



Federal Reserve Bank of Chicago

**Individuals and Institutions:  
Evidence from International  
Migrants in the U.S.**

*Una Okonkwo Osili and Anna Paulson*

REVISED September, 2005  
WP 2004-19

# **Individuals and Institutions: Evidence from International Migrants in the U.S.<sup>1</sup>**

Una Okonkwo Osili  
Indiana University at Purdue University, Indianapolis

Anna Paulson  
Federal Reserve Bank of Chicago

## **Abstract**

We investigate the impact of institutional quality on individuals using data on the financial decisions of immigrants in the U.S. While all of the individuals whose decisions we analyze face the same formal institutional framework in the U.S., they bring with them their impressions from 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 is persistent and absorbed early in life. In addition, the impact of institutions is amplified for immigrants who live in places where informal institutional constraints are likely to be reinforced, those who live in neighborhoods 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.

---

<sup>1</sup> We are grateful for comments from seminar participants at USC, UC Davis, UC Berkeley, Federal Reserve Bank of Chicago, Northwestern, Stanford, University of Texas, Austin and Cornell. In addition, we thank the Russell Sage Foundation for their support of this research and Shirley Chiu for excellent research assistance. Please address all correspondence to Anna Paulson, Federal Reserve Bank of Chicago, 230 S. LaSalle Street, Chicago, IL 60604-1413; phone: (312) 322 2169, email: [anna.paulson@chi.frb.org](mailto:anna.paulson@chi.frb.org). The views presented in this paper are those of the authors and do not necessarily reflect those of the Federal Reserve Bank of Chicago.

## 1. Introduction

Although there is widespread agreement that institutions shape economic outcomes and are important determinants of financial market development, we know relatively little about what lies inside the institutional “black box”. What are the channels through which institutions provide incentives for investment and influence behavior? Douglass North defines institutions as “formal constraints -- rules that human beings devise” and “informal constraints – such as conventions and rules of behavior”.<sup>2</sup> Understanding the role of informal institutional constraints is a crucial component of predicting the impact of formal institutional change and of making appropriate policy recommendations. It is relatively straight-forward 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 much more challenging.<sup>3</sup>

This paper focuses on measuring the importance of informal institutional constraints for financial development. 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 175 million people live outside their country of birth and about twenty percent of these international migrants live in the U.S. (World Migration, 2005). Together with their skill and talents, international migrants bring attitudes and experiences acquired in their country of origin to the destination country. North argues that individuals *embody* the informal institutional constraints reflected in their customs, traditions and codes of conduct.<sup>4</sup>

In the process of migrating from one country to another, individuals move from one formal institutional environment to another but may maintain the informal institutional constraints of their country of origin. 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. By studying the behavior of international migrants in the U.S., we isolate the impact of informal institutional constraints, since all of the migrants face the same set of formal rules in the U.S.

By analyzing how financial decisions in the U.S. are influenced by the quality of home country 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 U.S. for many years. This comparison provides some insight into the potential pace of economic progress and financial development following institutional reform.

---

<sup>2</sup> “Institutions, Institutional Change and Economic Performance” (1990), page 4.

<sup>3</sup> For example, Murell (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.”

<sup>4</sup> “Economic Institutions Through Time”, Nobel Lecture (1993).

The bulk of the evidence to date on the importance of institutions for financial development comes from cross-country studies which 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 provide incentives for investment is a key explanation for the persistent disparity in financial market development. 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, Demirguc-Kunt and Levine (2003a, 2003b) and Acemoglu, Johnson and Robinson (2001 and 2002). Using micro-economic data, Besley (1995) and Johnson, Macmillan and Woodruff (2002) show that effective property rights encourage investment. In addition to demonstrating the importance of informal institutional constraints, our paper provides independent evidence that institutions which effectively protect private property are a key determinant of financial market development.

Glaeser et al. (2004) raise some important issues about how to appropriately measure institutional quality. One advantage of our focus on informal institutional constraints, rather than on formal ones, is that it relegates these issues to the sidelines, at least in the current context. From the perspective of an individual, it does not matter whether embodied informal constraints are the results of outcomes (a dictator who protects private property, for example) or the result of formal constraints (a constitution that prevents a government from seizing private property). The experience and observation of the protection of private investment will lead an individual to embody this constraint. That being said, we examine many different measures of institutional effectiveness, including protection from expropriation and constraints on the executive and find that our conclusions are not driven by the way institutional quality is measured.

Regardless of the institutional quality measure, we find that higher country of origin institutional quality is associated with statistically and economically meaningful increases in stock market participation. For example, if Argentina's institutions increased in quality by one standard deviation – that is if its “protection from expropriation” was as good as in Germany, then stock market participation among Argentine immigrants in the U.S. would increase by 2.8 percentage points, a 29% increase. A similar increase in “constraints on the executive” would increase stock market participation by 1.1 percentage points, a 12% increase.

Our approach 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.<sup>5</sup> 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 U.S., we have to

---

<sup>5</sup> Carroll, Rhee and Rhee (1994) also use a conceptually similar approach in their study of the cultural determinants of savings. Hendricks (2004) examines the behavior of immigrants in the U.S. to explain variation in hours worked across countries. For hours worked in the U.S. 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.

take seriously the concern that the migration 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, and more definitively, 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 city specific measure of the size of an immigrant network. These results indicate that coming from a country with German rather than Argentinean institutions would increase stock market participation by 0.9 percentage points for the median immigrant, a 10 percent increase.

The finding that institutional quality matters more for immigrants who cluster together in neighborhoods with other immigrants from the same country addresses a substantive as well as an econometric issue. The third component of the institutional environment, according to North, is the “enforcement characteristics” of formal and informal institutional constraints.<sup>6</sup> We find that informal institutional constraints matter more when they are likely to be enforced and reinforced through immigrant networks.

We find that institutional quality has the largest impact on investment decisions which require the most institutional support. Institutional quality matters more for stock market participation than for owning a savings or a checking account, for example. 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 institutions. 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 impact of home country institutions varies with length of time in the U.S., with age at migration and with education. Home country institutional effects are very long-lasting, affecting all immigrants, except those who have lived in the U.S. for more than 28 years. The decisions of all immigrants who arrive in the U.S. at age 16 or later are influenced by institutions. Only immigrants who arrive in the U.S. as young children are not influenced by country of origin institutions. The fact that immigrants who leave their birth countries when they are 16 to 20 years old, and not yet adults, suggests that individuals absorb some lessons about institutions in the family and at school, rather than through direct experience.

We find that the impact of institutions increases with education. This contrasts with the findings of Guiso, Sapienza and Zingales (2004 and 2005), who find that the effects of

---

<sup>6</sup> “Economic Institutions Through Time”, Nobel Lecture (1993).

social capital and culture, are smaller for those with greater education.<sup>7</sup> This hints at a potentially important distinction between how some aspects of culture and informal institutional constraints influence behavior. Educated individuals in a country may have more direct experience with their country's institutions compared to the less-educated. They clearly have more direct experience with educational institutions. Individuals with more schooling may be more likely to participate in other home country institutions as well. These educational "elites" may also belong to a relatively small minority whose property is protected by institutions that are more generally ineffectual.<sup>8</sup>

We explore the distinction between culture and informal institutional constraints in more detail by examining the impact of country of ancestry institutions on individuals who were born in the U.S. For those who were born in the U.S., institutional quality has no effect on stock market participation, suggesting that the norms and rules of behavior that make up informal institutional constraints are distinct from other components of culture that persist across generations.

The next section describes the framework we use to derive the predicted relationship between institutional quality and financial market decisions. In section 3, we describe the country and individual level data that we analyze. Section 4 outlines the empirical strategy, discusses our findings and their robustness. Section 5 presents conclusions.

## 2. 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:

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

where  $S_i$  is the amount that individual  $i$  invests in stock,  $ER$  is the expected return from the investment, and  $X_i$  is a vector of individual characteristics (risk aversion, income, education, years in the U.S., age at migration, and so on) that affect the demand for stock.

Institutional quality is modeled by assuming that the investor believes there is some probability,  $\pi_i$  that the stock broker will abscond with the investor's funds. This variable captures the investor's beliefs about the likelihood of expropriation by firm managers or by the government. It measures, not only the possibility that the stock broker will abscond with funds, but also the possibility that the institutional framework is not

---

<sup>7</sup> In contrast, Glaeser et al (2001) find that individuals who invest in human capital also tend to have higher levels of social capital.

