

INSTITUTIONS AND FINANCIAL DEVELOPMENT: EVIDENCE FROM INTERNATIONAL MIGRANTS IN THE UNITED STATES

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Abstract—We investigate the impact of institutions on financial development by analyzing the financial behavior of immigrants in the United States. We find that immigrants from countries with institutions that more effectively protect private property are more likely to own stock in the United States. The effect of home-country institutions is persistent and absorbed early in life. The impact of institutions is amplified for immigrants who live in metropolitan areas with many other immigrants from the same country. These findings are robust to alternative measures of institutional effectiveness and to various methods of controlling for unobserved individual characteristics, including specifications with country fixed effects.

I. Introduction

ALTHOUGH there is widespread agreement that institutions shape economic outcomes and are important determinants of financial development, we know relatively little about what lies inside the institutional “black box.” International migration allows us to study the impact of placing an individual into a different formal institutional environment while holding past experience with institutions fixed. In the process of migrating from one country to another, individuals move from one formal institutional environment to another but may maintain beliefs about institutions acquired in their countries of origin.

Douglass North (1990) defines institutions as “formal constraints—rules that human beings devise” and “informal constraints—such as conventions and rules of behavior.” Understanding the role of informal institutional constraints is a crucial component of predicting the impact of formal institutional change. By studying the behavior of international migrants in the United States, we isolate the impact of informal institutional constraints, since all of the migrants face the same set of formal rules in the United States.¹

This paper measures the role of informal institutional constraints for financial development. By focusing on informal institutional constraints, we gain new insights into the

likely results of formal institutional reform. It is relatively straightforward to change formal institutions by altering the written rules that govern society, but changing the informal institutional constraints that manifest themselves in culture and norms of behavior is more challenging.²

Our approach takes advantage of the fact that in any given year, vast numbers of individuals confront new institutional surroundings and, in some fortuitous cases, detailed data are collected on the financial decisions they make in their new institutional environments. More than 191 million people live outside their country of birth and about 20% of these international migrants live in the United States (United Nations, 2005). Together with their skill and talents, international migrants bring attitudes and experiences acquired in their country of origin to the destination country. North (1993) argues that individuals *embody* the informal institutional constraints reflected in their customs, traditions, and codes of conduct.

By analyzing how immigrants’ financial decisions in the United States are influenced by country-of-origin institutions, we also gain insights into how the institutional framework becomes embedded in individuals and how susceptible it is to change. For example, we can compare the importance of home-country institutions for recent migrants relative to migrants who have been in the United States for many years. This comparison provides some insight into the potential pace of economic progress and financial development following institutional reform. In addition to demonstrating the importance of informal institutional constraints, our paper provides independent evidence that institutions that effectively protect private property are an important determinant of financial market development.

The bulk of the evidence to date on the importance of institutions for financial development comes from cross-country studies that reveal the total impact of institutions: formal and informal. A growing number of studies show that the ability of a country’s institutions to protect private property and to provide incentives for investment can explain a large fraction of the persistent disparity in financial development and economic performance across countries. These studies include Knack and Keefer (1995), La Porta et al. (1997, 1998, 2000), Levine (1998, 1999), Levine, Loayza, and Beck (2000), Rajan and Zingales (2003), Beck, Demirgüç-Kunt, and Levine (2003a, 2003b), Açemoglu, Johnson, and Robinson (2001, 2002), and Açemoglu and

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¹ We relax this assumption in the empirical work by including metropolitan statistical area (MSA) controls. Effectively, the empirical strategy assumes that formal institutional constraints are the same for immigrants living in the same MSA.

² For example, Murrell (1996), citing North (1990), describes policies in the countries that made up the former Soviet Union as a “mélange of the old and the new, a pattern typical of times of great institutional change, when revolutions in formal rules move far ahead of modifications in informal arrangements and behavior.”

Johnson (2005).³ In addition, Rodrik, Subramanian, and Trebbi (2004) present evidence that, not only do high-quality institutions contribute to economic development—institutions are, in fact, the key determinant of economic development.

We find that higher country-of-origin institutional quality is associated with statistically and economically meaningful increases in stock market participation.⁴ Stock market participation is the logical individual-level counterpart to country-level stock market capitalization, the measure of financial development used in many studies. If Argentina's institutions increased in quality by one standard deviation—that is, if its protection from expropriation was as good as Germany's, then stock market participation among Argentine immigrants in the United States would increase by 2.8 percentage points, a 29% increase. This finding is robust to alternative measures of institutional quality. For example, an equivalent increase in constraints on the executive would increase stock market participation by 1.1 percentage points, a 12% increase.

Our empirical strategy is similar to that of Fernandez and Fogli (2005) who show that country-of-ancestry fertility and female labor force characteristics influence the fertility and work behavior of U.S.-born children of immigrants.⁵ One important difference between their work and ours is that we study the behavior of immigrants, not their children. Because we study the behavior of individuals who have chosen to migrate to the United States, we have to take seriously the possibility that this decision is influenced by the home-country institutional environment in a way that is manifested in unobservable individual characteristics.

We take a number of steps to ensure that our findings are robust to potential biases due to the correlation of country-of-origin institutional quality and unobserved individual characteristics. First, we show that our findings are robust to controlling for immigrant selection that is related to country-of-origin inequality as described in Borjas (1987). Second, we eliminate the possibility that unobserved individual attributes are correlated with country-of-origin institutional quality by including country fixed effects in a specification where institutional quality is interacted with ethnic concentration, a country- and metropolitan-area-specific measure of the size of an immigrant network. These results indicate that an improvement in institutions comparable with coming from Germany rather than Argentina would increase stock

market participation by 0.9 percentage points for the median immigrant, a 10% increase.

This finding addresses a substantive as well as an econometric issue. The third component of the institutional environment, according to North (1993), is the enforcement characteristics of formal and informal institutional constraints. We find that informal institutional constraints matter more when they are more likely to be enforced and reinforced through immigrant networks.

Further robustness tests show that institutional quality has a larger impact on investments that are more institutionally intense. For example, institutional quality matters more for stock market participation than for owning a savings or a checking account. It also matters more for stock market participation than for investments in health or human capital that are mediated largely through the family rather than through formal channels. The fact that institutional quality matters when it should and does not matter when it should not makes it unlikely that the findings are due to unobserved country-of-origin characteristics.

In an effort to better understand the mechanism through which country-of-origin institutions work, we investigate how the effect of home-country institutions varies with length of time in the United States and with age at migration. Home-country institutional effects are persistent, affecting all immigrants, except those who have lived in the United States for more than 28 years.

Age at migration is also significant. Immigrants who arrive in the United States before age 16 are not affected by country-of-origin institutions. Those who arrive after age 16 are significantly influenced by institutions in their country of birth. When we focus on immigrants who left their birth countries when they were 16 to 20 years old, we find that institutions play an important role in their financial decisions. Because this group is unlikely to have had much direct experience with financial institutions, this suggests that important lessons about institutions are absorbed in the family and at school.

We explore in more detail how informal institutional constraints are transmitted by examining the impact of country-of-ancestry institutions on individuals who were born in the United States. For those who were born in the United States, the quality of these institutions has no effect on stock market participation, suggesting that the informal institutional constraints that influence financial decisions may be distinct from components of culture that persist across generations and across the same transformation in the formal institutional environment: norms about female labor force participation, fertility, and family living arrangements for example (see Antecol, 2000; Fernandez & Fogli, 2005; and Giuliano, 2004).

The next section describes the framework we use to derive the predicted relationship between institutional quality and financial decisions. In section III, we describe the country- and individual-level data that we analyze. Section

³ Besley (1995) and Johnson, McMillan, and Woodruff (2002) use firm-level data to show that investment increases when institutions do a better job of protecting property rights.

⁴ We study stock that is held outside of retirement accounts.

⁵ Carroll, Rhee, and Rhee (1994, 1999) also use a conceptually similar approach in their studies of the cultural determinants of savings. Hendricks (2004) examines the behavior of immigrants in the United States to explain variation in hours worked across countries. For hours worked in the United States he finds that home-country characteristics are important for women but not for men. Borjas (1987) also looks at the impact of country-of-origin characteristics on immigrant wage assimilation.

IV outlines the empirical strategy and discusses our findings and their robustness. Section V presents conclusions.

II. Framework

It is helpful to sketch out a simple reduced-form framework in order to make the hypotheses that we test clear. While we illustrate the framework in terms of an individual's decision about how much stock to purchase, this framework could easily apply to other financial decisions as well. Consider an individual, i , from country J who is considering how much stock to purchase. The individual's demand for stock is represented by

$$S_i = f(R, X_i),$$

where S_i is the amount that individual i invests in stock, R is the expected return from the investment, and X_i is a vector of individual characteristics (risk aversion, wealth, income, education, years in the United States, age at migration, and other characteristics) that affect the demand for stock.

Institutional quality is modeled by assuming that the investor believes there is some probability, π_i , that his or her funds will be misappropriated. This variable captures the investor's beliefs about the likelihood of expropriation by firm managers, or by the government, as well as the possibility that the stockbroker will abscond with funds. It measures the possibility that the institutional framework is not sufficient to ensure that stockbrokers behave honestly, that funds are invested in profit-maximizing projects, and that investment proceeds are appropriately reinvested or returned to investors. We assume that all agents (stockbrokers and firms) are governed by the same institutional framework and therefore they face a common cost of absconding. This means that variation in the likelihood of absconding by the firm or the broker can be safely ignored.⁶

Given her beliefs, the investor's expected return on the investment will not be R , the expected return on the stock, but $\pi_i \times 0 + (1 - \pi_i) \times R$. The probability that an investor places on the likelihood that the stockbroker or the firm absconds is a function of the quality of the institutions in the country that investor was born in, J , which may in turn be a function of the length of time the investor experienced those institutions, y_J , and the length of exposure that the investor has to U.S. institutions, y_{US} : $\pi_i = \pi(J, y_J, y_{US})$.

⁶ While variation in the likelihood of absconding at the firm level is unlikely to be related to the country of origin of the investor, stockbrokers may have different likelihoods of absconding and this likelihood of absconding may be related to the country of origin of the investor in the presence of taste-based discrimination (Becker, 1957) or ethnic affinity concerns (Cornell & Welch, 1996) which lead individuals to seek out brokers from the same ethnic background. In the empirical work, we address this possibility by including variables that help to control for the supply of and demand for brokers from the same ethnic background (MSA controls, measures of ethnic concentration for particular countries of origin within an MSA, country-of-origin fixed effects, as well as individual characteristics, including income, wealth, education, and race).

