

Understanding Latin America's Financial Inclusion Gap

Liliana Rojas-Suarez and Maria Alejandra Amado

Abstract

This paper analyzes Latin America's Financial Inclusion Gap, the difference between the average financial inclusion for Latin America and the corresponding average for a set of comparator countries. At the country level, we assess four types of obstacles to financial inclusion: macroeconomic weaknesses, income inequality, institutional deficiencies and financial sector inefficiencies. A key finding of this paper is that although the four types of obstacles explain the absolute level of financial inclusion, institutional deficiencies and income inequality are the most important obstacles behind the Latin America's financial inclusion gap. From our analysis at the individual level, we find that there is a Latin America-specific effect of education and income. The results suggest that the effect of attaining secondary education on the probability of being financially included is significantly higher in Latin America than in its comparators. Furthermore, the difference in the probability of being financially included between the richest and the poorest individuals is significantly higher in Latin America than in comparator countries.

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1. Introduction

Financial inclusion, broadly defined as the share of households and firms that use formal financial services, is increasingly recognized as crucial for development. Financial inclusion can have substantial effects on welfare and can contribute to the reduction of poverty¹. In particular, financial inclusion allows individuals and firms to reduce the costs of making transactions and to move away from short-term decision making toward an inter-temporal allocation of resources. This encourages savings and improves incentives for productive investments. As argued by Allen et al (2012), there is significant evidence supporting the positive effects of having a bank account on individuals' saving and investment behavior.

Although its importance is widely recognized -with a substantial amount of supporting literature²-, financial inclusion remains extremely low in a large number of Latin American countries. According to World Bank calculations for 2011³, the percentage of adults that have an account at a formal financial institution was only 30 percent in Colombia, 42 percent in Chile and a dismal 14 percent in El Salvador and Nicaragua. Even in Brazil, the country with the highest ratio of financial inclusion in the region, the ratio only reached 56 percent. For the region as a whole, the average was 30 percent, far below the average ratio in high income countries (89 percent) and even below the world average (46 percent). Most importantly Latin America lagged significantly relative to countries with similar real income per capita (henceforth, the region's comparators). Specifically, financial inclusion in Latin America's comparators reached an average of 49 percent; that is, on average, financial inclusion in the comparators group was over 60 percent higher than in Latin America. This gap was similar when comparing median values. The median value of financial inclusion in Latin America was 27.7 percent while that of its comparators equaled 45.5 percent.

This paper builds on existing research and new databases to address a fundamental question: What are the relevant factors explaining the lower ratios of financial inclusion in Latin America relative to comparable countries in terms of income per capita? In other words, what explains the *Latin American financial inclusion gap*? At the country level, what is the role of

¹See Beck, Demirgüç-Kunt, and Levine (2007) for an analysis of the effects of financial development on poverty rates. For the linkages between access to formal financial services and poverty see Dupas and Robinson (2009) and Brune et al. (2011).

² See for example Beck, Demirgüç-Kunt, and Honohan (2008) for an analysis of the theoretical models that illustrate the role access to finance plays in the development process. And Levine (2005) and Beck (2009) for an overview over the extensive literature on the relationship between finance and growth.

³ Global Findex Database, 2011. Available at <http://www.worldbank.org/globalfindex>.

macroeconomic vulnerabilities, socioeconomic constraints, institutional deficiencies and financial sector inefficiencies? At the individual level, do demographic characteristics such as sex, education or income affect financial inclusion in Latin America differently than in comparator countries?

The inclusion of a variety of country variables for understanding the Latin American financial inclusion gap builds up on the work of Rojas-Suarez (2007), among others, and is based on the premise that financial intermediaries' decisions are significantly influenced by the economic and institutional environment where the financial system operates. For example, it is expected that countries with greater institutional weaknesses are those where challenges to improve financial inclusion could become more daunting. Financial institutions might not be willing to extend the provision of financial services to large segments of the population in societies where the respect for the rule of law, including enforcement of contracts, is highly deficient. As shown below, relative to their comparators, most Latin American countries are not favorably placed regarding the quality of their institutions. This could, therefore, be a contributing factor explaining the region's financial inclusion gap.

Another example of country-specific variables that are potential candidates to understand the Latin American financial inclusion gap relates to the efficiency of the overall financial system. It is expected that in financial systems with large operational inefficiencies reflected, *inter alia*, in high administrative costs and/or a high degree of bank concentration, financial services might only be offered at very high costs--above those in a competitive system--which reduces usage of these services.⁴ On average, banks' administrative costs are higher in Latin America than in its comparators. This paper will explore whether this difference serves to explain the financial inclusion gap.