<sup>8</sup> See, for example, the discussion in Bates (1981) of government policies in Nigeria and in Ghana that benefited elites at the expense of other less politically influential groups. Similarly, the politicization of economic activity under Suharto in Indonesia clearly benefited Suharto and those with connections to him (see Temple in Rodrik (2003)).

sufficient to ensure that funds will be invested in profit maximizing projects, that investment proceeds will be appropriately reinvested or returned to investors. We assume that brokers are governed by the same institutional framework and therefore they face a common cost of absconding. This means that broker variation in the likelihood of absconding can be safely ignored.

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 stock broker 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 exposure that the investor has to U.S. institutions,  $y_{US}$ :  $\pi_i = \pi(J, y_J, y_{US})$ .

For the typical immigrant who comes from a country where institutions are weaker than in the U.S.,  $\pi$  is decreasing in origin country institutional quality, increasing in years spent in the origin country, and decreasing in years spent in the U.S.<sup>9</sup> Given this framework, demand for stock will be increasing in home country institutional quality and for a given level of institutional quality,  $\pi$  will be higher for individuals who have recently arrived in the U.S. 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. The investor must be convinced that the stock broker will not abscond with her investment and that the institutional and legal framework is sufficient to ensure that funds will be invested in profitable profits and that the proceeds of these projects will be returned to investors and not be expropriated by management, either in the form of non-productive 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 to the possibility that money invested in a savings account will disappear. This means that  $\pi_{Stock}$  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,  $\pi_{Family}$  should be close to zero.

---

<sup>9</sup> Note that regardless of how we measure institutional effectiveness, institutional quality in the U.S. is equal to ten, the maximum possible value.

### 3. Data

#### **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 individuals living in the U.S. Historically high rates of migration to the U.S. in the past two decades mean that at least 10 percent 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 U.S., but the immigrants vary in the institutional constraints that they have experienced prior to coming to the U.S.

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) 4 annual observations per person.<sup>10</sup> Table 2A summarizes these data for immigrants and the native-born. Compared to the native-born, immigrants are younger, more likely to be married, non-white, 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 to 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 to the native-born. For immigrants, average monthly per capita household income is \$1,640, compared to \$2,224 for the native-born. In addition to having lower incomes, immigrant households have also accumulated less wealth compared to households headed by individuals who were born in the U.S. The median immigrant household has wealth of \$29,001 compared to \$71,123 for the native born.

Stock market participation is the logical individual-level counterpart to country-level stock market capitalization, which is the measure of financial market development used in many cross-country level studies of institutions and financial market development. Eight and a half percent of the immigrant sample owns stock, compared with 20% of the native-born. 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.

Additional immigrant characteristics are described in Table 2B. Nearly one-half of the immigrants arrived in the U.S. within the 10 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

---

<sup>10</sup> We restrict our attention to the four annual survey waves where wealth data are available. Other SIPP variables are collected quarterly.



in Europe. Most of the immigrants arrived in the U.S. as adults, with almost 71% arriving at twenty-one years or older.

### **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 1 defines each variable and describes its source.

#### *Measures of Institutional Quality*

What are “good” institutions? Adam Smith powerfully captures 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. The various institutional measures have conceptual strengths and weaknesses as well as strengths and weaknesses 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. In this section we describe the various measures of institutional quality (and its determinants) that we use. The institutional quality measures are summarized in Table 3A and their correlations are reported in Table 3B. A discussion of the advantages of particular measures and how they have been used in the literature is included with the presentation of the results in the next section.

We use two measures of institutional quality from the International Country Risk Guide (ICRG) IRIS-3 data. These measures are “protection from expropriation of private investment” and “rule of law”. “Protection from expropriation” evaluates the risk “outright confiscation and forced nationalization” of property. Lower ratings “are given to countries where expropriation of private foreign investment is a likely event.” The “rule of law” 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.” These institutional

quality measures are formed from averages of annual observations from 1982 to 1995 and are rescaled, if necessary so that the maximum possible value is ten.

A third measure of institutional quality focuses is drawn from the Polity IV Database and focuses specifically on limitations to executive power. “Constraints on the executive” measures the extent of institutionalized constraints on the power of the chief executive. This institutional quality measure is also formed from averages of annual observations from 1982 to 1995 and has been rescaled so that the maximum possible value is ten.

In addition to “rule of law,” we also use each country’s legal tradition as a measure of institutional quality. “British legal origin” is equal to one if the country has a British legal tradition and is zero otherwise.

In addition to these four 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*. 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 10 years ago. The current and historical responses to each of the three questions were averaged and then an overall average was formed. One drawback of this measure is that it is only available for 31 countries.<sup>11</sup>

In addition direct measures of institutional quality, we look at two potential determinants of institutional quality: geography and human capital. Geographic endowments are proxied by the absolute value of the latitude of the country’s capital, and human capital is measured by the average years of schooling among adults in the country in 1960.

The institutional quality measures are available for 79 countries (including the U.S.), with three exceptions. “Constraints on the executive” is available for 76 countries, “Domestic Protection from Expropriation” is available for 31 countries, and average schooling in 1960 is available for 61 countries. The various measures and their relationship to the literature are discussed in more detail in the following section.

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 ranges, as measured by protection from expropriation, ranges from 1.83 (Iraq) to 10.00 (the Netherlands, Switzerland, the U.S.). 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 U.S.), and its

---

<sup>11</sup> 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.

mean is 6.96. There are some important distinctions between these the measures of institutional quality, however. 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). For example, the correlation coefficient between “protection from expropriation” and “constraints on the executive” is 0.62. One exception to this pattern is British legal origin. This variable is not significantly correlated with “protection from expropriation” or “constraints on the executive”. However, it is negatively correlated with latitude. “Domestic protection from expropriation” is positively correlated with its international counterpart, suggesting that in most cases a country’s institutional climate is similar for domestic and foreign investors. “Domestic protection from expropriation” is not significantly correlated with “constraints on the executive” and “British legal origin”. However, it is positively related to both latitude and average years of schooling in 1960.

#### *Other country variables*

In addition to measures of institutional quality, important country-level explanatory variables include: whether people from the country can speak English (from Bleakley and Chin, 2004); income, as measured by the average real per capita GDP from 1982 to 1995; financial development, measured as the average stock market capitalization from 1982 to 1995; inequality, measured by the average of all high quality Gini coefficient observations from 1985 to 1995 from Deininger and Squire (1996); and religion. These variables are also described in Table 1 and summarized in Table 3A.

## **4. 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 force status, education, sex, marital status, number of children in household, and race. A full set of MSA controls are included in  $\delta_s$ , and  $Z_j$  measures institutional quality in country  $j$ . All of the reported standard errors have been corrected to account for the heteroscedasticity 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.<sup>12</sup>

### **Baseline Findings and Alternative Measures of Institutional Quality**

---

<sup>12</sup> We use a linear probability model because it works well with fixed effects, is consistent under weak assumptions and because the coefficient estimates are easy to interpret. In particular, the coefficients on interaction terms are straight-forward to interpret (see Ai and Norton, 2003). Non-linear estimation methods, such as probit or logit, generate similar results.

The relationship between stock market participation and institutional quality is explored in Table 4 for a variety of measures of institutional effectiveness. In addition we also examine the relationship between stock market participation and some potential determinants of institutional quality: country of origin geographical attributes and country-level human capital. The sample is restricted 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.<sup>13</sup>

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 “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.<sup>14</sup>

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 and Viskanta (1996)). Changes in “rule of law” and other ICRG-IRIS-3 data are not correlated with future equity returns.

Glaeser et al. (2004) argue that “constraints on the executive” is a more appropriate way to capture North’s description of institutions as constraints. An important issue that they raise is that measures like “protection for expropriation” measure *outcomes* rather than constraints. 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. Our findings support this view, since we find largely the same results regardless of whether we use “constraints on the executive” or other measures of institutional effectiveness. For example, a one standard deviation increase in constraints on the executive is associated with a 1.1 percentage point increase in stock market participation.

Another concern with the “protection from expropriation” and the “rule of law” measures is that they are specifically designed to capture conditions from the perspective of private, foreign investors. To address this concern, we use “domestic protection from expropriation”, which is based surveys of domestic investors, to measure institutional

---

<sup>13</sup> See Appendix Table 2 for the impact of these independent variables.

<sup>14</sup> 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”.

quality. When we use this measure of institutional quality, we continue to find a strong positive relationship between institutional quality and stock market participation.

La Porta et al. (1998 and 2000) show that greater protection is offered 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.<sup>15</sup>

Rodrik, Subramanian and Trebbi (2004), Bloom and Sachs (1998), and Acemoglu, 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. Acemoglu, 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 (2002) 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 argue and 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 U.S.<sup>16</sup> Immigrants from countries with greater human capital in 1960 are more likely to own stock in the U.S. A one standard deviation increase (two and a half years) in average years of schooling in 1960, is associated with a 2.6 percentage point increase in stock market participation in the U.S.

