cohort level. Standard errors are in parentheses. *** indicates significance at at least the 1% level, ** at at least the 5% level, * at at least the 10% level.

Table 8: Experiencing a Banking Crisis and Deposit Insurance
Dependent Variable: Checking Account Ownership

Explanatory Variable	[1] Baseline	[2] Deposit Insurance Before Crisis	[3] Deposit Insurance After Crisis
Experienced Banking Crisis	-0.110*** (0.028)	-0.136*** (0.031)	-0.021 (0.026)
Crisis*Deposit Insurance before crisis		0.124*** (0.036)	
Crisis*Deposit Insurance after crisis			-0.114*** (0.036)
Country Controls	Yes	Yes	Yes
Adjusted R-Squared	0.3105	0.3157	0.3155
Number of Observations	3609	3485	3485
Number of Countries	80	75	75

Notes: In addition to those reported on here, all of these regressions include controls for age, age squared, wealth quartiles, labor force status, income, income squared marital status, sex, ethnicity, education, number of children, and county controls. The number of observations differs depending on the number of countries for which a particular measure is available. A linear probability model is used and standard errors are corrected for heteroskedasticity and clustering at the country-cohort level. Standard errors are in parentheses. *** indicates significance at at least the 1% level, ** at at least the 5% level, * at at least the 10% level.

Table 9: Experiencing a Banking Crisis and Other Investment Decisions

Explanatory Variable	[1] Baseline: Checking Account	[2] Any Bank Account	[3] Savings Account	[4] Stock	[5] IRA/Keogh	[6] Homeowner	[7] Self- Employed
Experienced Banking Crisis	-0.110*** (0.028)	-0.145*** (0.040)	-0.082*** (0.026)	0.0040 (0.006)	-0.009 (0.018)	-0.075*** (0.019)	-0.002 (0.022)
Country Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-Squared	3609	3609	3609	3609	3609	3609	0.0973
Number of Observations	0.3105	0.3202	0.2249	0.2390	0.1966	0.5057	3609
Number of Countries	80	80	80	80	80	80	80

Notes: In addition to those reported on here, all of these regressions include controls for age, age squared, wealth quartiles, labor force status, income, income squared marital status, sex, ethnicity, education, number of children, and county controls. A linear probability model is used and standard errors are corrected for heteroskedasticity and clustering at the country-cohort level. Standard errors are in parentheses. *** indicates significance at at least the 1% level, ** at at least the 5% level, * at at least the 10% level.

**Appendix Table 1: Systemic Banking Crises, GDP, Currency and Debt Crises,
Crises beginning 1975 – 1995**

	Country	Year(s) of Banking Crisis	Year(s) of GDP Crisis	Initial Year(s) of Currency Crisis	Initial Year(s) of Debt Crisis
1	Afghanistan	None	No Data	No Data	No Data
2	Argentina	1980–82, 1989-90, 1995	1990	1975	1982
3	Australia	None	None	None	None
4	Bahamas	None	1992	No Data	No Data
5	Bangladesh	1987–96	None	1976	None
6	Barbados	None	1983, 1992	None	None
7	Belgium	None	None	None	None
8	Belize	None	1983-85	None	None
9	Bolivia	1986–88, 1994-1995	1980-86	1981	1980
10	Brazil	1990, 1994-99	1983, 1992	1976	1983
11	Burma	None	No Data	1975	None
12	Cambodia	None	No Data	1992	None
13	Canada	None	1992	None	None
14	Chile	1976, 1981-83	None	1982	1983
15	China	None	None	None	None
16	Colombia	1982–87	None	1985	None
17	Costa Rica	1994–96	1982	1981	1981
18	Cuba	None	No Data	No Data	No Data
19	Czechoslovakia	None	No Data	No Data	No Data
20	Dominica	None	No Data	None	None
21	Dominican Republic	None	None	1985	1982
22	Ecuador	1980-1983	None	1982	1982
23	Egypt	1980-1983	None	1979	1984
24	El Salvador	1989	1981-82	1986	None
25	Ethiopia	None	1990-92	1993	None
26	Fiji	None	No Data	None	None
27	Finland	1991–94	1992-93	1993	None
28	France	None	None	None	None
29	Germany	None	None	None	None
30	Ghana	1982–89	1981-83	1978	None
31	Greece	None	1982-83	1983	None
32	Guatemala	None	1983-86	1986	None
33	Guyana	None	1979, 1984,1990	1987	1982
34	Haiti	None	1983-90, 1994-95	1992	None
35	Holland	None	No Data	None	None
36	Honduras	None	1982-83	1990	1981
37	Hong Kong	None	None	None	None
38	Hungary	1991–95	1992-93	None	None
39	India	None	None	None	None
40	Ireland	None	None	None	None
41	Iran	None	1979-81, 1986-88	1985	1992
42	Iraq	None	No Data	No Data	No Data
43	Israel	1977–83	None	1975	None
44	Italy	None	None	1981	None
45	Jamaica	None	1975-80	1978	1978
46	Japan	1992–2001	None	None	None