For the typical immigrant who comes from a country where institutions are weaker than in the United States, π is decreasing in origin-country institutional quality, increasing in years spent in the origin country, and decreasing in years spent in the United States. Given this framework, demand for stock will be increasing in home-country institutional quality, and for a given level of institutional quality, π will be higher for individuals who have recently arrived in the United States and who have arrived as adults.

We can also use this framework to think about how the effect of institutional quality will vary depending on the type of investment. The level of confidence in institutions required to make an investment vehicle reasonable depends on how institutionally intensive it is. Investing in stock, for example, requires a great deal of confidence in many institutions.⁷ The investor must be convinced that the stockbroker will not abscond with her investment and that the institutional and legal framework is sufficient to ensure that funds will be invested in profitable projects and that the proceeds of these projects will be returned to investors and not expropriated by management, either in the form of nonproductive investment or through outright theft. Investing in savings, opening a savings account, on the other hand, requires relatively less confidence in institutions and confidence primarily in a single institution, a bank. An investor must be convinced that the bank will keep her funds safe, accurately pay any interest due, and return accumulated funds upon demand.

For a given home-country institutional background, an individual is likely to put more weight on the possibility that an investment in stock will be stolen compared with the possibility that money invested in a savings account will disappear. This means that π_{Stock} is greater than $\pi_{Savings}$ and that the effect of home-country institutions should be greater for stock than for savings and other "safer" investments.

Other investments, say in children's health or education, which are primarily mediated through the family, require even less confidence in U.S. institutions. For investments that require no institutional support—that are entirely mediated through the family—institutions should not matter; π_{Family} should be close to 0.

III. Data

A. Individual Data

The challenge in using individual data is to find meaningful variation in institutional quality within a single data set. We achieve this by looking at a large sample of immigrants living in the United States. Historically high rates of migration to the United States in the past two

⁷ In related work on legal institutions and international trade, Berkowitz, Moenius, and Pistor (2006) address a similar issue and show that trade patterns and product complexity depend on institutional quality.

TABLE 1A.—CHARACTERISTICS OF IMMIGRANTS AND THE NATIVE-BORN IN THE SIPP DATA

Characteristic	Native-Born	Immigrant
Individual characteristics		
Age	46.47 (17.52)	45.22 (16.51)
% male	45.6%	46.2%
% married	57.4%	65.6%
% nonwhite	16.4%	32.2%
% unemployed or out of the labor force	33.8%	36.7%
# of children <18 in household	0.720 (1.090)	1.118 (1.347)
Average monthly per capita household income	\$2,224.44 (2,832.45)	\$1,639.53 (2,375.44)
Median monthly per capita household income	\$1,578	\$1,050
Average household wealth	\$185,754 (1,398,146)	\$122,685 (978,910)
25th percentile of household wealth	\$14,660	\$3,017
Median household wealth	\$71,123	\$29,001
75th percentile of household wealth	\$186,512	\$117,917
Educational attainment (%)		
Less than high school	15.0%	35.8%
High school graduate	30.4%	24.5%
Some college	30.6%	20.1%
Bachelor degree	15.9%	12.5%
Advanced degree	8.1%	7.1%
Financial market participation (%)		
% who own stock	20.0%	8.6%
% with a checking account (interest or noninterest)	63.8%	47.0%
% with a savings account	54.8%	40.1%
Other characteristics (%)		
% who drive own car to work	81.7%	75.1%
% who visited doctor in past 12 months	78.8%	79.3%
% who purchased prescription drugs for children	51.8%	34.1%
Number of individuals	31,046	5,020
Number of observations	100,839	15,043

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 four waves of the Survey on Income and Program Participation with wealth information, to individuals 18 and over, to those who live in a metropolitan statistical area, and to those who have nonmissing data for expropriation risk.

decades mean that at least 10% of the U.S. population was born abroad. The 1996–2000 Survey on Income and Program Participation (SIPP) data that we use are designed to be representative of the U.S. population and include approximately 46,000 individuals, of whom 11% are immigrants. These individuals face a common set of formal institutional constraints in the United States, but the immigrants vary in the institutional constraints that they have experienced prior to coming to the United States.

The financial decision that we focus on is the decision to own stock outside of a retirement account. Just over 8.5% of the immigrant sample owns stock, compared with 20% of the native-born (see table 1A). We study stock held outside of retirement accounts because these holdings are less likely to be determined by occupation and employer. Forty-seven percent of immigrants have a checking account compared with 64% of the native-born. Savings account ownership has a similar pattern. Forty percent of the immigrant sample has a savings account, compared with 55% of the native-born.

TABLE 1B.—IMMIGRANT CHARACTERISTICS

Characteristic	Immigrant
Year of arrival in the U.S. (%)	
Before 1964	11.5%
1965–1969	8.2%
1970–1974	10.1%
1975–1979	12.8%
1980–1984	17.9%
1985–1989	18.4%
1990–1996	21.2%
Age at migration (%)	
5 years or younger	3.7%
6 to 10 years	4.6%
11 to 15 years	6.8%
16 to 20 years	14.3%
over 20 years	70.6%
Continent of origin (%)	
North America	46.9%
Europe	15.4%
Asia	30.3%
Africa	0.9%
South America	6.3%
Australia and Oceania	0.2%

Notes: Unless otherwise noted, mean values are reported. The unit of observation is a person-wave. Sample is restricted to the four waves of the Survey on Income and Program Participation with wealth information, to individuals 18 and over, to those who live in a metropolitan statistical area, and to those who have nonmissing data for expropriation risk.

We restrict the sample to immigrants who are over 18 and live in a metropolitan statistical area (MSA), for a total sample of 15,043 observations, with (approximately) four annual observations per person.⁸ Table 1A summarizes these data for immigrants and the native-born. Compared with the native-born, immigrants are younger, more likely to be married, nonwhite, have more children, and more likely to be unemployed or economically inactive. Immigrants also tend to be less educated than the native-born. Slightly less than 36% of the immigrant sample has never completed high school compared with only 15% of the native-born sample. However, the percentage of immigrants and the native-born who have an advanced degree is roughly the same at 7% and 8%, respectively.

Monthly per capita household income is significantly lower for immigrants compared with the native-born. For immigrants, average monthly per capita household income is \$1,640, compared with \$2,224 for the native-born. In addition to having lower incomes, immigrant households have also accumulated less wealth compared with households headed by individuals who were born in the United States. The median immigrant household has wealth of \$29,001 compared with \$71,123 for the native-born.

Additional immigrant characteristics are described in table 1B. Nearly one-half of the immigrants arrived in the United States within the ten years prior to the start of the survey. Just under half of the immigrants were born in a North American country and about 15% were born in

⁸ We restrict our attention to the four annual survey waves where wealth data are available. Other SIPP data are collected quarterly.

Europe.⁹ Most of the immigrants arrived in the United States as adults, with almost 71% arriving at 21 years or older.

B. Country Data

The individual data are augmented with country-level data compiled from various sources. These data include various measures of institutional quality, and other important country characteristics. Table 2 defines each variable and describes its source.

What are “good” institutions? Adam Smith describes some of the most important components of effective institutions in *The Wealth of Nations*:

Commerce and manufactures can seldom flourish long in any state which does not enjoy a regular administration of justice, in which people do not feel themselves secure in the possession of their property, in which the faith of contracts is not supported by law, and in which the authority of the state is not supposed to be regularly employed in enforcing the payments of debts from those who are able to pay. Commerce and manufactures, in short, can seldom flourish in any state in which there is not a certain degree of confidence in the justice of government.

Transforming this image of effective institutions into a number that can be used in empirical analysis is a challenge. The literature emphasizes a number of different ways to operationalize what is meant by institutional effectiveness, including protection from expropriation, constraints on the executive, rule of law, and legal origin.

In addition to these measures, which have been used extensively in the literature, we create a new measure, domestic protection from expropriation of private investment. This measure is specifically designed to capture investment conditions from the perspective of domestic, rather than foreign, entrepreneurs. This variable is created from country-level surveys of local entrepreneurs. These surveys were completed in August 1996–February 1997 as part of a World Bank project and are discussed in the 1997 *World Development Report*.¹⁰

⁹ Mexico accounts for just over one-quarter of the immigrants in the sample. We assign institutional quality measures to individuals who were born in the Soviet Union, the former Yugoslavia, or Czechoslovakia in the following way: individuals who reported that they were born in Russia, Armenia, Azerbaijan, the Baltic States, Belarus, Estonia, Georgia, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Moldova, Tajikistan, Turkmenistan, Ukraine, USSR, or Uzbekistan are mapped to the institutional quality measure for the Soviet Union; individuals who reported that they were born in Czechoslovakia, Slovakia, or the Czech Republic are mapped to the institutional quality measure for Czechoslovakia, and individuals who reported that they were born in Yugoslavia, Bosnia and Herzegovina, Croatia, Macedonia, Montenegro, Slovenia, or Serbia are assigned the institutional quality measure for Yugoslavia.

¹⁰ We use these data rather than the 2000 World Business Environment Survey data because the 1997 data capture conditions during the same time period as the International Country Risk Guide (ICRG) and other institutional quality measures that we use.

We use responses to questions about the impact of theft and crime on the cost of business, the ability of state authorities to protect person and property, and the impact of the predictability of the judiciary on business operations to create an index for each country. Respondents were asked to rank current conditions and conditions ten years ago. The current and historical responses to each of the three questions were averaged and then an overall average was formed. One limitation of this measure is that it is only available for 31 of the countries in our sample.¹¹

Since the various institutional measures each have conceptual strengths and weaknesses as well as issues related to the number of countries that they cover and the time period that they are available for, our approach is to look at a number of different measures of institutional quality in an effort to ensure that the results do not depend on the specific way that institutional effectiveness is transformed into a number. Table 3A presents some summary statistics for each of the country-level variables that we use. U.S. values for each variable are reported in the column on the far right of the table. Institutional quality, as measured by protection from expropriation, ranges from 1.81 (Iraq) to 10.00 (the Netherlands, Switzerland, the United States). The average is 7.50. Constraints on the executive has similar properties. It ranges from 1.43 (Cuba, Iraq, Saudi Arabia, Syria) to 10.00 (including the Netherlands, Switzerland, the United States), and its mean is 6.96. Domestic protection from expropriation ranges from 3.63 (Poland) to 7.78 (Switzerland). The average is 5.31.