Additional country-specific variables that could potentially explain the lower usage of financial services in Latin America relative to its comparators include macroeconomic fragilities, such as the region's high volatility of inflation, and socioeconomic variables, such as Latin America's high income inequality—the highest among regions of the world.

The rest of the paper is organized as follows: Section 2 presents some stylized facts that characterize financial inclusion in Latin America, highlighting differences with other country groups, especially a set of countries categorized as the region's comparators. Section 3

⁴ It's been documented that high costs of maintaining deposit accounts and various types of fees on financial services are important constraints to financial inclusion (see Allen et al and Beck et al).

identifies and discusses key obstacles at the country level affecting financial inclusion. Section 4 presents an econometric analysis aimed at answering two questions: (a) At the country level, which obstacles explain the lower levels of financial inclusion in Latin America relatively to comparators? and (b) at the individual level, does belonging to Latin America significantly affect individuals' probability of being financially included, controlling for demographic characteristics such as age, sex, education and income? Is there any Latin American-specific effect of these individual characteristics? Section 5 concludes.

2. Financial Inclusion in Latin America: How does it compare with other country groups?

Until very recently, limited availability of data imposed a serious constraint on the empirical analysis of financial inclusion.⁵ Over the past couple of years, however, important efforts have emerged to overcome this problem.

At the regional level, the Andean Development Corporation (CAF, 2010) surveyed households in 17 large Latin American cities to gauge information on key characteristics of financial inclusion affecting the adult population, including factors deterring the demand for financial services.⁶ Selected questions on financial inclusion were also included in the CAF's 2011 survey, with plans to repeat the surveys in the years to come.⁷

At the global level, a World Bank project, named the Global Findex database was designed to allow comparisons across country characteristics, individual characteristics, and over time.⁸ The first round of the Findex database, covering the adult population (defined as 15 years of age and older) of 148 countries, was made public in 2011. While it is still too early to count with time series data (updates are scheduled for 2014 and 2017), the common methodology used in the country surveys allows sound cross-country and cross-individuals comparisons.

⁵ Indeed, most cross-country analyses were based on an indicator of financial inclusion constructed by Honohan (2007), based on multiple sources. See, for example, Rojas-Suarez (2010).

⁶ See CAF (2011)

⁷ Data from the surveys can be found in <http://www.caf.com/view/index.asp?pageMs=74589&ms=19>

⁸For complete information on the Global Findex project, see:

<http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/EXTPROGRAMS/EXTFINRES/EXTGLOBALFIN/0,,contentMDK:23147627~pagePK:64168176~piPK:64168140~theSitePK:8519639,00.html>

Table 1 to 3 present two indicators of financial inclusion taken from the Global Findex database: the percentage of adults that have an account at a formal financial institution, and the percentage of adults that have deposited savings at a financial institution in the past year. The former indicator provides a *stock* measurement while the latter is a *flow* measurement that is indicative of current activity by individuals in the usage of at least one category of financial services: savings. The indicators are presented for Latin American countries and for country groupings by income levels according to the World Bank categories.

Table 1 shows that, although with significant dispersion, no country in Latin America financially includes the large majority of its population. In the countries with the highest ratios, Brazil and Costa Rica, only half of the adult population has financial accounts. Moreover, this ratio is extremely low (less than 25 percent) in Central American economies (excluding Costa Rica), Paraguay, Peru and Uruguay. For this latter set of countries, the ratio of inclusion to formal financial services is similar to that of the average for Sub-Saharan Africa (24.1 percent)^{9, 10}. An additional important result is derived from column 2: Although a country comparison shows that the *intensity* of usage of savings accounts (column 2) roughly corresponds to the *penetration* of financial inclusion (column 1)¹¹, there are some clear exceptions. In Argentina, only 3.8 percent of the adult population has saved in a formal institution in 2010-11, the lowest number among the countries in our sample and out of line with the penetration indicator of column 1 (33 percent). This is indicative of a potential disintermediation process in Argentina; not a surprising result in the context of the ongoing economic and financial difficulties faced by this country. As discussed below, by affecting the *demand* for financial services, economic conditions play an important role as determinants of financial inclusion¹².

⁹ See World Bank (2012)

¹⁰ Of course it is possible that important segments of the population have access to financial services provided in the *informal sector*. However, as mentioned in the introduction, this paper takes the view that there are important benefits in the provision of financial services through formal channels.