47	Jordan	None	1989-91	1989	1989
48	South Korea	None	None	None	None
49	Laos	None	No Data	1978	None
50	Lebanon	1988-90	No Data	1984	None
51	Malaysia	None	None	None	None
52	Mexico	1981-91, 1994-2000	1988	1977	1982
53	Morocco	1980-1983	None	1981	1983
54	New Zealand	None	1989-91	None	None
55	Nicaragua	1987-1989	1986-93	1979	1980
56	Nigeria	1991-95	1983-84, 1995	1983	1983
57	Norway	1990-93	None	None	None
58	Pakistan	None	None	1972	None
59	Panama	1988-89	1976-77, 1989	None	1983
60	Peru	1983-90	1978, 1990	1976	1978
61	Philippines	1983-87	1985, 1993	1983	1983
62	Poland	1992-95	No Data	None	1981
63	Portugal	None	None	1983	None
64	Romania	1990-96	1990-92	None	1982
65	Singapore	None	None	None	None
66	South Africa	None	1987, 1992-93	1984	1985
67	Spain	1977-85	None	1983	None
68	Sweden	1991-94	1993	1993	None
69	Switzerland	None	1993	None	None
70	Syria	None	1984	1988	None
71	Taiwan	None	No Data	None	None
72	Thailand	1983-87	None	None	None
73	Trinidad & Tobago	None	1985-89	1986	1989
74	Turkey	1982-85	1980	1978	1978
75	UK	None	None	None	None
76	Uruguay	1981-84	1984	1983	1983
77	USSR	None	None	No Data	No Data
78	Venezuela	1994-95	1980-85	1984	1982
79	Vietnam	None	No Data	1981	1985
80	Yugoslavia	None	No Data	No Data	No Data

Notes: See Table 1 for definitions of each type of crisis

Appendix Table 2: The Effect of Control Variables on Having a Checking Account

Explanatory Variable	
Age [†]	1.003*** (0.313)
Age Squared [†]	-0.013*** (0.003)
2 nd Wealth Quartile	0.148*** (0.022)
3 rd Wealth Quartile	0.158*** (0.038)
4 th Wealth Quartile	0.142*** (0.028)
Unemployed or Out of Labor Force	-0.075*** (0.022)
Per Capita Income ^{††}	16.8** (7.78)
Per Capita Income Squared ^{††}	-0.001*** (0.0002)
Male	-0.043*** (0.013)
Married	0.165*** (0.019)
Number of Children	-0.02*** (0.007)
Non-white	-0.052 (0.045)
High School Graduate	0.136*** (0.024)
Some College	0.185*** (0.025)
Bachelor Degree	0.251*** (0.033)
Advance Degree	0.313*** (0.041)
Experienced Banking Crisis	-0.110*** (0.028)
Constant	0.441*** (0.111)
County Fixed Effects	Yes
Adjusted R-Squared	0.3105
Number of Observations	3609
Number of Countries	80

Notes: Dependent variable is equal to one if the respondent owned stock during the interview period in question and is zero otherwise. A linear probability model is used and standard errors are corrected for heteroskedasticity and clustering at the country-cohort level. Standard errors are in parentheses. The reported coefficients and standard errors of explanatory variables marked by a † are the actual ones multiplied by 100, by a †† are multiplied by 1,000,000. The lowest wealth quartile is the omitted wealth category, and the omitted education category is less than high school graduate. *** indicates significance at at least the 1% level, ** at at least the 5% level, * at at least the 10% level.