There are some important distinctions between the measures of institutional quality. For example, Mexico and China both have above-average protection from expropriation but below-average executive constraints. That being said, the various measures of institutional quality tend to be highly correlated with one another (see table 3B). In particular, domestic protection from expropriation is positively correlated with protection from expropriation, suggesting that conditions for foreign investors and domestic investors are similar.

IV. Empirical Findings

This section reports on our empirical findings. We estimate the decision to participate in the stock market using the following linear probability model:

$$S_{isj} = \alpha + \beta_1 X_i + \beta_2 Z_j + \delta_s + \varepsilon_{isj},$$

where S_{isj} is the decision to own stock for individual i who lives in metropolitan statistical area s and comes from country j . Individual controls are incorporated in X_i and include age, age squared, wealth quartiles, income, labor

¹¹ Because we do not look separately at the transition countries, we are able to use data from just 31 of the 67 country surveys that were completed.

TABLE 2.—DEFINITIONS AND SOURCES OF COUNTRY-LEVEL VARIABLES

Variable	Definition and Source
Protection from expropriation of private investment	This variable evaluates the risk of “outright confiscation and forced nationalization” of property. Lower ratings “are given to countries where expropriation of private foreign investment is a likely event.” Variable is the average over annual country observations 1982–1995. Source: International Country Risk Guide (ICRG) IRIS-3 Data
Constraints on the executive	This variable measures the extent of institutionalized constraints on the power of the chief executive. The variable takes on seven different values: (1) unlimited authority (there are no regular limitations on the executive’s actions, as distinct from irregular limitations such as the threat or actuality of coups and assassinations); (2) intermediate category; (3) slight to moderate limitation (there are some real but limited restraints on the executive); (4) intermediate category; (5) substantial limitations on executive authority (the executive has more effective authority than any accountability group but is subject to substantial constraints by them); (6) intermediate category; (7) executive parity or subordination (accountability groups have effective authority equal to or greater than the executive in most areas of activity). Variable is the average over annual country observations 1982–1995. We have normalized the variable so it ranges from 1 to 10. Source: Polity IV Database: http://www.cidcm.umd.edu/inscr/polity/ .
Domestic protection from expropriation of private investment	This variable is drawn from country-level surveys of local entrepreneurs. Responses to questions about the impact of theft and crime on the cost of business, the ability of state authorities to protect person and property, and the impact of the predictability of the judiciary on business operations were used to create an index for each country. Respondents were asked to rank current conditions (the surveys were conducted August 1996–February 1997) and conditions ten years ago. The current and historical responses to each of the three questions were averaged and then an overall average was formed. We rescaled the responses so that the maximum possible response for each of the three questions is ten. Source: Author’s calculations from the World Bank <i>World Development Report</i> 1997, Private Sector Survey: http://www.worldbank.org/wbi/governance/wdr97data.html .
Rule of law	This variable “reflects the degree to which the citizens of a country are willing to accept the established institutions to make and implement laws and adjudicate disputes.” Higher scores indicate “sound political institutions, a strong court system, and provisions for an orderly succession of power.” Lower scores indicate “a tradition of depending on physical force or illegal means to settle claims.” Upon changes in government new leaders “may be less likely to accept the obligations of the previous regime.” Variable is the average over annual country observations, 1982–1995. We have normalized the variable so it ranges from 1 to 10. Source: International Country Risk Guide (ICRG) IRIS-3 Data
British legal origin	This variable is equal to 1 if the legal regime of the country is British and 0 otherwise. Source: “The Quality of Government,” LaPorta et al. (1999). http://mba.tuck.dartmouth.edu/pages/faculty/rafael.laporta/publications/LaPorta%20PDF%20Papers-ALL/Quality%20of%20Govt-All/Quality%20of%20Govt.xls .
English speaking	This variable is equal to 1 if English is one of the official languages of the country <i>and</i> if at least 50% of the immigrants from the country who were surveyed in the 1980 U.S. Census report that they do not speak a language other than English at home. Source: Bleakley and Chin (2004).
Latitude	This variable is equal to the absolute value of the latitude of the country’s capital divided by 90. Source: “The Quality of Government,” LaPorta et al. (1999). http://mba.tuck.dartmouth.edu/pages/faculty/rafael.laporta/publications/LaPorta%20PDF%20Papers-ALL/Quality%20of%20Govt-All/Quality%20of%20Govt.xls .
Gini coefficient	Average of Gini-coefficients across one country over all “high-quality” observations 1985–1995. Source: Deininger and Squire (1996) http://go.worldbank.org/UVPO9KSJJ0 .
Av. per capita GDP	Average real GDP per capita 1982–1995, 1995 dollars. Source: World Bank, World Development Indicators
Stock market capitalization	Average per capita market capitalization of listed countries, 1982–1995, 1995 dollars. Source: World Bank Development Indicators.
Years of schooling in 1960	Years of schooling of the total population over 25 in 1960. Source: Barro, Robert J., and Jong-Wha Lee, International Data on Educational Attainment: Updates and Implications: http://www.cid.harvard.edu/ciddata/ciddata.html .
Religion controls: Catholic, Protestant, Muslim	The percentage of people in the country (times 100) who are a particular religion. Source: CIA Factbook
Av. per capita remittances	Average real remittances per capita 1982–1995, 1995 dollars. Source: World Bank, World Development Indicators

force status, education, sex, marital status, number of children in household, and race. A full set of MSA controls are included in δ_s , and Z_j measures institutional quality in country j . To the extent that individual characteristics, like wealth and education, are influenced by institutional quality in the country of origin, the regression will tend to produce overly conservative estimates of the direct effect of institutions, β_2 .

By including measures of individual characteristics, we are able to isolate the effect of institutions. This addresses an important concern with some earlier cross-country studies of the impact of institutions. For example, the identification strategy used by Açemoglu, Johnson, and Robinson (2001, 2002) stresses the link between institutional development and settler mortality during the colonial period, but leaves open the possibility that the human capital of early

TABLE 3A.—SUMMARY OF COUNTRY VARIABLES

Characteristic	N	Mean	Standard Deviation	Min	Median	Max	U.S. value
Measures of institutional quality							
Protection from expropriation	79	7.50	1.74	1.81	7.51	10.00	10.00
Constraints on the executive	76	6.96	2.87	1.43	7.14	10.00	10.00
Domestic protection from exp.	31	5.31	1.16	3.63	5.12	7.78	5.27
Rule of law	79	6.16	2.51	1.94	5.98	10.00	10.00
British legal origin	79	0.29	0.46	0.00	0.00	1.00	1.00
Latitude	79	0.33	0.19	0.01	0.33	0.71	0.42
Av. years of schooling, 1960	61	4.27	2.54	0.21	4.06	10.07	8.66
Other country characteristics							
English speaking	79	0.139	0.35	0.00	0.00	1.00	1.00
Gini coefficient	52	38.80	10.48	22.27	36.24	59.71	41.19
Av. GDP per capita	74	8,704	10,376	106	3,208	42,873	24,831
Stock market cap. per capita	65	4,875	8,300	3.38	993	36,406	18,750
Av. remittances per capita							
Catholic	74	39.29	40.01	0.00	27.2	97.00	24.00
Protestant	74	10.43	19.39	0.00	0.35	87.00	52.00
Muslim	74	16.82	33.77	0.00	0.00	100.00	1.00

Note: Protection from expropriation, constraints on the executive, quality of the bureaucracy, and rule of law have been rescaled so that the maximum possible value is 10.

TABLE 3B.—CORRELATION BETWEEN INSTITUTIONAL QUALITY MEASURES

Characteristic	Protection from Exp.	Constraints on Exec.	Domestic Protection from Exp.	Rule of Law	British Legal Origin	Latitude	Average Years of Schooling, 1960
Protection from expropriation	—						
Constraints on the executive	0.619***	—					
Domestic protection from Exp.	0.557***	0.250	—				
Rule of law	0.869***	0.501***	0.552***	—			
British legal origin	0.119	0.060	0.021	0.036	—		
Latitude	0.572***	0.386***	0.348*	0.584***	-0.200*	—	
Av. years of schooling, 1960	0.715***	0.575***	0.201	0.701***	0.023	0.661***	—

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

colonial settlers played a role in future economic development (see Glaeser et al., 2004).

All of the reported standard errors have been corrected to account for the heteroskedasticity that is implicit in the linear probability model and are also adjusted to allow for correlation across observations for immigrants who come from the same country.¹²

A. Baseline Findings and Alternative Measures of Institutional Quality

The relationship between stock market participation and institutional quality is explored in table 4 for a variety of measures of institutional effectiveness. The sample is re-

stricted to immigrants who are at least 18 years of age, live in a MSA, and come from one of the 78 countries for which institutional quality data are available. In addition to a measure of institutional quality, human capital, or geography, the explanatory variables include age, age squared, wealth quartiles, labor force status, income, marital status, sex, race, education, number of children, and controls for the MSA where the immigrant lives.¹³

We find that institutional quality has a positive and significant effect on stock market participation. According to these estimates, if an individual from a country with “average” institutions, as captured by protection from expropriation had instead come from a country that had institutions that were one standard deviation above the mean, the likelihood that they owned stock would increase by 2.8 percentage points, a 32% increase in the likelihood of stock market participation, relative to the observed participation rate for immigrants of 8.6%. This is roughly equivalent to considering what would happen if Argentina’s

¹² We use a linear probability model because it is computationally attractive given the large number of fixed effects, it is consistent under weak assumptions, and the coefficient estimates are easy to interpret. In particular, the coefficients on interaction terms are straightforward to interpret (see Ai & Norton, 2003). Nonlinear estimation methods, such as probit or logit, generate similar results. The clustering takes into account the mapping of birth countries to countries for the purposes of assigning an institutional quality variable, described in footnote 9. For the purposes of clustering the standard errors, individuals born in Czechoslovakia, Slovakia, and the Czech Republic are considered to be part of the same cluster, for example.

¹³ In addition to being important determinants of the demand for stock, individual characteristics like wealth, income, race, and education are also likely to influence the likelihood that individuals seek out brokers who share their country of origin. See appendix table A2 for the impact of each of the independent variables.