¹¹ For example, Costa Rica, the country with the largest percentage of adult populations that have a financial account, is also the country with the largest percentage of adult populations that increased its savings in 2010-2011. Likewise, Nicaragua, displays one of the lowest ratio of financial inclusion in the region (14.2 percent) and a dismal percentage of the adult population that saved in 2010-11 (6.5 percent).

¹² It is important to note that the indicators used in this paper do not reveal the existing huge differences in financial inclusion between urban and rural populations. By and large, the percentage of urban populations being financially included is much larger than the corresponding percentage in rural areas (a comprehensive analysis on financial inclusion in major urban areas in Latin America is included in CAF (2011)). Explaining the differential behavior in the usage of financial services between urban and rural areas is beyond the scope of this paper.

Table 1: Financial Inclusion Indicators in Latin America

| | Has an account at a formal financial institution ⁽¹⁾ | Has saved at a financial institution in the past year ⁽¹⁾ |
|--|---|--|
| Argentina | 33.1 | 3.8 |
| Bolivia | 28.0 | 17.1 |
| Brazil | 55.9 | 10.3 |
| Chile | 42.2 | 12.4 |
| Colombia | 30.4 | 9.2 |
| Costa Rica | 50.4 | 19.9 |
| Dominican Republic | 38.2 | 16.0 |
| Ecuador | 36.7 | 14.5 |
| El Salvador | 13.8 | 12.9 |
| Guatemala | 22.3 | 10.2 |
| Honduras | 20.5 | 8.5 |
| Mexico | 27.4 | 6.7 |
| Nicaragua | 14.2 | 6.5 |
| Panama | 24.9 | 12.5 |
| Paraguay | 21.7 | 9.7 |
| Peru | 20.5 | 8.6 |
| Uruguay | 23.5 | 5.7 |
| Venezuela, RB | 44.1 | 13.6 |
| <i>Latin America mean (unweighted)</i> | 30.4 | 11.0 |

Notes: (1) Percentage of adult population, 2011

Source: Authors' calculations based on Global Financial Inclusion (Global Findex) Database, 2011

Table 2 divides the world into four groups of countries: High Income countries, Latin American countries, Latin American comparators, and the rest of the world¹³. Latin American comparators are defined as countries within the same range of real income per capita as Latin American countries¹⁴. Annex I presents the list of countries within each category.

¹³ High Income Countries are defined as those countries with values of income per-capita higher than those of Latin America and its comparators.

¹⁴ This range goes from 879.9 to 9933.2 in constant 2000 US\$ in 2009.

Latin America lags significantly relative to High Income countries in terms of the percentage of the adult population with an account in a formal institution; the Latin American figure is about one third of the corresponding number for high income economies. Moreover, Latin America lags significantly with respect to its comparators, and is only moderately higher than the rest of non-Latin American developing countries. This raises the issue about the particular features of Latin America that may explain the low levels of financial inclusion.¹⁵ These issues will be dealt with in section 4.

The story for the flow indicator of financial inclusion (percentage of adult population who saved in the period 2010-11) is similar to, but much more dramatic than that of the stock variable. The percentage of the population who saved in Latin America is about one quarter of the corresponding percentage in high income countries.

Table 2: Indicators of Financial Inclusion: Latin America and Other country Groups, 2011

| | Has an account at a formal financial institution ⁽¹⁾ | | Has saved at a financial institution in the past year ⁽¹⁾ | |
|----------------------------|---|--------|--|--------|
| | Average | Median | Average | Median |
| High Income Countries | 89.3 | 94.6 | 45.3 | 49.5 |
| Latin America | 30.4 | 27.7 | 11.0 | 10.3 |
| Latin American comparators | 48.6 | 45.5 | 14.4 | 12.2 |
| Rest of the World | 18.3 | 17.3 | 8.8 | 7.7 |

Notes: (1) Percentage of adult population, 2011

Source: Global Financial Inclusion (Global Findex) Database, 2011

An additional indicator that is often used to complement the financial inclusion indicator is banking system penetration through channels like bank branches and ATMs.¹⁶ These indicators are taken from the Financial Access Survey (FAS), a database constructed by the

¹⁵ Which are actually closer to many of the poorest countries in the world than to the region's comparators.

¹⁶ Ideally, the activities of the entire formal financial system would be accounted for rather than just the banking system. However, no such data exists for world-wide comparisons, thus this indicator provides useful, albeit limited additional information.

International Monetary Fund (IMF) ¹⁷and are presented in Table 3. The indicators consider the number of bank branches and ATMs per 100,000 adults.