These baseline findings suggest that immigrants come to the U.S. 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 U.S. For ease of exposition, the rest of the paper uses a single measure of institutional quality, “protection from expropriation”.

### **Additional Country Controls**

---

<sup>15</sup> 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 and Levine, 2002). We find no significant relationship between country of origin ethnic concentration and stock market participation among immigrants in the U.S.

<sup>16</sup> The smaller sample size for this estimate is due to the lack of data on schooling in 1960 for Mexico.

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. For example, perhaps it is not institutional quality that matters, but income in the country of origin. We may have found a significantly positive effect of institutional quality on financial market participation because institutional quality is positively correlated with country income and country income was not included in the baseline estimates. We explore the possibility that our findings are the result of omitted country characteristics in Table 5. In addition to the explanatory variables reported on in Table 5, each of these estimates includes all of the same control variables that were included in the baseline estimates.

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. One possible explanation for our findings is that there is discrimination against individuals based on their continent of origin, say Africa or Central or South America, for example, and that countries in the same continent tend to share institutional qualities.<sup>17</sup> This leaves open the possibility that the protection from expropriation risk variable is measuring the effect of discrimination rather than institutional quality. In order to explore the feasibility of this potential explanation, we add a set of continent controls to the estimates. Adding continent controls leaves the coefficient on protection from expropriation positive and significant.

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 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 U.S. This would mean that the positive coefficient on protection from expropriation should be interpreted to mean that individuals from countries with institutions like the U.S. 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 U.S. should eliminate the significance of "protection from expropriation". In order 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 and 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

---

<sup>17</sup> Recall that the estimates include a control for being "non-white", so the continent controls capture differential treatment based on continent of origin, holding racial characteristics fixed.

effect on stock market participation.<sup>18</sup> 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 participating in the stock market participation.<sup>19</sup> Ideally, we would include an individual measure of English speaking ability in the estimates. However, the SIPP data does 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 one 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 and Chin, 2004). Coming from a country where English is spoken has a positive, and statistically insignificant 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 U.S.<sup>20</sup> Immigrants from countries where the stock market is relatively small, 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.<sup>21</sup>

Overall the results presented in Table 5 suggest that the finding that the decision to own stock in the U.S. is influenced by the quality of institutions in the country of origin is robust to including additional attributes of the country of origin.

---

<sup>18</sup> Many studies, including Hall and Jones (1999), Acemoglu, Johnson and Robinson (2001, 2002), Easterly and Levine (2003), and Rodrik, Subramainian and Trebbi (2004) find that GDP per capita is higher in countries with better institutions.

<sup>19</sup> Chiswick (1978) and Borjas (1987) show that immigrants from English speaking countries experience more rapid wage assimilation.

<sup>20</sup> We have also examined the effect of controlling for remittances to the home country. If immigrants are not investing in U.S. financial markets perhaps they are investing at home through remittances. Including a measure of remittances received in the home country does not alter the effect of institutional quality. We find that migrants from countries that receive higher per capita remittances are more likely to participate in U.S. stock markets.

<sup>21</sup> Using “contract intensive money” as a measure of financial market development leads to the same findings. Contract intensive money is equal to the non-cash fraction of the money supply and is associated with higher rates of investment and growth. See Clague, Keefer, Knack and Olson (1999).

## 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 they are only concerned with the right tail of the income distribution, high ability migrants 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. Since countries with low inequality also tend to have strong institutions, we have to be concerned that our finding that financial market participation increases with country of origin institutional quality is driven by ability bias.<sup>22</sup> For example, high ability individuals from countries with low inequality and high quality institutions are more likely to migrate and low ability individuals from countries with high inequality and less effective institutions tend to migrate. 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 first column in Table 6 reports the baseline findings for the 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 U.S. 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.

### *Ethnic concentration and country of origin fixed effects*

In addition to unobserved ability, there are other individual characteristics that we cannot observe that may have an important 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 influences the decision to own stock. Similarly, variation in educational quality across countries may impact the cost of obtaining information about

---

<sup>22</sup> Engerman and Sokoloff (2000) provide evidence that in societies with high initial inequality the evolution of institutions favored a narrow elite.



U.S. financial markets. Parental participation in financial markets is likely to be correlated with country of origin institutional quality and with the decision to own stock of the current generation (Chiteji and Stafford (2000)).

In order to produce unbiased estimates of the effect of country of origin institutional quality on financial market participation in the U.S., 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:

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

See Appendix Table 1 for 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:

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

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  $s$ . We include a full set of country of origin controls in  $\delta_j$ . All of the other variables are defined above.

Because this new institutional quality measure varies by country of origin for a given MSA, we can include both country and MSA fixed effects in the estimation. By including country of origin fixed effects, we eliminate correlation between unobserved individual attributes and country of origin.

By including MSA fixed effects in all of the estimates, we rule out another potential source of bias in the new institutional quality measure. Since location choice is non-random, 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 be unbiased.

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 100 observations per country. The number of observations for each country is 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 100 observations, so we will discuss those findings. For the median immigrant who lives in a city where 0.78 percent 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.

### **Enforcement of Informal Institutional Constraints**

In addition to addressing an important econometric issue, the estimates which 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 non-financial contexts, including employment probabilities (Munshi, 2003), wage growth and human capital accumulation (Boras, 1995 and 2000) and language proficiency (Chiswick and Miller, 1996). 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.

### **The effect of institutional quality on other behavior**

We continue our exploration of the robustness of the link between stock market participation and institutional quality by considering 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 the possibility that institutional quality is proxying for some other country of origin characteristic – national character, 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 institutions matter when they are supposed to and do not matter when they 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 percent 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 percent. In addition, we cannot rule out the possibility that the savings account results are due to biases induced by unobserved heterogeneity. 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 to the likelihood of having a savings account.

Owning a checking account and using checks is more institutionally intense compared to 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 percent increase in stock market participation and a 4.7 percent increase in the likelihood of owning checks. Similarly, Guiso, Sapienza and Zingales (2004) find that households in high social capital areas are more likely to own 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 is 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 but does not influence other investment decisions, which require less institutional support, 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.

### **The effect of institutional quality on different types of people**

We turn now to examining how institutional quality affects the likelihood that different groups of immigrants own stock. In addition to providing further robustness checks on our main results, these estimates help to identify the potential channels through which home country institutions come to influence behavior.

#### *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], 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). The findings are quite striking. Immigrants who have more education are *more* influenced by home country institutions than their counterparts who have completed less schooling. A one standard deviation increase in home country institutional quality is predicted to raise the stock market participation of highly educated immigrants by 5.4 percentage points and by 1.0 percentage points for immigrants in the low education group.<sup>23</sup>

---

<sup>23</sup> The effect is even larger if we restrict attention to immigrants with advanced degrees.

In contrast, Guiso, Sapienza and Zingales (2004 and 2005) find that the effect of social capital and culture is muted for those with greater education. This hints at a potentially important distinction between how culture and institutions influence behavior. Educated individuals in a country are likely to participate more and to have more direct experience with their country's institutions compared to the less-educated. At a minimum, they have had more direct exposure to educational institutions in their country of origin.<sup>24</sup> In addition, these educational "elites" may belong to a relatively small minority whose property is protected by institutions that are more generally less effective. The effects of culture, on the other hand, appear to be more concentrated among less educated individuals, suggesting that cultural lessons are transmitted, at least partially, through different mechanisms than lessons about the institutional environment.

In columns [4] and [5], we compare the effect of institutional quality on high and low skill workers, respectively.<sup>25</sup> 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 to 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. Restricting 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 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 reflects an orientation toward 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 this large number of immigrants who share the same institutional background. Eliminating Mexican immigrants from the sample has no effect on the results.

---

<sup>24</sup> Recall that the vast majority of immigrants arrive in the U.S. when they are twenty-one years of age or older, after the bulk of their formal education has been completed.

<sup>25</sup> "High Skill Workers" are workers whose 3-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 3-digit occupation code from SIPP is similarly mapped into "Transportation and Material Moving Occupations", "Handlers, Equipment Cleaners, Helpers and Laborers", or "Service Occupations, Except Private Household" categories according to the same BLS classifications.

### **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 U.S. for subsets of immigrants based on the number of years they have lived in the U.S.

Columns 2 – 6 of Table 10 divide the immigrant sample into five sub-samples based on how many years they have been living in the U.S. For each sub-sample, two estimates are produced: one which includes controls for how old the immigrant was when she arrived in the U.S. and one which does not. Controlling for age at arrival in the U.S. 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 sub-sample, except for the sub-sample of immigrants who have been in the U.S. for more than 28 years.