TABLE 4.—THE EFFECT OF INSTITUTIONAL QUALITY ON IMMIGRANT STOCK MARKET PARTICIPATION

Explanatory Variable	[1]	[2]	[3]	[4]	[5]	[6]	[7]
Protection from expropriation	0.016*** (0.005)						
Constraints on the executive		0.004* (0.002)					
Domestic protection from expropriation			0.033*** (0.009)				
Rule of law				0.012*** (0.003)			
British legal origin					0.033** (0.017)		
Latitude						0.114** (0.047)	
Average years of schooling, 1960							0.006** (0.003)
Adjusted <i>R</i> -squared	0.2315	0.2306	0.2876	0.2314	0.2275	0.2289	0.2296
Number of observations	14,232	14,052	7,814	14,232	14,232	14,232	7,856

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

protection from expropriation had been the same as Germany's between 1982 and 1995. The results are the same if we use rule of law to measure institutional quality.¹⁴

One attractive feature of the protection from expropriation measure of institutional quality is that improvements in protection from expropriation are correlated with future equity returns (Erb, Harvey, & Viskanta, 1996).¹⁵ Açemoglu, Johnson, and Robinson (2001, 2002) find that institutional quality, as measured by protection from expropriation, causes long-run economic and financial development.

Constraints on the executive may be closer to North's description of institutions as constraints; however it only measures constraints on the executive branch of government. Açemoglu and Johnson (2005) find that constraints on the executive also have long-run effects on investment, growth, and financial development. An important issue that Glaeser et al. (2004) raise is that measures like protection from expropriation capture *outcomes* rather than constraints. One advantage of our approach is that from the point of view of an individual, rather than a country, this distinction is less relevant. The informal institutional constraints that an individual comes to embody could be the result of formal institutional constraints or of outcomes.

We find largely the same results regardless of whether we use constraints on the executive or other measures of institutional effectiveness. A one standard deviation increase in constraints on the executive is associated with a 1.1 percentage point increase in stock market participation.

The next set of results use a measure of institutional quality that is specifically designed to capture conditions from the perspective of domestic investors. Domestic pro-

tection from expropriation, which is based on World Bank surveys of domestic investors, is also a strong positive predictor of stock market participation. This addresses concerns that the measures of institutional quality, like protection from expropriation, that are intended to reflect circumstances that impact private, foreign investors, induce biases. A one standard deviation increase in domestic protection from expropriation corresponds to a 3.8 percentage point increase in stock market participation.

La Porta et al. (1998, 2000) show that greater protection is provided to shareholders in countries with a British legal tradition and that financial development is accelerated in these countries. Our findings parallel theirs: stock market participation among immigrants from countries with a British legal tradition is 3.3 percentage points higher than that of immigrants from countries with a different legal tradition.¹⁶

Rodrik, Subramanian, and Trebbi (2004) and Açemoglu, Johnson, and Robinson (2001) find that geography has an important effect on the quality of institutions. Countries that are further from the equator tend to develop stronger institutions. Açemoglu, Johnson, and Robinson (2001) argue that European colonialists adopted different colonization policies depending on the host country environment, leading to more effective institutional arrangements in some countries. Although their work emphasizes the role of settler mortality rates in determining the colonization policy, they also show that places where effective institutional arrangements were established tend to be further from the equator. In addition, Beck, Demirgüç-Kunt, and Levine (2003b)

¹⁴ The results are also the same if we use the ICRG measure quality of the bureaucracy. This variable is highly correlated with protection from expropriation.

¹⁵ Erb, Harvey, and Viskanta (1996) find that changes in rule of law and other ICRG IRIS-3 variables are not correlated with future equity returns.

¹⁶ Some studies find that the degree of ethnic tensions in a country is an important predictor of institutional quality, since the greater ethnic diversity may lead to the adoption of policies that favor expropriation of resources, rather than the emergence of open and competitive systems (Easterly & Levine, 1997). We find no significant relationship between country-of-origin ethnic concentration and stock market participation among immigrants in the United States.

TABLE 5.—THE EFFECT OF INSTITUTIONAL QUALITY ON IMMIGRANT STOCK MARKET PARTICIPATION, ADDITIONAL COUNTRY CONTROLS

Explanatory Variable	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Protection from expropriation	0.016*** (0.005)	0.014*** (0.005)	0.011** (0.005)	0.013** (0.005)	0.011* (0.005)	0.017** (0.008)	0.022*** (0.008)	0.027*** (0.007)	0.029*** (0.006)
Av. per capita GDP [†]				1.090 (0.959)	1.060 (0.994)	0.766 (1.380)	-1.090 (1.510)	-1.530 (1.680)	-4.220* (2.100)
English speaking					0.031** (0.010)	0.009 (0.023)	0.012 (0.025)	0.030 (0.023)	-0.026 (0.029)
Stock market capitalization [†]						3.700 (5.070)	3.520 (4.880)	0.178 (4.790)	4.060 (5.490)
Stock market capitalization squared [†]						-0.0002 (0.0001)	-0.0001 (0.0001)	0.00005 (0.0001)	0.000005 (0.0002)
Av. per capita remittances received							0.256 (0.160)	-0.105 (0.278)	-0.231 (0.233)
Average years of schooling, 1960								-0.008* (0.004)	-0.008* (0.005)
Religion controls	No	No	Yes	No	No	No	No	No	No
Continent controls	No	Yes	No	No	No	No	No	No	Yes
Adjusted <i>R</i> -squared	0.2315	0.2324	0.2341	0.2365	0.2374	0.2375	0.2504	0.2643	0.2679
Number of observations	14,232	14,232	13,250	13,336	13,336	11,509	10,592	5,807	5,807

Notes: In addition to those reported on here, all of these regressions include controls for age, age squared, wealth quartiles, labor force status, income, marital status, sex, ethnicity, education, number of children, and MSA. The number of observations differs depending on the number of countries for which a particular country characteristic is available. A linear probability model is used and standard errors are corrected for heteroskedasticity and clustering at the country level. The reported coefficients and standard errors of explanatory variables marked by [†] are the actual ones multiplied by 1,000,000. 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.

show that latitude helps to explain financial development. We use the absolute value of the latitude of the capital city divided by 90 to capture this effect and find that individuals who were born in countries that are further from the equator are significantly more likely to participate in the U.S. stock market.

Some authors provide evidence that the ability of a country to acquire good institutions is determined by the availability of human capital (see Barro, 1999, and Glaeser et al., 2004, for example). We examine this possibility in the final column of table 4 where we examine the impact of average years of schooling in 1960 in the country of origin on stock market participation in the United States.¹⁷ Immigrants from countries with greater human capital in 1960 are more likely to own stock in the United States. A one standard deviation increase (two and a half years) in average years of schooling in 1960 is associated with a 1.5 percentage point increase in stock market participation in the United States.

These baseline findings suggest that immigrants come to the United States with attitudes shaped by the effectiveness of home-country institutions, regardless of how they are measured, and that the ability of home-country institutions to protect investment and provide incentives for investment has a significant effect on immigrant behavior in the United States over and above the impact of individual characteristics including wealth, income, and education. The possibility that migrants from countries with weak institutions invest more in U.S. stock markets, because of the relative strength of U.S. institutions, is ruled out by the positive relationship between stock market participation in the United States and country-of-origin institutional quality, regardless of how it is measured.

¹⁷ The smaller sample size for this estimate is due to the lack of data on schooling in 1960 for Mexico.

For ease of exposition, the rest of the paper uses a single measure of institutional quality, protection from expropriation. We have replicated the results using constraints on the executive with largely the same conclusions.

B. Omitted Country Variables

We turn our attention now to exploring the robustness of our findings. The first issue we consider is that there may be other important country-of-origin characteristics that are correlated with institutional quality that were left out of the baseline results. In table 5 we explore the impact of adding additional country characteristics. In addition to the explanatory variables reported in table 5, each of these estimates includes all of the same control variables that were included in the baseline estimates.¹⁸

For purposes of comparison, the first column of table 5 repeats the results from table 4 column 1. In column 2, we report on estimates that include continent controls in addition to protection from expropriation. The results are unchanged. This rules out the possibility that the results are driven by discrimination based on continent of origin, Africa or Central or South America, for example, and that countries in the same continent tend to share institutional qualities.¹⁹

We also examine the possibility that religious influences on institutional quality are responsible for our earlier findings in column 3 of table 5. Stulz and Williamson (2003), for example, document a link between a country's religious

¹⁸ The issue of omitted country characteristics is also addressed in specifications that include country fixed effects (see table 7) and in placebo regressions (see table 8).

¹⁹ Recall that the estimates include a control for being nonwhite, so the continent controls capture differential treatment based on continent of origin, holding racial characteristics fixed.

attributes and investor rights, particularly creditor rights. This estimate adds controls for the percentage of the country-of-origin population that is Catholic, Protestant, and Muslim to the baseline specification. Adding these variables lowers the point estimate of the impact of institutional quality from 0.016 to 0.011.

Another potential explanation for our findings is that financial market adaptation may be easier for immigrants from countries that are more similar to the United States. This would mean that the positive coefficient on protection from expropriation should be interpreted to mean that individuals from countries with institutions like the United States are more likely to participate in U.S. financial markets, rather than as an indication that better institutions to protect private property encourage financial market participation. If this is the case, then including other, potentially better, measures of the similarity between the country-of-origin economy and the United States should eliminate the significance of protection from expropriation. To capture this possibility, we include average per capita GDP from 1982 to 1995 in the country of origin in the estimate presented in column 4 of table 5. Countries with better institutions have higher GDP per capita (see Rodrik, Subramanian, & Trebbi, 2004, for example), so including this variable may absorb some of the effect of institutional quality. GDP per capita has a positive but insignificant effect on stock market participation.²⁰ Adding this variable reduces the coefficient on protection from expropriation from 0.016 to 0.013.

Since countries with high institutional quality also tend to have been colonized by Britain, it is possible that the positive coefficient on protection from expropriation is capturing not institutional quality, but the ability of individuals who were born in some former British colonies to speak English. The ability or inability to speak English may play an important role in determining the ease of stock market participation.²¹ Ideally, we would include an individual measure of English-speaking ability in the estimates.²² However, the SIPP data do not include any measure of this characteristic, so we try to capture it at the country level instead. Column 5 in table 5 adds an indicator variable that is equal to 1 if the country of origin has English as an official language of the country *and* if a majority of immigrants from that country surveyed in the 1980 U.S. Census spoke English at home (see Bleakley & Chin, 2004). Coming from a

country where English is spoken has a positive and statistically significant effect on the likelihood of owning stock. Adding this variable to the estimates lowers the point estimate of the coefficient on institutional quality somewhat (from 0.013 to 0.011). However, it remains positive and significant.