Table 3: Financial Inclusion through branches and ATMs (per 100,000 adult population, 2011)

| | Number of Branches | Number of ATMs | Number of ATMs + Branches |
|----------------------------|--------------------|----------------|---------------------------|
| | Unweighted Average | | |
| High Income Countries | 34.3 | 99.4 | 134.2 |
| Latin America | 21.4 | 39.9 | 61.4 |
| Latin American Comparators | 19.3 | 43.6 | 63.3 |
| Rest of the World | 5.7 | 6.5 | 12.4 |

Source: IMF, Financial Inclusion Survey

The figures in Table 3 show a significant difference between high income countries and Latin American countries in terms of bank coverage through branches and ATMs. However, this gap is lower than that for the indicators of financial inclusion shown in Tables 1 and 2. For example the average number of branches per 100,000 adults in Latin America is 63 percent of the corresponding value in high income countries and above the value of the Latin American comparators.

However, an important caveat in assessing the importance of banks' financial penetration through branches and ATMS is that banks in a number of countries are using other channels for the delivery of financial services, mostly based on digital technology. For example, for Brazilian financial institutions, the most important form of reaching rural areas is through non-bank correspondents; these are non-banking entities which provide banking services through digital connections with a bank. This model has become increasingly popular and has started to be applied in other Latin American countries such as Colombia, Mexico and Peru. Similarly, in other countries like Bolivia, the large expansion of microfinance activities is not necessarily based on the usage of branches or ATMs.

¹⁷See www.fas.imf.org.

3. Obstacles to Financial Inclusion in Latin America: Cross-Country Comparisons

At the country level, the vast literature¹⁸ on financial inclusion has identified a number of constraints for financial inclusion, both on the supply and the demand sides. In this section, we follow the classification of factors affecting financial inclusion suggested by Rojas-Suarez (2007) and further explored by Rojas-Suarez and Gonzales (2010) and discuss simple correlations between financial inclusion and some of the most important identified constraints. Here and in Section 4, the variable of financial inclusion used is the percentage of the population that has at least one account at a formal financial institution. As explained above, this indicator is taken from the Global Findex Database for the year 2011.

Obstacles affecting financial inclusion can be classified into four categories. The first category relates to socio-economic constraints that limit both the supply of and the demand for financial services. The second deals with vulnerabilities in the macroeconomic environment that deters large segments of the population from using the services provided by the formal financial system. The third category focuses on institutional weaknesses, with emphasis on the quality of the governability of countries. Finally, the fourth category identifies characteristics in the operations of the formal financial system that impede the adequate provision of financial services. These operations respond both to the regulatory framework and to the specific features of the financial system (such as the competitive environment, business models, etc.). The discussion in this section provides insights on the behavior of these obstacles for the Latin American region relative to its comparators. An econometric investigation of these relationships will be undertaken in section 4.

a. Socio-Economic Factors

A number of papers¹⁹ have discussed the importance of socio-economic development in explaining the degree of financial inclusion. Low levels of social indicators are often associated with lower demand for and supply of financial services. As stated by Claessens (2005), financial exclusion often reflects a wider social exclusion, which involves factors such as education level, type of employment, and training.

Figure 1a shows this relationship by comparing the financial inclusion indicator and the UN Human Development Indicator (HDI), which is a well-known measurement of social

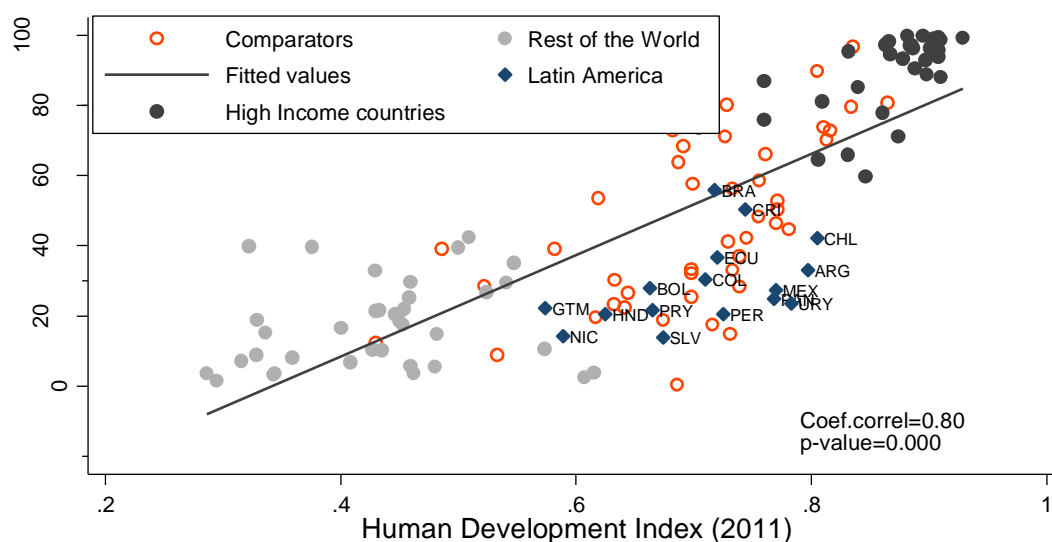
¹⁸ As reviewed in Rojas-Suarez (2007) and Allen et al (2012).