### **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 in 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 U.S. for subsets of immigrants based on their age of arrival in the U.S.

Table 11 divides the immigrant sample into three sub-samples based on age at arrival in the U.S.: 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 which includes controls for the calendar year when the immigrant arrived in the U.S. and one which does not. Controlling for year of arrival in the U.S. generally produces slightly smaller coefficients on institutional quality, so we only discuss the findings which 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 21<sup>st</sup> birthday versus 0.019 for those who arrived after age twenty-one, 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 or 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, rather than direct experience play an important role in shaping an individual's perception of the trustworthiness of institutions.

### **Intergenerational Transmission of Informal Institutional Constraints**

In a final set of estimates, we take another approach to examine the robustness of the finding that immigrants who come from countries with weak institutions are less likely to participate in U.S. financial markets. Expanding on the findings from Table 11, which show that the behavior of immigrants who arrived in the U.S. 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 U.S. 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.<sup>26</sup> 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 U.S., but trace their ancestry to one of the same countries, 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, informal institutional constraints do not appear to be passed along to future generations. This contrasts with findings in other areas which suggests that some aspects of culture do seem to persist across generations and across the same transformation in the formal institutional environment: norms about fertility and female labor force participation (Fernandez and Fogli, 2005), for example.

## **5. 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 a key explanation for the persistent disparity in financial market development across countries. We investigate the impact of institutional quality on financial market development using data on the financial decisions of immigrants in the U.S. While all of the individuals whose decisions we analyze face the same formal institutional framework in the U.S., 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 effects immigrants for at least the first 28 years that they live in the U.S. and is present in all but the youngest migrants. The impact of institutions is amplified by living in a neighborhood with many

---

<sup>26</sup> 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.

other immigrants from the same country of origin and is greater for immigrants who have more education. 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, and is enhanced by additional formal schooling. Third, the effect of informal institutional constraints 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.

What do these findings tell us about the likely results of formal institutional reform? Examining the behavior of immigrants in the U.S. corresponds to a best case scenario for institutional reform: the change in the institutional environment is credible, it is multi-faceted, affecting fiscal, monetary and trade policy as well as the judicial and political system; and 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 influence the behavior of international migrants in the U.S. for decades. Translating these findings into a more complex real world environment, where institutional reforms are likely to be less comprehensive, potentially lack credibility and permanence, and sometimes do not have 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 next generation will be governed by updated informal institutional constraints.



## References

- Acemoglu, Daron, Simon Johnson and James A. Robinson, 2001. "The Colonial Origins of Comparative Development: An Empirical Investigation," *American Economic Review*, 91, 1369-1401.
- Acemoglu, Daron, Simon Johnson and James A. Robinson, 2002. "Reversal of Fortune: Geography and Institutions in the Making of the Modern World Income Distribution," *Quarterly Journal of Economics*, 117(4), 1231-94.
- Ai, Chunrong and Edward C. Norton. "Interaction Terms in Logit and Probit Models," *Economic Letters*, 80,123-129.
- Barro, Robert J. 1999. "Human Capital and Growth in Cross-country Regressions," *Swedish Economic Policy Review*, 6(2), 237-277.
- Bates, Robert H., 1981. Market and States in Tropical Africa: The Political Basis of Agricultural Policies University of California Press: Berkeley, CA
- Beck, Thorsten, Asli Demirgüç-Kunt and Ross Levine, 2003a, "Law and Finance: Why Does Legal Origin Matter?," *Journal of Comparative Economics*, 31,653-675.
- Beck, Thorsten, Asli Demirgüç-Kunt and Ross Levine, 2003b, "Law, Endowments, and Finance," *Journal of Financial Economics*, 70: 181-187.
- Beck, Thorsten, Asli Demirgüç-Kunt and Ross Levine, 2000. "A New Database on Financial Development and Structure," *World Bank Economic Review*, 14, 597-605.
- Beck, Thorsten, Ross Levine and Norman Loayza, 2000. "Finance and the Sources of Growth," *Journal of Financial Economics*, 58, 261-300.
- Besley, Timothy, October 1995. "Property Rights and Investment Incentives: Theory and Evidence from Ghana," *Journal of Political Economy*, 103(5), 903-937.
- Bitler, Marianne P., Alicia M. Robb, and John D. Wolken, 2001. "Financial Services Used by Small Businesses: Evidence from the 1998 Survey of Small Business Finance," *Federal Reserve Bulletin*, Board of Governors of the Federal Reserve System, April, 183-205.
- Bleakley, Hoyt and Aimee Chin, 2004. "Language Skills and Earnings: Evidence from Childhood Immigrants," *The Review of Economics and Statistics*, 86(2), 481-496.
- Bloom, David E. and Jeffrey D. Sachs, 1998. "Geography, Demography, and Economic Growth in Africa," *Brookings Papers on Economic Activity*, 2, 207-295.

- Borjas, George J., 1985. "Assimilation, Changes in Cohort Quality, and the Earnings of Immigrants," *Journal of Labor Economics*, 3(4), 463-489.
- Borjas, George J., 1987. "Self-Selection and the Earnings of Immigrants," *American Economic Review*, 77(4), 531-553.
- Borjas, George J., 1995. "Ethnicity, Neighborhoods and Human Capital Externalities," *American Economic Review*, 85, 365-390.
- Borjas, George J., 2000. "Ethnic Enclaves and Assimilation," *Swedish Economic Policy Review*, 7: 91-122.
- Brunetti, Aymo, Gregory Kisunko and Beatrice Weder 1997. "Institutional Obstacles to Doing Business: Region-by-Region Results from a Worldwide Survey of the Private Sector," *World Bank Policy Research Working Paper No. 1759*,
- Carroll, Christopher D, Rhee, Byung-Kun and Chanyong Rhee, 1994. "Are There Cultural Effects on Saving? Some Cross-Sectional Evidence," *Quarterly Journal of Economics*, 109 (3), 685-700
- Chiteji, Ninja and Frank Stafford. 2000. "Asset Ownership Across Generations." *PSC Research Report No. 00-454*. University of Michigan
- Chiswick Barry R., 1978. "The Effect of Americanization on the Earnings of Foreign-born Men," *Journal of Political Economy*, 86(5), 897-921.
- Chiswick, Barry and Miller, 1996. "Ethnic Networks and Language Proficiency Among Immigrants," *Journal of Population Economics*, 9(1), 19-35.
- Clague, Christopher; Philip Keefer, Stephen Knack, and Mancur Olson 1999. "Contract-intensive Money." *Journal of Economic Growth*, 4, 185-209.
- Deininger, Klaus and Lyn Squire, 1996. "A New Data Set Measuring Income Inequality," *World Bank Economic Review*, 10(3), 565-91.
- Djankov, Simeon, Rafael La Porta, Florencio Lopez-de-Silanes and Andrei Shleifer, 2001. "The Regulation of Entry," *Quarterly Journal of Economics*, 117, 1-38.
- Duflo, Esther and Emmanuel Saez, 2002. "Participation and Investment Decisions in a Retirement Plan: The Influence of Colleagues' Choices," *Journal of Public Economics*, 85(1), 121-48.
- Erb, Claude B., Campbell R. Harvey and Tadas E. Viskanta, 1996, "Expected Returns and Volatility in 135 Countries" *Journal of Portfolio Management*, 46-58.