The availability and sophistication of home-country financial markets may also influence the likelihood of stock market participation among immigrants in the United States. Immigrants from countries where stock markets are less developed, for example, may simply be unfamiliar with this type of investment. Ideally, we would control for past usage of the stock market at the individual level. However, those data are unavailable. In column 6 of table 5, we add average stock market capitalization in the country of origin from 1982 to 1995 and its square to the regression. Home-country stock market capitalization has a positive but insignificant effect on stock market participation. The coefficient on institutional quality in this regression is highly significant and equal to 0.017. Note that stock market capitalization in the country of origin is also determined to some extent by the quality of country-of-origin institutions.²³

In column 7, we examine the effect of remittances to the country of origin. If immigrants from countries with weak institutions are not investing in U.S. financial markets, perhaps they are investing in the country of origin through remittances. The demand for remittances may be particularly high in places with weak institutions where there are likely to be limited formal sources of insurance and investment funds. Since individual-level remittance data are not available, we include a measure of average per capita remittances received in the country of origin. The effect of institutional quality remains significant and is equal to 0.022 when we control for remittances.

In addition, we find that migrants from countries that receive higher per capita remittances are more likely to participate in U.S. stock markets, although the coefficient on the remittance variable is not significant at conventional levels. The official remittance statistics may not capture remittances that go through informal channels—those that are delivered in person, for example. The share of remittances sent through informal channels may well be larger in countries where institutions are weak.

One of the critiques of the view that institutional quality is an important determinant of economic and financial development is the concern that countries with good institutions also have high human capital, making it difficult to disentangle the effect of institutions and human capital (see Glaeser et al., 2004). All of the regressions discussed here include individual controls for education, and in column 8 a

²⁰ Many studies, including Hall and Jones (1999), Acemoglu, Johnson, and Robinson (2001, 2002), Acemoglu and Johnson (2005), Easterly and Levine (2003), and Rodrik, Subramanian, and Trebbi (2004) find that GDP per capita is higher in countries with better institutions.

²¹ Chiswick (1978) and Borjas (1987) show that immigrants from English-speaking countries experience more rapid wage assimilation.

²² We should note that our estimates do include household income and education, which are likely to partially account for the ability to speak English. Black et al. (2006) find that college-educated immigrants who speak English at home have wages that are the same as similar native-born individuals.

²³ Using “contract intensive money” as a measure of financial market development leads to the same findings. Contract intensive money is equal to the noncash fraction of the money supply and is associated with higher rates of investment and growth. See Clague et al. (1999).

country-of-origin measure of the average level of schooling in 1960 is included as well. In this regression, the effect of institutional quality remains positive and very significant. In contrast to the estimate presented in column 7 of table 4, where average schooling was the only country-level control, we find that in the presence of additional controls, immigrants from countries with higher educational achievement in 1960 are less likely to own stock in the United States.

Finally, column 9 adds continent controls to the regression.²⁴ The results are largely unchanged. Overall the results presented in table 5 suggest that the finding that the decision to own stock in the United States is influenced by the quality of institutions in the country of origin is robust to including additional attributes of the country of origin.

C. Unobserved Heterogeneity

We turn our attention now to what is an important empirical issue for any study of immigrant behavior and for ours in particular. 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. If unobserved individual characteristics are correlated with country-of-origin institutional quality, then we need to be concerned that our findings capture the effect of unobserved individual characteristics, rather than the effect of institutional quality. We take a number of steps to ensure that this is not the case.

Self-selection and home-country inequality. According to Borjas (1987), the decision to migrate will be a function of, among other things, unobserved migrant ability and the distribution of income in the country of origin and the destination country. Because high-ability migrants are concerned with only the right tail of the income distribution, they will tend to migrate from more equal societies to less equal ones. In contrast, low-ability migrants will move from less equal societies to more equal ones, to protect themselves against a draw from the low end of the wage distribution. Assuming that unobserved ability affects financial behavior as well as labor market outcomes, this type of selection could bias our results.

Since countries with low inequality also tend to have strong institutions, our finding that financial market participation increases with country-of-origin institutional quality could be driven by ability bias.²⁵ For example, immigrants from Sweden, a country with low inequality (relative to the

²⁴ Including both religion and continent controls was not feasible for the smaller sample of countries where information on average years of schooling in 1960 is available. Most of the variation in religion across these countries is across, rather than within, continents, leading to collinearity problems. Using religion rather than continent controls yields similar results.

²⁵ Sokoloff and Engerman (2000) provide evidence that in societies with high initial inequality the evolution of institutions favored a narrow elite.

TABLE 6.—THE EFFECT OF INSTITUTIONAL QUALITY ON IMMIGRANT STOCK MARKET PARTICIPATION, CONTROLLING FOR HOME-COUNTRY INEQUALITY

Explanatory Variable	[1]	[2]
Protection from expropriation	0.024*** (0.006)	0.013** (0.006)
Gini coefficient		-0.003*** (0.001)
Adjusted R-squared	0.2408	0.2435
Number of observations	10,206	10,206

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

United States) and high-quality institutions, are likely to be of high ability. In contrast, immigrants from Brazil, a country with high inequality and less effective institutions, will tend to have lower unobserved ability. We address this by adding a measure of country-of-origin inequality, the Gini coefficient, to the baseline estimates.

These results are found in table 6. Because Gini coefficient data are only available for a subset of countries, these estimates use a smaller sample. The second column adds the country-of-origin Gini coefficient. Greater inequality in the country of origin is associated with lower financial market participation in the United States. We find some evidence that selective immigration of the sort described above may bias the baseline estimates of the coefficient on institutional quality. Adding the Gini coefficient to the estimation reduces the coefficient on protection from expropriation from 0.024 to 0.013. The impact of having German rather than Argentinean institutions is estimated to be a 2.3 percentage point increase in stock market participation, rather than a 4.2 percentage point increase. The comparison here is to column 1 of table 6, which repeats the baseline specification for the smaller sample of countries for which Gini coefficient data are available.

Inequality itself appears to have a sizable impact on stock market participation. Immigrants who come from countries where the Gini coefficient is one standard deviation above the mean are 3.1 percentage points less likely to own stock in the United States, all else equal. This is roughly equivalent to the lower rate of stock market participation that one would expect due to greater inequality in El Salvador relative to the United States.

Ethnic concentration and country-of-origin fixed effects. In addition to unobserved ability, there are other individual characteristics that we cannot observe that may play a role in the decision to participate in financial markets and may also be correlated with country-of-origin institutional quality. For example, the degree of risk aversion may be correlated with the likelihood of migration from particular countries and also influence the decision to own stock. Similarly, variation in the quality of schooling

TABLE 7.—THE EFFECT OF INSTITUTIONAL QUALITY AND ETHNIC CONCENTRATION ON IMMIGRANT STOCK MARKET PARTICIPATION

Explanatory Variable	77 countries [1]	77 countries [2]	29 countries w/ at least 100 obs. [3]	29 countries w/ at least 100 obs. [4]
Protection from expropriation × ethnic concentration	0.913*** (0.199)	0.696* (0.369)	0.928*** (0.200)	0.680* (0.371)
Ethnic concentration	-6.877*** (1.501)	-5.142* (2.757)	-7.004*** (1.509)	-5.030* (2.766)
Country controls	No	Yes	No	Yes
Adjusted R-squared	0.2356	0.2599	0.2328	0.2538
Number of observations	13,867	13,867	13,675	13,675

Notes: In addition to those reported on here, all of these regressions include controls for age, age squared, wealth quartiles, labor force status, income, marital status, sex, ethnicity, education, number of children, and MSA. A linear probability model is used and standard errors are corrected for heteroskedasticity and clustering at the individual 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.

across countries may impact the cost of obtaining information about U.S. financial markets.²⁶

In order to produce unbiased estimates of the effect of country-of-origin institutional quality on financial market participation in the United States, we need to eliminate the possibility that omitted individual characteristics are correlated with country-of-origin institutional quality. If we can do this, we can confidently interpret the coefficient estimate on institutional quality, despite the fact that there may be important individual characteristics that we do not observe.

To do this, we create a new measure of institutional quality that captures both institutional quality and the potential size of an immigrant network. The new measure of institutional quality is the interaction of protection from expropriation with ethnic concentration. Ethnic concentration is defined as the percentage of people in an MSA who come from the same country as the immigrant in question:

$$EC_{sj} = \frac{\text{\# of immigrants from country } j \text{ living in MSA } s}{\text{total population in MSA } s}.$$

Because this new institutional quality measure varies by country of origin, we can include country-of-origin fixed effects in the estimation. By including country-of-origin fixed effects, we eliminate correlation between unobserved individual attributes and country of origin. Appendix table A1 reports the median ethnic concentration for immigrants from each country. We use data from the 1990 Census IPUMS to calculate this measure for each country of origin and MSA.

In table 7, we estimate

$$S_{isj} = \alpha + \beta_1 X_i + \beta_2 Z_j \times EC_{sj} + \beta_3 EC_{sj} + \delta_s + \delta_j + \epsilon_{isj},$$

where $Z_j \times EC_{sj}$ is the interaction of institutional quality and ethnic concentration for an individual from country j who lives in MSA s . The ethnic concentration variable, EC_{sj} , helps to control for the availability of informal invest-

ments that might substitute for investing in stock. This variable is also likely to capture differences in the supply of immigrant brokers who share the same country of origin as potential investors. In addition, it also measures the potential for an ethnic network to ensure the honesty of these immigrant brokers. We include a full set of country-of-origin controls in δ_j . All of the other variables are defined above.

By including MSA fixed effects in all of the estimates, we rule out another potential source of bias in the new institutional quality measure.²⁷ Since location choice is nonrandom, immigrants who choose to live in an MSA with a large fraction of immigrants from the same country of origin are likely to be systematically different along unobservable dimensions from immigrants who choose to live in an MSA with very few immigrants from the same country of origin. By including MSA fixed effects, we ensure that the coefficient on protection from expropriation interacted with ethnic concentration will not be biased by these unobservable characteristics.

In addition to dealing with a potential source of bias, this approach may also shed light on why the quality of country-of-origin institutions matters for financial market participation. A significant and positive coefficient on the new institutional quality measure means that the impact of coming from a country with weak institutions is reinforced when individuals from countries with weak institutions live near one another.