¹⁹ Such as Claessens, 2005.

development.²⁰ The correlation coefficient between these two variables is 0.8. In general, countries with greater access to social services and a better quality of life are countries that have also developed a stronger “financial culture” in which the use of financial services through formal markets becomes indispensable. In the graph, the countries denoted with dark dots are those classified as high income economies. As expected, these countries display the highest values of both the HDI and the indicator of inclusion.

Most Latin American countries are below the fitted line, suggesting that, *ceteris paribus*, there is potential for improving financial inclusion given their degree of development. Thus, other factors are constraining financial inclusion (explored in Section 4’s econometric investigation). Uruguay, Mexico and Panama stand out. Their degree of financial inclusion is well below what can be expected given their degree of social development. Such homogeneous behavior cannot be found in Latin America’s comparator countries.

Figure 1a: Financial Inclusion and Social Development



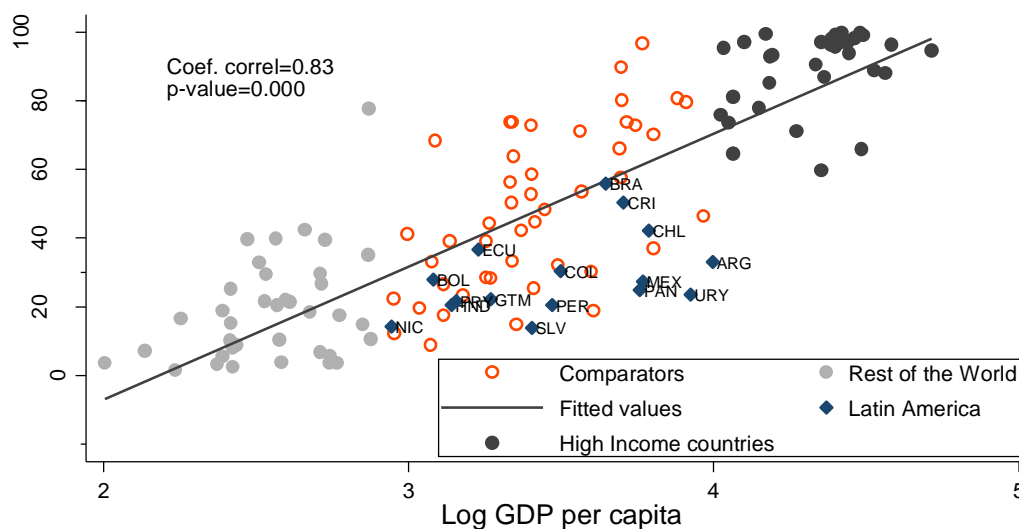
Source: Authors' calculations based on United Nations Development Programme (2011) and Findex (2011)

Alternatively, a country’s degree of social development could be proxied by the value of its real GDP per capita. As shown in Figure 1b, the correlation between GDP per capita and financial inclusion is highly positive (0.83) and of the same order of magnitude as the correlation between social development and financial inclusion (0.83). As expected, the

²⁰ The HDI has three components. The first relates to health, the second to education and the third to income.

behavior of Latin American countries is also similar to that in figure 1a and so is the behavior of the comparators.²¹

Figure 1b: Financial Inclusion and GDP per capita



Source: Authors' calculations based on World Development Indicators (2012) and Findex (2011)