- Easterly, William and Ross Levine, 2003. "Tropics, Germs, and Crops: How Endowments Influence Economic Development," *Journal of Monetary Economics*, 50(1), 3-39.
- Easterly, William and Ross Levine, November 1997. "Africa's Growth Tragedy: Policies and Ethnic Divisions," *Quarterly Journal of Economics*, 112(4), 1203-50.
- Engerman, Stanley and Kenneth Sokoloff, 2000, "History Lessons: Institutions, Factor Endowments, and Paths of Development in the New World," *Journal of Economic Perspectives* 14, 217--232.
- Fernandez, Raquel and Alessandra Fogli, 2005. "Culture: An Empirical Investigation of Beliefs, Work and Fertility." *NBER Working Paper* 11268.
- Glaeser, Edward L., Rafael La Porta, Florencio Lopez-de-Silanes and Andrei Shleifer. 2004 "Do Institutions Cause Growth?" *Journal of Economic Growth* 9(3),271-303
- Glaeser, Edward L. and Andrei Shleifer, November 2002. "Legal Origins," *Quarterly Journal of Economics*, 117(4), 1193-1229.
- Glaeser, Edward L., David Laibson and Bruce Sacerdote, 2001. "The Economic Approach to Social Capital," *NBER Working Paper* 7728.
- Guiso, Luigi, Paola Sapienza and Luigi Zingales, June 2004. "The Role of Social Capital in Financial Development," *American Economic Review*, 94 (3), 526-556
- Guiso, Luigi, Paola Sapienza and Luigi Zingales, 2005. "Does Culture Affect Economic Outcomes?" Manuscript, Northwestern University.
- Hall, Robert E. and Charles I. Jones, February 1999. "Why Do Some Countries Produce so Much More Output per Worker than Others?" *Quarterly Journal of Economics*, 114(1), 83-116.
- Hendricks, Lutz, 2004. "Why do Hours Worked Differ Across Countries? Evidence from U.S. Immigrants," Manuscript, Iowa State University.
- Hong, Harrison, Jeffrey D. Kubik and Jeremy C. Stein, 2004. "Social Interaction and Stock-Market Participation," *Journal of Finance*, 59(1), 137-163
- Johnson, Simon, John McMillan and Christopher Woodruff, 2002. "Property Rights and Finance," *American Economic Review*, 92(5), 1335-56.
- Kandori, Michihiro. 1992. "Social Norms and Community Enforcement," *Review of Economic Studies*, 59, 63-80.

- Knack, Stephen and Philip Keefer, 1995. "Institutions and Economic Performance: Cross-Country Tests Using Alternative Measures," *Economics and Politics*, 7(3), 207-227.
- La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer and Robert W. Vishny, 2002. "Investor Protection and Corporate Valuation," *Journal of Finance*, 57, 1147-70.
- La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer and Robert W. Vishny, 2000. "Investor Protection and Corporate Governance," *Journal of Financial Economics*, 58, 3-27.
- La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer and Robert W. Vishny, 1998. "Law and Finance," *Journal of Political Economy*, 106(6), 1113-55.
- LaPorta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert W. Vishny, 1997. "Legal Determinants of External Finance" *Journal of Finance* 52 (3), 1131-1150.
- La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer and Robert W. Vishny, February 1994. "The Quality of Government," *Journal of Law, Economics and Organization*, 15(1), 222-279.
- Levine, Ross, Norman Loayza and Beck Thorston, 2000. "Financial Intermediation and Growth: Causality and Causes," *Journal of Monetary Economics*, 46, 31-77.
- Levine, Ross, 1999. "Law, Finance, and Economic Growth," *Journal of Financial Intermediation*, 8, 36-67.
- Levine, Ross, 1998. "The Legal Environment, Banks, and Long-run Economic Growth," *Journal of Money, Credit, and Banking*, 30, 688-726.
- Madrian, Brigitte and D. Shea, 2000, "Peer Effects and Savings Behavior in Employer-Sponsored Savings Plans," *University of Chicago Working Paper*.
- Munshi, Kaivan, 2003. "Networks in the Modern Economy: Mexican Migrants in the US Labor Market." *Quarterly Journal of Economics*, 118(2), 549-597.
- Murrell, Peter, 1996. "How Far Has the Transition Progressed?" *Journal of Economic Perspectives* 10(2), 25-44
- Paulson, Anna and Audrey Singer, 2003. "Savings and Settlement: Evidence from Mexican Migrants in the U.S." Manuscript.

- North, Douglass C., 1988. "Institutions, Economic Growth and Freedom: An Historical Introduction," *Freedom, Democracy and Economic Welfare: Proceedings of an International Symposium*, Vancouver: Fraser Institute, 3-25.
- North, Douglass C., 1990. Institutions, Institutional Change, and Economic Performance Cambridge University Press, New York.
- North, Douglass C., 1993. "Economic Institutions Through Time", Nobel Lecture.
- Rajan, Raghuram G. and Luigi Zingales, 2003. "The Great Reversals: The Politics of Financial Development in the Twentieth Century," *Journal of Financial Economics*, 69(1), 5-50.
- Rodrik, Dani, editor, 2003. In Search of Prosperity: Analytic Narratives on Economic Growth. Princeton University Press, Princeton, NJ.
- Rodrik, D., A. Subramanian and F. Trebbi. 2004 "Institutions Rule: The Primacy of Institutions over Geography and Integration in Economic Development", *Journal of Economic Growth*, 9(2), 136-165
- Smith, Adam. 1776. An Inquiry into the Nature and Causes of the Wealth of Nations, 5th ed. (edited by Edwin Cannan, 1930), vols. I and II, Methuen and Co, London
- Stulz, René M. and Rohan Williamson, 2003. "Culture, Openness and Finance," *Journal of Financial Economics*, 70(3), 313-349.
- Temple, Jonathan 2003. "Growing Into Trouble: Indonesia after 1966," in Rodrik, Dani, editor, In Search of Prosperity: Analytic Narratives on Economic Growth. Princeton University Press, Princeton, NJ.
- World Bank, 1997 World Development Report. World Bank, Washington D.C.
- World Migration 2005: Costs and Benefits of International Migration. International Migration Organization.

**Table 1: Definitions and Sources of Country Level Variables**

Variable	Definition and Source
Protection from Expropriation of Private Investment	This variable evaluates the risk "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 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: <a href="http://www.cidcm.umd.edu/inscr/polity/">http://www.cidcm.umd.edu/inscr/polity/</a>
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 10 years ago. The current and historical responses to each of the three questions were averaged and then an overall average was formed. Source: Author's calculations from the World Bank World Development Report 1997, Private Sector Survey: <a href="http://www.worldbank.org/wbi/governance/wdr97data.html">http://www.worldbank.org/wbi/governance/wdr97data.html</a>
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 one if the legal regime of the country is British and zero otherwise. Source: "The Quality of Government" LaPorta, Lopez-de-Silanes, Schleifer, Vishny (1999). <a href="http://www.som.yale.edu/faculty/fl69/datasets.asp">http://www.som.yale.edu/faculty/fl69/datasets.asp</a>

**Table 1: Definitions and Sources of Country Level Variables, continued**

<b>Variable</b>	<b>Definition and Source</b>
English Speaking	This variable is equal to one 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, Hoyt and Aimee Chin. “Language Skills and Earnings: Evidence from Childhood Immigrants”, <i>Review of Economics and Statistics</i> , May 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, Lopez-de-Silanez, Schleifer, Vishny (1999). <a href="http://www.som.yale.edu/faculty/fl69/datasets.asp">http://www.som.yale.edu/faculty/fl69/datasets.asp</a>
Gini Coefficient	Average of Gini-coefficients across one country over all “high-quality” observations 1985-95. Source: Deininger and Squire (1996) <a href="http://www.worldbank.org/research/growth/dddeisqu.htm">http://www.worldbank.org/research/growth/dddeisqu.htm</a>
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: <a href="http://www.cid.harvard.edu/ciddata/ciddata.html">http://www.cid.harvard.edu/ciddata/ciddata.html</a>
Catholic, Protestant, Muslim	The percentage of people in the country (x 100) who are a particular religion. Source: CIA Factbook.

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

<b>Characteristic</b>	<b>Native-Born</b>	<b>Immigrant</b>
<b>Individual Characteristics</b>		
Age	46.47 (17.52)	45.22 (16.51)
% Male	45.6%	46.2%
% Married	57.4%	65.6%
% non-white	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)
25 <sup>th</sup> percentile of household wealth	\$14,660	\$3,017
Median household wealth	\$71,123	\$29,001
75 <sup>th</sup> percentile of household wealth	\$186,512	\$117,917
<b>Educational Attainment (%)</b>		
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%
<b>Financial Market Participation (%)</b>		
% who own stock	20.0%	8.6%
% with a checking account (interest or non-interest)	63.8%	47.0%
% with a savings account	54.8%	40.1%
<b>Other characteristics (%)</b>		
% 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 non-missing data for “expropriation risk”.



**Table 2B: Immigrant Characteristics**

<b>Characteristic</b>	<b>Immigrant</b>
<b>Year of Arrival in the U.S. (%)</b>	
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%
<b>Age at Migration (%)</b>	
five years or younger	3.7%
six to ten years	4.6%
eleven to fifteen years	6.8%
sixteen to twenty years	14.3%
over twenty years	70.6%
<b>Continent of Origin (%)</b>	
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. 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 non-missing data for “expropriation risk”.

**Table 3A: Summary of Country Variables**

<b>Characteristic</b>	<b>N</b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>Min</b>	<b>Median</b>	<b>Max</b>	<b>U.S. value</b>
<b>Measures of Institutional Quality</b>							
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
<b>Other Country Characteristics</b>							
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
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
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.