These estimates are reported in table 7. The first column reports estimates of stock market participation using protection from expropriation multiplied by ethnic concentration to measure institutional quality. This estimate also includes the direct effect of ethnic concentration. The estimates presented in column 1 do not include country fixed effects. Column 2 adds country fixed effects. Columns 1 and 2 use the entire sample of 77 countries. Columns 3 and 4 repeat this exercise for the 29 countries in the sample with more than one hundred observations per country. The number of observations for each country is

²⁶ In addition, parental participation in financial markets is likely to be correlated with country-of-origin institutional quality and with the decision of the current generation to own stock (Chiteji & Stafford, 1999).

²⁷ Note that EC_{sj} varies by country of origin for a given MSA, so we can include both country and MSA fixed effects in the regressions.

TABLE 8.—DO INSTITUTIONS MATTER DIFFERENTLY FOR DIFFERENT TYPES OF BEHAVIOR?

	Stock Ownership [1]	Savings Account [2]	Checking Account [3]	Prescription Drugs for Children [4]	Drive Own Car to Work [5]	Visited a Doctor in Past 12 Months [6]
A. Baseline specification						
Protection from expropriation	0.016*** (0.005)	0.022*** (0.006)	0.024*** (0.006)	0.023*** (0.008)	-0.003 (0.006)	0.002 (0.003)
Mean of dependent variable	8.6%	40.1%	47.0%	34.1%	75.1%	79.3%
Adjusted <i>R</i> -squared	0.2315	0.1835	0.2386	0.0786	0.0573	0.0035
Number of observations	14,232	14,232	14,232	3,221	7,546	8,705
B. Controlling for Unobserved Heterogeneity						
Protection from expropriation	0.696* (0.369)	-0.282 (0.598)	1.625*** (0.496)	1.409 (1.059)	0.892 (0.658)	-0.268 (0.492)
× Ethnic concentration						
Ethnic concentration	-5.142* (2.757)	2.533 (4.417)	-12.004*** (3.665)	-10.529 (7.889)	-6.702 (4.820)	1.839 (3.619)
Country controls	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted <i>R</i> -squared	0.2599	0.1973	0.2492	0.0972	0.0682	0.0017
Number of observations	13,867	13,867	13,867	3,143	7,340	8,474

Notes: In addition to those reported on here, all of these regressions include controls for age, age squared, wealth quartiles, labor force status, income, marital status, sex, ethnicity, education, number of children, and MSA. A linear probability model is used and standard errors are corrected for heteroskedasticity and clustering at the country 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. Checking account is equal to 1 if the respondent has a checking account that either does or does not pay interest. Savings account is equal to 1 if the respondent has a savings account, and 0 otherwise. Prescription drugs for children is asked of respondents who have a child aged 0–14 and is equal to 1 if the respondent purchased prescription drugs for the child, and 0 otherwise. Drives own car to work is asked of respondents who are employed or own a business and is equal to 1 if the respondent drives to work, and 0 otherwise. Visited a doctor in the past 12 months is equal to 1 if the respondent visited a doctor in the 12 months before the survey question, and 0 otherwise.

relevant here because we estimate country-of-origin fixed effects.

The coefficient on institutional quality interacted with ethnic concentration remains positive and significant when country fixed effects are included. The point estimate is lowest in column 4 when country fixed effects are included and when the sample is restricted to the 29 countries with more than one hundred observations, so we will discuss those findings. For the median immigrant who lives in a metropolitan area where 0.78% of the population comes from the same country, the estimates imply that the likelihood of owning stock would increase by 0.9 percentage points if institutional quality had been one standard deviation higher from 1982 to 1995. By comparison, the baseline findings, which are not corrected for unobserved heterogeneity, imply that the same increase in institutional quality is associated with a 2.8 percentage point increase in stock market participation.

D. Enforcement of Informal Institutional Constraints

In addition to addressing an important econometric issue, the estimates that include institutional quality interacted with ethnic concentration speak to an important substantive one. North (1993) defines institutions as a trinity: the formal rules of the game, informal institutional constraints, and the enforcement of formal and informal constraints. One role of neighborhoods with a large population of immigrants from a single country is the enforcement of country-of-origin norms and customs (see, for example, Kandori, 1992). When immigrants live in a place where country-of-origin institutional constraints are more likely to be enforced, these constraints should matter more.

We find evidence in favor of this view. Ethnic concentration is roughly twice that of the median immigrant for

Filipino immigrants and about one-half of the median for Portuguese immigrants. A one standard deviation improvement in institutions in the Philippines is predicted to increase Filipino stock market participation by 2.1 percentage points. The same improvement in institutional quality would increase stock market participation by 0.43 percentage points for Portuguese immigrants.

The finding that the effect of institutional quality varies with size of the potential immigrant network is consistent with work by Madrian and Shea (2000), Duflo and Saez (2003), and Hong, Kubik, and Stein (2004), who show that social interactions have important effects on financial decisions. Immigrant networks have also been shown to be important in a number of other nonfinancial contexts, including employment probabilities (Munshi, 2003), wage growth and human capital accumulation (Borjas, 1995, 2000), and language proficiency (Chiswick & Miller, 1996).²⁸

E. The Effect of Institutional Quality on Other Behavior

In table 8 we present estimates of the effect of country-of-origin institutional quality on the decision to have a checking account, a savings account, to invest in children's health via prescription drugs, to drive one's own car to work, and to visit a doctor. These estimates serve two purposes. First, they allow us to test the hypothesis that the importance of institutional quality declines with the level of institutional support required to make a particular investment decision reasonable. Second, these estimates address

²⁸ In addition, Fernandez and Fogli (2005) show that the impact of country-of-ancestry norms on fertility and women's labor force participation is also amplified for the children of immigrants who reside in neighborhoods with other people who share the same country of ancestry.

TABLE 9.—DO INSTITUTIONS MATTER DIFFERENTLY FOR DIFFERENT TYPES OF IMMIGRANTS?

	Baseline [1]	High-Educ. Immig. [2]	Low-Educ. Immig. [3]	High-Skill Workers [4]	Low-Skill Workers [5]	Citizens [6]	Exclude Mexico [7]
Protection from expropriation	0.016*** (0.005)	0.031*** (0.012)	0.006 (0.004)	0.039*** (0.010)	0.011** (0.005)	0.025*** (0.008)	0.016*** (0.005)
Adjusted <i>R</i> -squared	0.2315	0.2801	0.0890	0.2910	0.1221	0.2427	0.2297
% who own stock	8.6%	22.8%	1.6%	23.9%	2.9%	14.3%	11.4%
Number of observations	14,232	2,842	5,127	1,984	2,408	5,829	10,199

Notes: In addition to those reported on here, all of these regressions include controls for age, age squared, wealth quartiles, labor force status, income, marital status, sex, ethnicity, education, number of children, and MSA. A linear probability model is used and standard errors are corrected for heteroskedasticity and clustering at the country 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. High-skill workers are workers whose three-digit occupation code from SIPP is mapped into Professional and technical or executive, administrative, and managerial, according to Bureau of Labor Statistics classifications. Low-skill workers include workers whose three-digit occupation code from SIPP is similarly mapped into transportation and material moving occupations; handlers, equipment cleaners, helpers, and laborers; and service occupations, except private household.

the possibility that institutional quality is proxying for some other country-of-origin characteristic—national attitudes regarding self-reliance or altruism, for example—that explains all sorts of behavior, not just behavior that should be governed by the institutions that determine protection of private property and incentives for investment. In other words, the regressions in table 8 tell us if institutional quality matters when it is supposed to and does not matter when it should not.

The first panel of table 8 uses the baseline specification and the second panel controls for unobserved heterogeneity using the specification from table 7, which interacts protection from expropriation with ethnic concentration and includes country-of-origin fixed effects. For ease of comparison column 1 repeats the regressions from table 4, column 1 and table 7, column 2.

Looking first at the decision to open a savings account, we see that in the baseline specification higher institutional quality is associated with a higher likelihood of having a savings account. A one standard deviation increase in institutional quality is associated with a 3.8 percentage point increase in the likelihood of having a savings account, a 9.5% increase in the likelihood of having a savings account relative to the observed percentage of immigrants with a savings account of 40.1%. The same increase in institutional quality is predicted to increase stock market participation by 29%. As we expect from the relative importance of institutional support required by the two investments, institutional quality has a larger impact on the likelihood of owning equity compared with the likelihood of having a savings account. In addition, we cannot rule out the possibility that the savings account results are due to biases induced by unobserved heterogeneity.

Owning a checking account and using checks are more institutionally intense compared with having a savings account. Not only must an individual be convinced that the bank will keep funds safe and available upon demand, but they must also be convinced that the payment system as a whole and the system for getting checks from one place to another is sufficiently secure to prevent fraud. At the same time, the threshold of institutional quality that is required to support checks is lower than that required to support investments in the stock market. The results bear out this ranking.

In contrast to the findings for savings accounts, the impact of institutional quality on having a checking account is robust to controlling for unobserved heterogeneity, but improvements in institutional quality are more important for stocks than for checks. A one standard deviation increase in institutional quality is associated with an 11% increase in stock market participation and a 4.7% increase in the likelihood of having a checking account. Similarly, Guiso, Sapienza, and Zingales (2004) find that households in high social capital areas are more likely to use checks and invest more in the stock market.

We see a similar pattern with a range of investment activities that are intermediated through the family: investing in children's health through prescription drugs, driving to work, and visiting a doctor. While investments in children's health are positively and significantly correlated with country-of-origin institutional quality in the baseline specification, the magnitude of the effect of an increase in institutional quality is much lower than that for owning stock.

In addition, none of these results are robust to controlling for unobserved heterogeneity. The fact that institutional quality influences the decision to own stock has a smaller effect on financial investments that require less institutional support and does not appear to influence investments that are mediated through the family raises our confidence that our findings are driven by individuals who embody home-country institutions and not by some spurious correlation between country-of-origin characteristics and immigrant behavior more generally.

F. The Effect of Institutional Quality on Different Types of People

We turn now to analyzing how institutional quality affects different groups of immigrants. These estimates help to identify the potential channels through which home-country institutions come to influence behavior and also serve as further robustness checks on our main results.