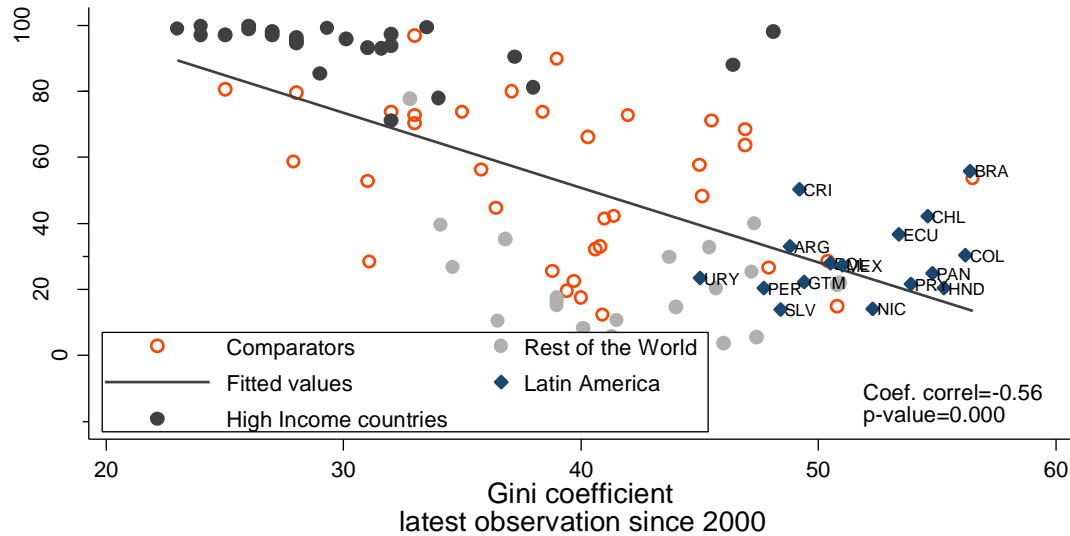
Income distribution is another socio-economic factor potentially affecting financial inclusion. Inequality can hinder financial reforms and financial development that enhance financial inclusion. The argument is that in very unequal economies, with a highly skewed distribution of income, wealth and political powers, powerful interests will likely block or manipulate reforms so as to capture the benefits and avoid the costs (Claessens and Perotti, 2005). Behrman and Birdsall (2009) analyze the relationship between structural, high inequality –measured by schooling inequality- and an index of financial liberalization for a sample of 37 developing and developed countries. They conclude that in a highly unequal setting, powerful interests are more likely to dominate politics, pushing for financial policies that protect privileges rather than foster competition and growth.

Some authors, however, argue that there is some evidence suggesting that improved household financial inclusion may lead to lower income inequality (see Honohan 2007). Thus, there is the potential for reverse causality in the relationship between these two variables.

²¹ This result is not surprising since GDP per capita is one of the components of the HDI and, as Pritchett (2010) has noted the cross-country variability of the HDI is increasingly driven by GDP per capita.

While section 4 deals with the reverse causality issue, here we limit ourselves to the observed correlation between financial inclusion and income inequality as measured by the Gini coefficient (Figure 2). The correlation coefficient between the Gini and financial inclusion equals -0.56 and is significant at the 1 percent level. Once again, high income countries display greater financial inclusion and lower income inequality.

Figure 2: Financial Inclusion and Income Inequality



Source: Authors' calculations based on World Income Inequality Database (WIID- v. 2.0a) and Findex (2011)

It is quite likely that the provision of financial services by financial institutions is relatively easier in more egalitarian societies since financial products can be more uniform across a large majority of the population. It is, therefore, not surprising that countries like Finland, Denmark and Belgium, where almost 100 percent of their populations are financially included, are also among the countries with the lowest values of the Gini coefficient. In contrast, Latin American countries are largely concentrated in the lower right hand side of the figure (the average and the median values of the Gini coefficient for Latin American countries equal 51.4) While Gini coefficients in comparator countries are more dispersed, the average (38.7) and the median (39.2) values are significantly lower than those for Latin America.

b. Macroeconomic Constraints to Financial Inclusion

Macroeconomic instability can have adverse effects on financial inclusion. Significant macroeconomic imbalances are associated with financial crises, sharply slowing the provision

of financial services. But beyond credit supply effects, the negative consequences on the demand for financial services are usually quite severe and may last well after the end of a financial crisis. The reason is that the demand for deposits and savings products offered by the formal financial system depends largely on *trust* in the soundness of the system. The economic and financial crises in emerging markets and developing countries in the last three decades have resulted in significant losses for depositors in terms of the real value of their wealth. Deposits' freeze, interest rate ceilings, forced conversion of foreign-currency denominated deposits into local currency-denominated deposits using undervalued exchange rates, and hyperinflation that destroyed the value of savings in the financial system were among the causes.²²