**Table 4: The Effect of Institutional Quality on Immigrant Stock Market Participation**

<b>Explanatory Variable</b>	<b>[1]</b>	<b>[2]</b>	<b>[3]</b>	<b>[4]</b>	<b>[5]</b>	<b>[6]</b>	<b>[7]</b>
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 R-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 controls. 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. Standard errors are in parentheses. \*\*\* indicates significance at at least the 1% level, \*\* at at least the 5% level, \* at at least the 10% level.

**Table 5: The Effect of Institution Quality on Immigrant Stock Market Participation, Additional Country Controls**

<b>Explanatory Variable</b>	<b>[1]</b>	<b>[2]</b>	<b>[3]</b>	<b>[4]</b>	<b>[5]</b>	<b>[6]</b>
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)
Av. Per Capita GDP <sup>†</sup>				1.090 (0.959)	1.060 (0.994)	0.766 (1.380)
English Speaking					0.031 ** (0.010)	0.009 (0.023)
Stock Market Capitalization <sup>†</sup>						3.700 (5.070)
Stock Market Capitalization Squared <sup>†</sup>						-0.0002 (0.0001)
Religion Controls	No	No	Yes	No	No	No
Continent Controls	No	Yes	No	No	No	No
Adjusted R-Squared	0.2315	0.2324	0.2341	0.2365	0.2374	0.2375
Number of Observations	14,232	14,232	13,250	13,336	13,336	11,509

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 controls. 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 a † 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.

**Table 6: Controlling for Unobserved Heterogeneity**  
**The Effect of Institution 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 controls. 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 a † 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.

**Table 7: Does Enforcement Matter?  
Controlling for Unobserved Heterogeneity  
The Effect of Institution 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 controls. 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.

**Table 8: Do Institutions Matter Differently for Different Types of Behavior?**

	Stock Ownership	Savings Account	Checking Account	Prescription Drugs for Children	Drive own Car to Work	Visited a Doctor in Past 12 Months
<b>A. Baseline specification</b>	[1]	[2]	[3]	[4]	[5]	[6]
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 R-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>B. Controlling for Unobserved Heterogeneity</b>						
Protection from Expropriation x Ethnic Concentration	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	-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 R-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 controls. 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 one if the respondent has a checking account that either does or does not pay interest. “Savings Account” is equal to one if the respondent has a savings account and zero otherwise. “Prescription Drugs for Children” is asked of respondents who have a child aged 0-14 and is equal to one if the respondent purchased prescription drugs for the child, and zero otherwise. “Drives own Car to Work” is asked of respondents who are employed or own a business and is equal to one if the respondent drives to work and is equal to zero otherwise. “Visited a Doctor in the past 12 months” is equal to one if the respondent visited a doctor in the 12 months before the survey question and zero otherwise.



**Table 9: Do Institutions Matter Differently for Different Types of Immigrants?**

	<b>Baseline</b>	<b>High Educ. Immig.</b>	<b>Low Educ. Immig.</b>	<b>High Skill Workers</b>	<b>Low Skill Workers</b>	<b>Citizens</b>	<b>Exclude Mexico</b>
	<b>[1]</b>	<b>[2]</b>	<b>[3]</b>	<b>[4]</b>	<b>[5]</b>	<b>[6]</b>	<b>[7]</b>
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 R-Squared	0.2315	0.2801	0.0890	0.2910	0.1221	0.2427	0.2297
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 controls. 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 3-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 3-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".

**Table 10: The Persistence of Institutions**  
**The Effect Institution Quality on Immigrant Stock Market Participation,**  
**by Years of U.S. Experience**

Explanatory Variables	Years in the U.S.					
	ALL	1 – 7	8 – 12	13 – 17	18 – 27	28+
<b>No Age at Arrival Controls</b>						
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 R-Squared	0.2315	0.2138	0.3324	0.3629	0.2660	0.2844
<b>Age at Arrival Controls</b>						
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 R-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 controls. 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.

**Table 11: Learning about Institutions**  
**The Effect Institution Quality on Immigrant Stock Market Participation,**  
**by Age at Migration**

Explanatory Variables	Age at Arrival in U.S.			
	ALL	1 – 15	16 – 20	21+
<b>No Year of Arrival Controls</b>				
Protection from Expropriation	0.016*** (0.005)	0.007 (0.006)	0.013* (0.007)	0.018*** (0.006)
Adjusted R-Squared	0.2315	0.2585	0.2715	0.2387
<b>Year of Arrival Controls</b>				
Protection from Expropriation	0.016*** (0.005)	0.007 (0.006)	0.014* (0.007)	0.019*** (0.006)
Adjusted R-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 controls. 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.

**Table 12: Intergenerational Transmission of Institutional Lessons  
The Effect of Institution Quality on Stock Market Participation  
Selected Natives and Immigrants**

<b>Explanatory Variable</b>	<b>Native</b>	<b>Immigrant</b>
Protection from Expropriation	-0.002 (0.019)	0.021*** (0.008)
Adjusted R-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 controls. 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.

**Appendix Table 1: 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 <sup>27</sup>	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 <sup>28</sup>	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

<sup>27</sup> Includes individuals who reported that they were born in: Czechoslovakia, Slovakia, Czech Republic.

<sup>28</sup> Includes individuals who reported that they were born in: England, United Kingdom, Scotland, Wales, Northern Ireland.

47	Malaysia	0.0232%	19
48	Mexico	8.5920%	4,163

**Appendix Table 1: Ethnic Concentration and Number of observations per country, continued**

	Country	Median Ethnic Concentration (%)	Number of Observations
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 <sup>29</sup>	0.4919%	365
64	Singapore	0.0130%	3
65	South Africa	0.0297%	24
66	Spain	0.1249%	66
67	Sweden	0.0388%	29
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 <sup>30</sup>	0.1243%	117
	All	0.7829%	15,043

<sup>29</sup> 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.

<sup>30</sup> Includes individuals who reported that they were born in: Yugoslavia, Bosnia and Herzegovina, Croatia, Macedonia, Montenegro, Slovenia, Serbia.

**Appendix Table 2: The Effect of Control Variables on Stock Market Participation**

Explanatory Variable	[1]
Age <sup>†</sup>	0.215 (0.157)
Age Squared <sup>†</sup>	-0.002 (0.002)
2 <sup>nd</sup> Wealth Quartile	0.010 * (0.005)
3 <sup>rd</sup> Wealth Quartile	0.040 *** (0.012)
4 <sup>th</sup> Wealth Quartile	0.179 *** (0.020)
Unemployed or Out of Labor Force	0.027 *** (0.008)
Per Capita Income <sup>††</sup>	30.700 *** (4.590)
Per Capita Income Squared <sup>††</sup>	-0.001 *** (0.000)
Male	-0.021 *** (0.005)
Married	0.024 ** (0.010)
Number of Children	-0.004 * (0.002)
Non-white	0.003 (0.012)
High School Graduate	-0.0001 (0.007)
Some College	0.043 *** (0.011)
Bachelor Degree	0.050 *** (0.018)
Advance 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 one if the respondent owned stock during the interview period in question and is zero otherwise. A linear probability model is used and standard errors are corrected for heteroskedasticity and clustering at the country level. Standard errors are in parentheses. The reported coefficients and standard errors of explanatory variables marked by a † are the actual ones multiplied by 100, by a †† are multiplied by 1,000,000. The lowest wealth quartile is the omitted wealth category, and the omitted education category is less than high school graduate. \*\*\* indicates significance at at least the 1% level, \*\* at at least the 5% level, \* at at least the 10% level.



## Working Paper Series

A series of research studies on regional economic issues relating to the Seventh Federal Reserve District, and on financial and economic topics.