Education, occupation, citizenship. In table 9, we examine how the impact of institutions varies with education and with occupational characteristics. In columns 2 and 3,

TABLE 10.—THE EFFECT OF INSTITUTIONAL QUALITY ON IMMIGRANT STOCK MARKET PARTICIPATION, BY YEARS OF U.S. EXPERIENCE

Explanatory Variables	ALL	Years in the U.S.				
		1–7	8–12	13–17	18–27	28+
No age at arrival controls						
Protection from expropriation	0.016*** (0.005)	0.014** (0.006)	0.013* (0.008)	0.028*** (0.006)	0.023*** (0.008)	0.008 (0.010)
Adjusted <i>R</i> -squared	0.2315	0.2138	0.3324	0.3629	0.2660	0.2844
Age at arrival controls						
Protection from expropriation	0.016*** (0.005)	0.014** (0.006)	0.013* (0.008)	0.028*** (0.006)	0.022*** (0.008)	0.003 (0.010)
Adjusted <i>R</i> -squared	0.2331	0.2135	0.3334	0.3631	0.2663	0.2909
Number of observations	14,232	2,619	2,192	2,145	2,750	2,955

Notes: In addition to those reported on here, all of these regressions include controls for age, age squared, wealth quartiles, labor force status, income, marital status, sex, ethnicity, education, number of children, and MSA. A linear probability model is used and standard errors are corrected for heteroskedasticity and clustering at the country 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.

we provide estimates for two education groups: high education (those with a college degree or more schooling) and low education (those who have not completed high school). Immigrants who have less education are more influenced by home-country institutions than their counterparts who have completed more schooling. A one standard deviation increase in home-country institutional quality is predicted to raise the stock market participation of immigrants in the low-education group by 1.0 percentage points or 62.5%, relative to the observed stock market participation of this group of 1.6%. For highly educated immigrants, the same improvement in institutions is associated with an increase in stock market participation of 5.4 percentage points or 23.7% relative to their observed stock market participation of 22.8%. This is consistent with Guiso, Sapienza, and Zingales (2004, 2006), who also find that the effect of social capital and culture is muted for those with greater education.

In columns 4 and 5, we compare the effect of institutional quality on high- and low-skill workers, respectively.²⁹ One reason for making this comparison is because foreign educational credentials are often not accepted by U.S. employers. This means that a highly educated immigrant may be working in a low-skill occupation. It may be the occupational milieu rather than education itself that drives the differential impact of institutions for high- and low-education immigrants. This does not appear to be the case. The impact of home-country institutions is higher for immigrants with high-skill jobs compared with those with low-skill jobs. Recall that all of the regressions include controls for education.

In column 6, the sample is restricted to immigrants who are naturalized U.S. citizens. Among U.S. citizen immigrants, the likelihood of owning stock is significantly increasing in home-country institutional effectiveness. Re-

stricting the sample in this way has (at least) two effects. First, we make sure that the link between stock market participation and home-country institutional quality is not driven by the reluctance of undocumented immigrants to buy stock and the potential correlation between being undocumented and coming from a country with weak institutions. Second, immigrants must choose to become citizens and by doing so signal their general orientation toward U.S. society and institutions. However, despite this decision, their investment behavior continues to be influenced by country-of-origin institutions, suggesting that informal institutional constraints cannot be shed at will.

Finally in column 7, we eliminate Mexican immigrants from the sample. Just over a quarter of the immigrants were born in Mexico, and we want to make sure that the results are not driven by the large number of immigrants who share the same institutional background. Eliminating Mexican immigrants from the sample has no effect on the results.

G. Persistence of Institutions

We now consider the persistence of the effects of home-country institutions. We address this question in columns 2–6 of table 10, which examines the effect of country-of-origin institutional quality on financial market participation in the United States for subsets of immigrants based on the number of years they have lived in the United States.

Columns 2–6 of table 10 divide the immigrant sample into five subsamples based on how many years they have been living in the United States. For each subsample, two estimates are produced: one that includes controls for how old the immigrant was when she arrived in the United States and one that does not. Controlling for age at arrival in the United States produces slightly more conservative results, so we discuss those estimates in the text. The effects of informal institutional constraints are very persistent. The effect of protection from expropriation is positive and significant for every subsample, except for the subsample of immigrants who have been in the United States for more than 28 years. The long-lasting effect of country-of-origin institutions is akin to the finding that individuals who lived

²⁹ High-skill workers are workers whose three-digit occupation code from SIPP is mapped into the professional and technical or executive, administrative, and managerial categories according to Bureau of Labor Statistics (BLS) classifications. Low-skill workers include workers whose three-digit occupation code from SIPP is similarly mapped into the following categories according to the same BLS classifications: transportation and material moving occupations; handlers, equipment cleaners, helpers, and laborers; or service occupations, except private household.

TABLE 11.—THE EFFECT OF INSTITUTIONAL QUALITY ON IMMIGRANT STOCK MARKET PARTICIPATION, BY AGE AT MIGRATION

Explanatory Variables	ALL	Age at Arrival in U.S.		
		1–15	16–20	21+
No year of arrival controls				
Protection from expropriation	0.016*** (0.005)	0.007 (0.006)	0.013* (0.007)	0.018*** (0.006)
Adjusted <i>R</i> -squared	0.2315	0.2585	0.2715	0.2387
Year of arrival controls				
Protection from expropriation	0.016*** (0.005)	0.007 (0.006)	0.014* (0.007)	0.019*** (0.006)
Adjusted <i>R</i> -squared	0.2335	0.2609	0.2721	0.2427
Number of observations	14,232	1,677	1,639	7,963

Notes: In addition to those reported on here, all of these regressions include controls for age, age squared, wealth quartiles, labor force status, income, marital status, sex, ethnicity, education, number of children, and MSA. A linear probability model is used and standard errors are corrected for heteroskedasticity and clustering at the country 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.

through the Great Depression have persistently higher savings rates (see Meredith & Schewe, 1994).

H. Learning about Institutions

We have presented evidence that informal institutional constraints are embodied in individuals and that these constraints influence financial market decisions even in a new formal institutional framework. However, these findings do not address the question of how or when these constraints become embodied in individuals. For example, are they inherited and present even in individuals who migrated at a very young age? Or are they only observed individuals who migrate as mature adults, consistent with the view that they are shaped by an individual's experience in their country of origin? We take an initial step toward answering these questions via the estimates presented in table 11. This table examines the effect of country-of-origin institutional quality of financial market participation in the United States for subsets of immigrants based on their age of arrival in the United States.

Table 11 divides the immigrant sample into three subsamples based on age at arrival in the United States: those who arrived before age 16, those who arrived when they were between 16 and 20 years, and those who arrived when they were 21 years or older. Two estimates are produced: one that includes controls for the calendar year when the immigrant arrived in the United States and one that does not. Controlling for year of arrival in the United States generally produces slightly smaller coefficients on institutional quality, so we discuss only the findings that include these controls. Informal institutional constraints from the country of origin are present even in very young migrants. The effect of protection from expropriation is positive and statistically significant for all except the youngest migrants. The point estimate is somewhat smaller, 0.014 for immigrants who arrived before their 21st birthday versus 0.019 for those who arrived after age 21, but this difference is not statistically significant.

The effect of country-of-origin institutions is present even in those who migrated when they were 16 to 20 and before many of them would have been likely to have had

much direct experience with their country-of-origin institutions outside of school. They would have been unlikely, for example, to have owned stock, to have had a bank account, or to have had direct experience with their country of birth's legal system. This suggests that families and possibly the educational system, and not just direct experience, play an important role in shaping an individual's perception of the trustworthiness of institutions.

I. Intergenerational Transmission of Informal Institutional Constraints

In a final set of estimates, we take another approach to examine the robustness of the findings. This approach also helps to illuminate the mechanism through which institutions come to influence behavior. Expanding on the findings from table 11, which show that the behavior of immigrants who arrived in the United States as teenagers is influenced by home-country institutions, we consider whether institutional attitudes are inherited. To do this we take advantage of the fact that the SIPP data provide information on region or country of ancestry for individuals born in the United States. We can map some of these responses to individual countries and then estimate the effect of institutional quality on stock market participation for natives as well as for immigrants.³⁰ The estimates are presented in table 12.

For immigrants, we find a positive and significant effect of institutional quality on stock market participation. For those who were born in the United States, but trace their ancestry to one of the countries listed in footnote 30, institutional quality has no effect on financial market participation. When the formal institutional environment is altered as profoundly as it is when an individual migrates from one country to another, the influence of informal

³⁰ We form samples of natives and of immigrants who map their ancestry to or were born in one of the following thirteen countries: Canada, France, the Netherlands, England, Germany, Hungary, Ireland, Italy, Poland, Russia, Cuba, Mexico, and the Dominican Republic. The SIPP data do not include information on the generation of ancestry, so we are not able to refine these estimates by comparing the children of immigrants and the grandchildren of immigrants, for example.

TABLE 12.—THE EFFECT OF INSTITUTIONAL QUALITY ON STOCK MARKET PARTICIPATION, SELECTED NATIVES AND IMMIGRANTS

Explanatory Variable	Native	Immigrant
Protection from expropriation	−0.002 (0.019)	0.021*** (0.008)
Adjusted <i>R</i> -squared	0.2090	0.2523
Number of observations	44,181	7,040

Notes: In addition to those reported on here, all of these regressions include controls for age, age squared, wealth quartiles, labor force status, income, marital status, sex, ethnicity, education, number of children, and MSA. A linear probability model is used and standard errors are corrected for heteroskedasticity and clustering at the country 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. The native sample used in these estimates includes U.S.-born individuals who identified their ancestral country as Canada, France, the Netherlands, England, Germany, Hungary, Ireland, Italy, Poland, Russia, Cuba, Mexico, and the Dominican Republic. The immigrant sample includes foreign-born individuals who were born in these same countries.

institutional constraints for financial market behavior do not appear to be passed along to future generations.

J. *Trust in Institutions versus Alternative Explanations*

We find robust statistical evidence that immigrants from countries with strong institutions are more likely to participate in U.S. financial markets. We interpret this as evidence that immigrants from countries with weak institutions are less likely to trust institutions in the United States. Although a number of other explanations are possible, many of them are not consistent with our empirical findings. For example, the low stock market participation among immigrants from countries with weak institutions might reflect their lack of direct experience and information about financial markets, rather than a distrust of institutions. However, this explanation seems unlikely given the positive coefficient on institutional quality in estimates that include controls for stock market capitalization in the country of origin (table 5, columns 6–9).