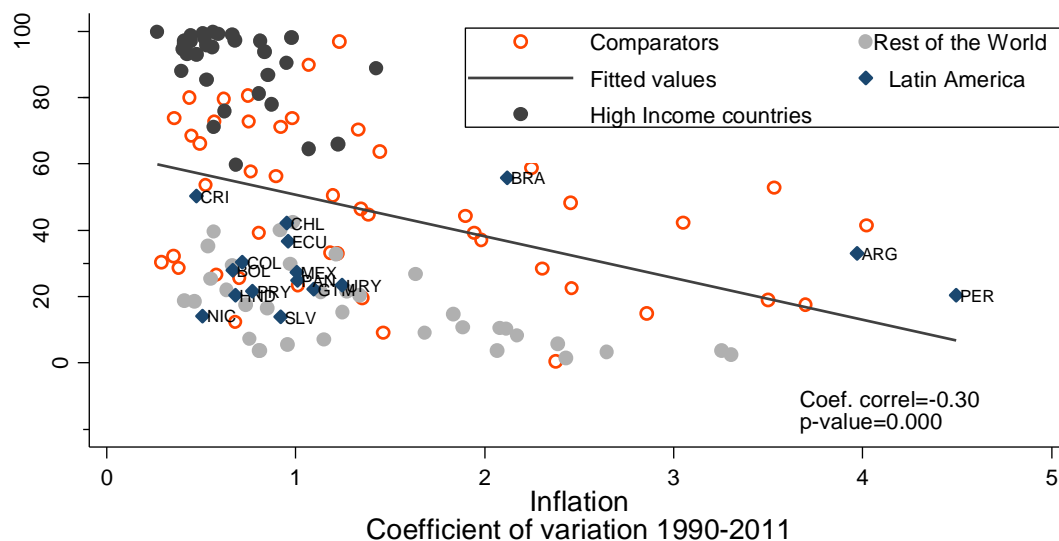
High inflation volatility and real interest rates perhaps best capture the adverse effect of macro instability on the demand for financial services. Figure 3 shows the negative correlation between the coefficient of variation of inflation²³ and the indicator of financial inclusion. The inverse relationship between these variables is reflected in a correlation coefficient of -0.30, significant at the 1 percent level. Most high income economies (denoted with dark dots) are located at the upper left hand side of the graph. Clearly, high income countries have the lowest inflation volatility and the highest values for financial inclusion, suggesting a high willingness to demand (and supply) services offered by the formal financial system. Among Latin American countries, Peru and Argentina have the greatest inflation volatility, followed by Brazil. This high volatility in part reflects the extremely high inflation rates in the early 1990s and the speculative balance of payments crises in the late 1990s in Brazil and Peru. The highest ratio of financial inclusion displayed by Brazil (among Latin American countries) cannot be explained by a long history of macroeconomic stability as the country does not have one. Other country-specific policies and factors are behind Brazil's advances with financial inclusion. With escalating inflation in the last years, problems in Argentina are as current today as they were in the 1990s. By contrast, Chile and Costa Rica have the combination of low inflation volatility and relatively high (among countries in the region) financial inclusion indicators. The average and median values of inflation volatility for Latin America and its comparators countries do not diverge significantly (1.3 and 1.0 respectively in Latin America and 1.4 and 1.2 respectively in the comparator countries). The

²² Although the recent global financial crisis severely affected developed countries, especially the US, in general, depositors did not suffer losses in the real value of their deposits. This is because a number of advanced economies have in place *credible* deposit insurance schemes—a result of these countries' capacity to issue “hard currency”, that is currencies that are internationally traded and enjoy high liquidity worldwide.

²³ Approximated by the ratio standard deviation to average inflation, calculated over the period 1990-2011.

values in both groups, however, differ significantly from those in high income countries (0.7 and 0.5 respectively)

Figure 3: Financial Inclusion and Inflation Volatility



Source: Authors' calculations based on IMF World Economic Outlook (WEO) and Findex (2011)

c. Institutional Factors

The importance of institutional quality in the provision of financial services has been discussed extensively in the literature.²⁴ The institutional environment in which financial entities operate plays a central role in the provision of financial services.

To measure institutional quality, this paper uses the Worldwide Governance Indicators.²⁵ Previous studies²⁶ have demonstrated that the financial system will develop more fully in countries with observance of the law, political stability, fair and efficient enforcement of the rule of law and respect for creditors' and debtors' rights. When contracts between creditors and debtors are observed, depositors have incentives to entrust their savings to banks and other financial institutions. Also, financial firms have incentives to lend at better rates and longer terms to enterprises, since they can seize collaterals when default happens and are compensated according to pre-established rules in bankruptcy. In a recent paper, Allan et al (2012) show that two measures of creditors' rights—the "legal right index" from the World

²⁴ An analysis of the effect of institutional quality on access to bank services is found in Beck et al. (2003).