Does Bank Concentration Lead to Concentration in Industrial Sectors? <i>Nicola Cetorelli</i>	<b>WP-01-01</b>
On the Fiscal Implications of Twin Crises <i>Craig Burnside, Martin Eichenbaum and Sergio Rebelo</i>	<b>WP-01-02</b>
Sub-Debt Yield Spreads as Bank Risk Measures <i>Douglas D. Evanoff and Larry D. Wall</i>	<b>WP-01-03</b>
Productivity Growth in the 1990s: Technology, Utilization, or Adjustment? <i>Susanto Basu, John G. Fernald and Matthew D. Shapiro</i>	<b>WP-01-04</b>
Do Regulators Search for the Quiet Life? The Relationship Between Regulators and The Regulated in Banking <i>Richard J. Rosen</i>	<b>WP-01-05</b>
Learning-by-Doing, Scale Efficiencies, and Financial Performance at Internet-Only Banks <i>Robert DeYoung</i>	<b>WP-01-06</b>
The Role of Real Wages, Productivity, and Fiscal Policy in Germany's Great Depression 1928-37 <i>Jonas D. M. Fisher and Andreas Hornstein</i>	<b>WP-01-07</b>
Nominal Rigidities and the Dynamic Effects of a Shock to Monetary Policy <i>Lawrence J. Christiano, Martin Eichenbaum and Charles L. Evans</i>	<b>WP-01-08</b>
Outsourcing Business Service and the Scope of Local Markets <i>Yukako Ono</i>	<b>WP-01-09</b>
The Effect of Market Size Structure on Competition: The Case of Small Business Lending <i>Allen N. Berger, Richard J. Rosen and Gregory F. Udell</i>	<b>WP-01-10</b>
Deregulation, the Internet, and the Competitive Viability of Large Banks and Community Banks <i>Robert DeYoung and William C. Hunter</i>	<b>WP-01-11</b>
Price Ceilings as Focal Points for Tacit Collusion: Evidence from Credit Cards <i>Christopher R. Knittel and Victor Stango</i>	<b>WP-01-12</b>
Gaps and Triangles <i>Bernardino Adão, Isabel Correia and Pedro Teles</i>	<b>WP-01-13</b>
A Real Explanation for Heterogeneous Investment Dynamics <i>Jonas D.M. Fisher</i>	<b>WP-01-14</b>
Recovering Risk Aversion from Options <i>Robert R. Bliss and Nikolaos Panigirtzoglou</i>	<b>WP-01-15</b>
Economic Determinants of the Nominal Treasury Yield Curve <i>Charles L. Evans and David Marshall</i>	<b>WP-01-16</b>

## **Working Paper Series** *(continued)*

Price Level Uniformity in a Random Matching Model with Perfectly Patient Traders <i>Edward J. Green and Ruilin Zhou</i>	<b>WP-01-17</b>
Earnings Mobility in the US: A New Look at Intergenerational Inequality <i>Bhashkar Mazumder</i>	<b>WP-01-18</b>
The Effects of Health Insurance and Self-Insurance on Retirement Behavior <i>Eric French and John Bailey Jones</i>	<b>WP-01-19</b>
The Effect of Part-Time Work on Wages: Evidence from the Social Security Rules <i>Daniel Aaronson and Eric French</i>	<b>WP-01-20</b>
Antidumping Policy Under Imperfect Competition <i>Meredith A. Crowley</i>	<b>WP-01-21</b>
Is the United States an Optimum Currency Area? An Empirical Analysis of Regional Business Cycles <i>Michael A. Kouparitsas</i>	<b>WP-01-22</b>
A Note on the Estimation of Linear Regression Models with Heteroskedastic Measurement Errors <i>Daniel G. Sullivan</i>	<b>WP-01-23</b>
The Mis-Measurement of Permanent Earnings: New Evidence from Social Security Earnings Data <i>Bhashkar Mazumder</i>	<b>WP-01-24</b>
Pricing IPOs of Mutual Thrift Conversions: The Joint Effect of Regulation and Market Discipline <i>Elijah Brewer III, Douglas D. Evanoff and Jacky So</i>	<b>WP-01-25</b>
Opportunity Cost and Prudentiality: An Analysis of Collateral Decisions in Bilateral and Multilateral Settings <i>Herbert L. Baer, Virginia G. France and James T. Moser</i>	<b>WP-01-26</b>
Outsourcing Business Services and the Role of Central Administrative Offices <i>Yukako Ono</i>	<b>WP-02-01</b>
Strategic Responses to Regulatory Threat in the Credit Card Market* <i>Victor Stango</i>	<b>WP-02-02</b>
The Optimal Mix of Taxes on Money, Consumption and Income <i>Fiorella De Fiore and Pedro Teles</i>	<b>WP-02-03</b>
Expectation Traps and Monetary Policy <i>Stefania Albanesi, V. V. Chari and Lawrence J. Christiano</i>	<b>WP-02-04</b>
Monetary Policy in a Financial Crisis <i>Lawrence J. Christiano, Christopher Gust and Jorge Roldos</i>	<b>WP-02-05</b>
Regulatory Incentives and Consolidation: The Case of Commercial Bank Mergers and the Community Reinvestment Act <i>Raphael Bostic, Hamid Mehran, Anna Paulson and Marc Saidenberg</i>	<b>WP-02-06</b>

## **Working Paper Series** *(continued)*

Technological Progress and the Geographic Expansion of the Banking Industry <i>Allen N. Berger and Robert DeYoung</i>	<b>WP-02-07</b>
Choosing the Right Parents: Changes in the Intergenerational Transmission of Inequality — Between 1980 and the Early 1990s <i>David I. Levine and Bhashkar Mazumder</i>	<b>WP-02-08</b>
The Immediacy Implications of Exchange Organization <i>James T. Moser</i>	<b>WP-02-09</b>
Maternal Employment and Overweight Children <i>Patricia M. Anderson, Kristin F. Butcher and Phillip B. Levine</i>	<b>WP-02-10</b>
The Costs and Benefits of Moral Suasion: Evidence from the Rescue of Long-Term Capital Management <i>Craig Furfine</i>	<b>WP-02-11</b>
On the Cyclical Behavior of Employment, Unemployment and Labor Force Participation <i>Marcelo Veracierto</i>	<b>WP-02-12</b>
Do Safeguard Tariffs and Antidumping Duties Open or Close Technology Gaps? <i>Meredith A. Crowley</i>	<b>WP-02-13</b>
Technology Shocks Matter <i>Jonas D. M. Fisher</i>	<b>WP-02-14</b>
Money as a Mechanism in a Bewley Economy <i>Edward J. Green and Ruilin Zhou</i>	<b>WP-02-15</b>
Optimal Fiscal and Monetary Policy: Equivalence Results <i>Isabel Correia, Juan Pablo Nicolini and Pedro Teles</i>	<b>WP-02-16</b>
Real Exchange Rate Fluctuations and the Dynamics of Retail Trade Industries on the U.S.-Canada Border <i>Jeffrey R. Campbell and Beverly Lapham</i>	<b>WP-02-17</b>
Bank Procyclicality, Credit Crunches, and Asymmetric Monetary Policy Effects: A Unifying Model <i>Robert R. Bliss and George G. Kaufman</i>	<b>WP-02-18</b>
Location of Headquarter Growth During the 90s <i>Thomas H. Klier</i>	<b>WP-02-19</b>
The Value of Banking Relationships During a Financial Crisis: Evidence from Failures of Japanese Banks <i>Elijah Brewer III, Hesna Genay, William Curt Hunter and George G. Kaufman</i>	<b>WP-02-20</b>
On the Distribution and Dynamics of Health Costs <i>Eric French and John Bailey Jones</i>	<b>WP-02-21</b>
The Effects of Progressive Taxation on Labor Supply when Hours and Wages are Jointly Determined <i>Daniel Aaronson and Eric French</i>	<b>WP-02-22</b>

## **Working Paper Series** *(continued)*

Inter-industry Contagion and the Competitive Effects of Financial Distress Announcements: Evidence from Commercial Banks and Life Insurance Companies <i>Elijah Brewer III and William E. Jackson III</i>	<b>WP-02-23</b>
State-Contingent Bank Regulation With Unobserved Action and Unobserved Characteristics <i>David A. Marshall and Edward Simpson Prescott</i>	<b>WP-02-24</b>
Local Market Consolidation and Bank Productive Efficiency <i>Douglas D. Evanoff and Evren Örs</i>	<b>WP-02-25</b>
Life-Cycle Dynamics in Industrial Sectors. The Role of Banking Market Structure <i>Nicola Cetorelli</i>	<b>WP-02-26</b>
Private School Location and Neighborhood Characteristics <i>Lisa Barrow</i>	<b>WP-02-27</b>
Teachers and Student Achievement in the Chicago Public High Schools <i>Daniel Aaronson, Lisa Barrow and William Sander</i>	<b>WP-02-28</b>
The Crime of 1873: Back to the Scene <i>François R. Velde</i>	<b>WP-02-29</b>
Trade Structure, Industrial Structure, and International Business Cycles <i>Marianne Baxter and Michael A. Kouparitsas</i>	<b>WP-02-30</b>
Estimating the Returns to Community College Schooling for Displaced Workers <i>Louis Jacobson, Robert LaLonde and Daniel G. Sullivan</i>	<b>WP-02-31</b>
A Proposal for Efficiently Resolving Out-of-the-Money Swap Positions at Large Insolvent Banks <i>George G. Kaufman</i>	<b>WP-03-01</b>
Depositor Liquidity and Loss-Sharing in Bank Failure Resolutions <i>George G. Kaufman</i>	<b>WP-03-02</b>
Subordinated Debt and Prompt Corrective Regulatory Action <i>Douglas D. Evanoff and Larry D. Wall</i>	<b>WP-03-03</b>
When is Inter-Transaction Time Informative? <i>Craig Furfine</i>	<b>WP-03-04</b>
Tenure Choice with Location Selection: The Case of Hispanic Neighborhoods in Chicago <i>Maude Toussaint-Comeau and Sherrie L.W. Rhine</i>	<b>WP-03-05</b>
Distinguishing Limited Commitment from Moral Hazard in Models of Growth with Inequality* <i>Anna L. Paulson and Robert Townsend</i>	<b>WP-03-06</b>
Resolving Large Complex Financial Organizations <i>Robert R. Bliss</i>	<b>WP-03-07</b>