Another possibility is that migrants from countries with weak institutions choose not to hold stocks in the United States because they plan on returning to their countries of origin and therefore prefer to hold more liquid assets. In addition to it being somewhat unlikely that return migration is more likely among immigrants from countries with weak institutions, this explanation is inconsistent with the finding that immigrants from countries with weak institutions are also less likely to own liquid assets, like checking accounts (table 8, column 3). This explanation is also inconsistent with the estimates that include country-of-origin fixed effects (table 7, columns 2 and 4). These estimates eliminate potential bias from omitted individual characteristics, like the likelihood of return migration, which might be correlated with country-of-origin institutional quality.

Another potential reason for a positive relationship between country-of-origin institutional quality and stock market participation is that immigrants from countries with weak institutions send more remittances to their countries of origin and consequently have fewer funds to invest in the stock market. Remittances are likely to be particularly important sources of insurance and investment for countries where institutions are weak. Our empirical findings do not

support this interpretation, however.³¹ The positive relationship between stock market participation and institutional quality is preserved in regressions that include measures of remittances received in the country of origin (table 5, columns 7–9). This view is reinforced by evidence presented in Aggarwal et al. (2006) that remittances do not in general substitute for financial development in receiving countries; instead they tend to promote financial development.

In addition, estimates with country-of-origin fixed effects (table 7, columns 2 and 4) eliminate the possibility that an unobserved individual propensity to send remittances (or the likelihood of return migration) that is correlated with institutional quality biases the coefficient on institutional quality. The inclusion of the ethnic concentration variable in these estimates addresses the concern that the findings are driven by immigrants who have a high propensity to remit who also choose to live in areas with many other immigrants from the same country.

Given the country-of-origin fixed-effects findings, a successful alternative explanation would have to rely on unobserved characteristics that vary among immigrants from a given country that are correlated with both ethnic concentration and institutional quality. For instance, we cannot rule out the possibility that immigrants from a country with weak institutions who choose to live in areas with high ethnic concentration are more likely to prefer informal financial arrangements and are therefore less likely to invest in U.S. stocks. This phenomenon could account for the positive coefficient on the interaction between institutional quality and ethnic concentration in the fixed-effects regressions. Note that the possibility that country-of-origin institutions have different impacts on different segments of the population could be entirely consistent with the trust explanation that we emphasize.

Finally, we find suggestive evidence that immigrants' trust in U.S. financial institutions is directly related to country-of-origin institutional quality. Using data from the 2004 U.S. General Social Survey (GSS), which includes a special module on immigration, we find that immigrants from countries with higher institutional quality are more likely to trust banks and other U.S. financial institutions. Among immigrants who come from countries with above-average institutional quality (measured by protection from expropriation), 68% have more confidence in the individuals that run banks and financial institutions than they do in people generally. Among immigrants from countries with below-average institutional quality, only 46% share this view. Eighteen percent of individuals from countries with above-average institutions think that the people who run banks and financial institutions are less trustworthy than people generally. In contrast, 38% of people from countries with below-average institutions feel this way.

³¹ The SIPP data that we use do not include individual-level data on remittances, so we cannot directly explore this potential explanation.

V. Conclusions

This paper adds to the growing body of theoretical and empirical work that identifies the ability of a country's institutions to protect private property and provide incentives for investment as an explanation for the persistent disparity in financial development across countries. We investigate the impact of institutional quality on financial development using data on the financial decisions of immigrants in the United States. While all of the individuals whose decisions we analyze face the same formal institutional framework in the United States, they bring with them their impressions and experiences with institutions in their home countries.

We find that immigrants from countries with institutions that more effectively protect private property and provide incentives for investment are more likely to participate in U.S. financial markets. The effect of home-country institutions affects immigrants for at least the first 28 years that they live in the United States and is present in all but the youngest migrants. The impact of institutions is amplified by living in a neighborhood with many other immigrants from the same country of origin. These findings are robust to alternative measures of institutional effectiveness and to various methods of controlling for unobserved individual characteristics, including specifications with country fixed effects.

The approach that we use allows us to take a glimpse inside the institutional "black box" and draw several conclusions. First, North is right—individuals "embody" informal institutional constraints. Second, the process by which institutional lessons become embedded in individuals occurs early in life, probably in the family and in school. Third, the effect of informal institutional constraints on financial decision-making is different from other aspects of culture. It does not appear to decay with education, nor is it transmitted across generations when the formal institutional environment is altered. Important questions remain: including whether property rights institutions as opposed to those that govern contracts between individuals have different effects on informal institutional constraints and subsequent investment behavior.

What do our findings tell us about the likely results of formal institutional reform? Examining the behavior of immigrants in the United States corresponds to a best-case scenario for institutional reform: the change in the institutional environment is credible; it is multifaceted, affecting fiscal, monetary, and trade policy as well as the judicial and political system; and the majority of the individuals whose behavior we study have, in some sense, sought out institutional change and are motivated to succeed economically.

Even in this environment, informal institutional constraints continue to influence the behavior of migrants to the United States decades after their arrival. Translating these findings into a more complex real-world environ-

ment—where institutional reforms are likely to be less comprehensive, to potentially lack credibility and permanence, and to sometimes have less than the full support of those they affect—suggests that frequently the impact of institutional reforms will unfold over generations. On a more optimistic note, the legacy of weak institutions does not have to persist across generations: when the formal institutional environment is fundamentally altered, the results suggest that future generations will be governed by updated informal institutional constraints.

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APPENDIX

TABLE A1.—ETHNIC CONCENTRATION AND NUMBER OF OBSERVATIONS PER COUNTRY

Country	Median Ethnic Concentration (%)	Number of Observations
1 Argentina	0.0747%	96
2 Australia	0.0580%	30
3 Austria	0.0633%	64
4 Bahamas, The	—	11
5 Bangladesh	—	40
6 Belgium	0.0314%	21
7 Bolivia	0.0479%	36
8 Brazil	0.0965%	55
9 Canada	0.6848%	392
10 Chile	0.0717%	77
11 China	0.8739%	595
12 Colombia	0.7335%	217
13 Costa Rica	—	34
14 Cuba	17.3184%	617
15 Czechoslovakia ¹	0.1673%	38
16 Denmark	0.0704%	7
17 Dominican Republic	1.5686%	267
18 Ecuador	0.6477%	172
19 Egypt	0.1477%	38
20 El Salvador	1.0890%	494
21 England ⁱⁱ	0.5252%	419
22 Ethiopia	0.0815%	5
23 Finland	0.0145%	3
24 France	0.1185%	88
25 Germany (East and West)	0.4858%	373
26 Ghana	—	16
27 Greece	0.3521%	124
28 Guatemala	0.1697%	158
29 Guyana	0.5743%	134
30 Haiti	0.6296%	219
31 Honduras	0.1611%	143
32 Hong Kong	0.1917%	139
33 Hungary	0.1195%	72
34 India	0.3301%	417
35 Indonesia	0.1241%	1
36 Iran	0.0987%	145
37 Iraq	0.1540%	53
38 Ireland	0.1394%	136
39 Israel	0.1350%	53
40 Italy	0.5840%	290
41 Jamaica	1.0060%	318
42 Japan	0.3189%	182
43 Jordan	0.0270%	16
44 Kenya	—	7
45 Korea, South	0.5308%	438
46 Lebanon	0.0330%	52
47 Malaysia	0.0232%	19
48 Mexico	8.5920%	4,163
49 Morocco	—	6
50 Myanmar	—	23
51 Netherlands	0.1492%	46
52 New Zealand	0.0027%	3
53 Nicaragua	0.3377%	81
54 Nigeria	0.0562%	39
55 Norway	0.0386%	19
56 Pakistan	0.0764%	84
57 Panama	0.0652%	26
58 Peru	0.2147%	108
59 Philippines	1.8140%	916
60 Poland	0.7874%	249
61 Portugal	0.3592%	88
62 Romania	0.0873%	52
63 Russia ⁱⁱⁱ	0.4919%	365
64 Singapore	0.0130%	3
65 South Africa	0.0297%	24
66 Spain	0.1249%	66
67 Sweden	0.0388%	29

TABLE A1.—(CONTINUED)

Country	Median Ethnic Concentration (%)	Number of Observations
68 Switzerland	0.0464%	16
69 Syria	0.0511%	42
70 Taiwan	0.2270%	216
71 Thailand	0.0547%	79
72 Trinidad & Tobago	0.4149%	131
73 Turkey	0.0555%	15
74 Uruguay	0.0644%	7
75 Venezuela	0.3400%	46
76 Vietnam	0.7256%	663
77 Yugoslavia ^{iv}	0.1243%	117
All	0.7829%	15,043

Notes:

¹ Includes individuals who reported that they were born in Czechoslovakia, Slovakia, Czech Republic.
ⁱⁱ Includes individuals who reported that they were born in England, the United Kingdom, Scotland, Wales, Northern Ireland.
ⁱⁱⁱ Includes individuals who reported that they were born in Russia, Armenia, Azerbaijan, the Baltic States, Belarus, Estonia, Georgia, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Moldova, Tajikistan, Turkmenistan, Ukraine, USSR, Uzbekistan.
^{iv} Includes individuals who reported that they were born in Yugoslavia, Bosnia and Herzegovina, Croatia, Macedonia, Montenegro, Slovenia, Serbia.

TABLE A2.—THE EFFECT OF CONTROL VARIABLES ON STOCK MARKET PARTICIPATION

Explanatory Variable	
Age [†]	0.215 (0.157)
Age squared [†]	-0.002 (0.002)
2nd wealth quartile	0.010* (0.005)
3rd wealth quartile	0.040*** (0.012)
4th wealth quartile	0.179*** (0.020)
Unemployed or out of labor force	0.027*** (0.008)
Per capita income ^{††}	30.700*** (4.590)
Per capita income squared ^{††}	-0.001*** (0.000)
Male	-0.021*** (0.005)
Married	0.024** (0.010)
Number of children	-0.004* (0.002)
Nonwhite	0.003 (0.012)
High school graduate	-0.0001 (0.007)
Some college	0.043*** (0.011)
Bachelor degree	0.050*** (0.018)
Advanced degree	0.161*** (0.024)
Protection from expropriation	0.016*** (0.005)
Constant	-0.201*** (0.052)
MSA controls	Yes
Adjusted R-squared	0.2315
Number of observations	14,232

Notes: Dependent variable is equal to 1 if the respondent owned stock during the interview period in question, and 0 otherwise. A linear probability model is used and standard errors are corrected for heteroskedasticity and clustering at the country level. Standard errors are in parentheses. The reported coefficients and standard errors of explanatory variables marked by † are the actual ones multiplied by 100, by †† 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.