## **Working Paper Series** *(continued)*

The Case of the Missing Productivity Growth: Or, Does information technology explain why productivity accelerated in the United States but not the United Kingdom? <i>Susanto Basu, John G. Fernald, Nicholas Oulton and Sylaja Srinivasan</i>	<b>WP-03-08</b>
Inside-Outside Money Competition <i>Ramon Marimon, Juan Pablo Nicolini and Pedro Teles</i>	<b>WP-03-09</b>
The Importance of Check-Cashing Businesses to the Unbanked: Racial/Ethnic Differences <i>William H. Greene, Sherrie L.W. Rhine and Maude Toussaint-Comeau</i>	<b>WP-03-10</b>
A Structural Empirical Model of Firm Growth, Learning, and Survival <i>Jaap H. Abbring and Jeffrey R. Campbell</i>	<b>WP-03-11</b>
Market Size Matters <i>Jeffrey R. Campbell and Hugo A. Hopenhayn</i>	<b>WP-03-12</b>
The Cost of Business Cycles under Endogenous Growth <i>Gadi Barlevy</i>	<b>WP-03-13</b>
The Past, Present, and Probable Future for Community Banks <i>Robert DeYoung, William C. Hunter and Gregory F. Udell</i>	<b>WP-03-14</b>
Measuring Productivity Growth in Asia: Do Market Imperfections Matter? <i>John Fernald and Brent Neiman</i>	<b>WP-03-15</b>
Revised Estimates of Intergenerational Income Mobility in the United States <i>Bhashkar Mazumder</i>	<b>WP-03-16</b>
Product Market Evidence on the Employment Effects of the Minimum Wage <i>Daniel Aaronson and Eric French</i>	<b>WP-03-17</b>
Estimating Models of On-the-Job Search using Record Statistics <i>Gadi Barlevy</i>	<b>WP-03-18</b>
Banking Market Conditions and Deposit Interest Rates <i>Richard J. Rosen</i>	<b>WP-03-19</b>
Creating a National State Rainy Day Fund: A Modest Proposal to Improve Future State Fiscal Performance <i>Richard Mattoon</i>	<b>WP-03-20</b>
Managerial Incentive and Financial Contagion <i>Sujit Chakravorti, Anna Llyina and Subir Lall</i>	<b>WP-03-21</b>
Women and the Phillips Curve: Do Women's and Men's Labor Market Outcomes Differentially Affect Real Wage Growth and Inflation? <i>Katharine Anderson, Lisa Barrow and Kristin F. Butcher</i>	<b>WP-03-22</b>
Evaluating the Calvo Model of Sticky Prices <i>Martin Eichenbaum and Jonas D.M. Fisher</i>	<b>WP-03-23</b>

## **Working Paper Series** *(continued)*

The Growing Importance of Family and Community: An Analysis of Changes in the Sibling Correlation in Earnings <i>Bhashkar Mazumder and David I. Levine</i>	<b>WP-03-24</b>
Should We Teach Old Dogs New Tricks? The Impact of Community College Retraining on Older Displaced Workers <i>Louis Jacobson, Robert J. LaLonde and Daniel Sullivan</i>	<b>WP-03-25</b>
Trade Deflection and Trade Depression <i>Chad P. Brown and Meredith A. Crowley</i>	<b>WP-03-26</b>
China and Emerging Asia: Comrades or Competitors? <i>Alan G. Ahearne, John G. Fernald, Prakash Loungani and John W. Schindler</i>	<b>WP-03-27</b>
International Business Cycles Under Fixed and Flexible Exchange Rate Regimes <i>Michael A. Kouparitsas</i>	<b>WP-03-28</b>
Firing Costs and Business Cycle Fluctuations <i>Marcelo Veracierto</i>	<b>WP-03-29</b>
Spatial Organization of Firms <i>Yukako Ono</i>	<b>WP-03-30</b>
Government Equity and Money: John Law's System in 1720 France <i>François R. Velde</i>	<b>WP-03-31</b>
Deregulation and the Relationship Between Bank CEO Compensation and Risk-Taking <i>Elijah Brewer III, William Curt Hunter and William E. Jackson III</i>	<b>WP-03-32</b>
Compatibility and Pricing with Indirect Network Effects: Evidence from ATMs <i>Christopher R. Knittel and Victor Stango</i>	<b>WP-03-33</b>
Self-Employment as an Alternative to Unemployment <i>Ellen R. Rissman</i>	<b>WP-03-34</b>
Where the Headquarters are – Evidence from Large Public Companies 1990-2000 <i>Tyler Diacon and Thomas H. Klier</i>	<b>WP-03-35</b>
Standing Facilities and Interbank Borrowing: Evidence from the Federal Reserve's New Discount Window <i>Craig Furfine</i>	<b>WP-04-01</b>
Netting, Financial Contracts, and Banks: The Economic Implications <i>William J. Bergman, Robert R. Bliss, Christian A. Johnson and George G. Kaufman</i>	<b>WP-04-02</b>
Real Effects of Bank Competition <i>Nicola Cetorelli</i>	<b>WP-04-03</b>
Finance as a Barrier To Entry: Bank Competition and Industry Structure in Local U.S. Markets? <i>Nicola Cetorelli and Philip E. Strahan</i>	<b>WP-04-04</b>

## **Working Paper Series** *(continued)*

The Dynamics of Work and Debt <i>Jeffrey R. Campbell and Zvi Hercowitz</i>	<b>WP-04-05</b>
Fiscal Policy in the Aftermath of 9/11 <i>Jonas Fisher and Martin Eichenbaum</i>	<b>WP-04-06</b>
Merger Momentum and Investor Sentiment: The Stock Market Reaction To Merger Announcements <i>Richard J. Rosen</i>	<b>WP-04-07</b>
Earnings Inequality and the Business Cycle <i>Gadi Barlevy and Daniel Tsiddon</i>	<b>WP-04-08</b>
Platform Competition in Two-Sided Markets: The Case of Payment Networks <i>Sujit Chakravorti and Roberto Roson</i>	<b>WP-04-09</b>
Nominal Debt as a Burden on Monetary Policy <i>Javier Díaz-Giménez, Giorgia Giovannetti, Ramon Marimon, and Pedro Teles</i>	<b>WP-04-10</b>
On the Timing of Innovation in Stochastic Schumpeterian Growth Models <i>Gadi Barlevy</i>	<b>WP-04-11</b>
Policy Externalities: How US Antidumping Affects Japanese Exports to the EU <i>Chad P. Bown and Meredith A. Crowley</i>	<b>WP-04-12</b>
Sibling Similarities, Differences and Economic Inequality <i>Bhashkar Mazumder</i>	<b>WP-04-13</b>
Determinants of Business Cycle Comovement: A Robust Analysis <i>Marianne Baxter and Michael A. Kouparitsas</i>	<b>WP-04-14</b>
The Occupational Assimilation of Hispanics in the U.S.: Evidence from Panel Data <i>Maude Toussaint-Comeau</i>	<b>WP-04-15</b>
Reading, Writing, and Raisinets <sup>1</sup> : Are School Finances Contributing to Children's Obesity? <i>Patricia M. Anderson and Kristin F. Butcher</i>	<b>WP-04-16</b>
Learning by Observing: Information Spillovers in the Execution and Valuation of Commercial Bank M&As <i>Gayle DeLong and Robert DeYoung</i>	<b>WP-04-17</b>
Prospects for Immigrant-Native Wealth Assimilation: Evidence from Financial Market Participation <i>Una Okonkwo Osili and Anna Paulson</i>	<b>WP-04-18</b>
Individuals and Institutions: Evidence from International Migrants in the U.S. <i>Una Okonkwo Osili and Anna Paulson</i>	<b>WP-04-19</b>