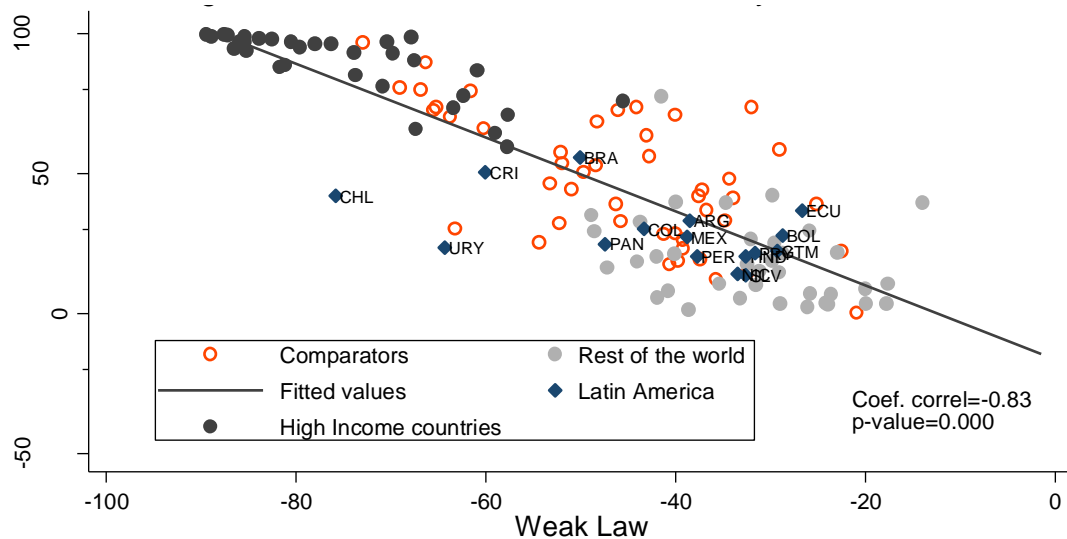
²⁵ www.govindicators.org

²⁶ See for example, Claessens and Leaven (2003) and Demetriades and Andrianova (2004).

Bank *Doing Business* and the “political risk rating” from the International Country Risk Guide-- play an important role in the usage of bank accounts.

Figure 4 illustrates the relationship between institutional quality and financial inclusion using the *Rule of Law* component of the Worldwide Governance Indicators, which measures agents’ confidence in and commitment to abiding by the rules of society, the quality of contract enforcement, the police, the courts and the likelihood of crime and violence. In this graph we are using the variable *Weak Law*, which is a transformation of the rule of law indicator and ranges from -100 to 0. The graph shows a clear negative (positive) relationship between weak law (adherence to the rule of law) and financial inclusion. The correlation coefficient is -0.83 and is significant at the 1 percent level.

Figure 4: Financial Inclusion and Quality of Institutions



Source: Authors' calculations based on The Worldwide Governance Indicators (2010) and Findex (2011)

As expected, high income economies are concentrated in the upper left corner of the graph, indicating that high institutional quality in developed countries is consistent with high levels of financial inclusion. Among Latin American countries, Chile is the closest to high income economies in terms of quality of institutions.²⁷ At the opposite extreme, a number of Central American countries, including Nicaragua, El Salvador, Honduras and Guatemala, Bolivia, and Paraguay display very low institutional quality and very low financial inclusion. Relative to its comparators, Latin American countries do not stand favorably. On average, the *weak law* indicator reaches a value of -40 in Latin America while the corresponding value in

²⁷ However, despite its high level of institutional quality, Chile still lags in terms of financial inclusion, relative to Brazil and Costa Rica.

comparator countries equals -46. This difference is significantly larger if we take median values. *Weak law* in the median Latin America country is -35, while it is -44 in the median comparator country.

d. Financial Sector Inefficiencies and Inadequacies

Based on Rojas-Suarez (2007), in this category we include obstacles to financial inclusion encountered by individuals and firms that can be attributed to characteristics of the financial system, including financial entities' methods and practices in conducting their operations.

Operational inefficiencies reflected, for example, in high administrative costs and/or a high degree of concentration can result in important constraints for financial inclusion.²⁸ Financial system's inefficiencies tend to restrict the availability of financial products and to increase the price of accessing them. High costs of opening and maintaining an account in a financial institution (above the costs in more efficient systems) and high minimum balances requirements are byproducts of these inefficiencies.²⁹

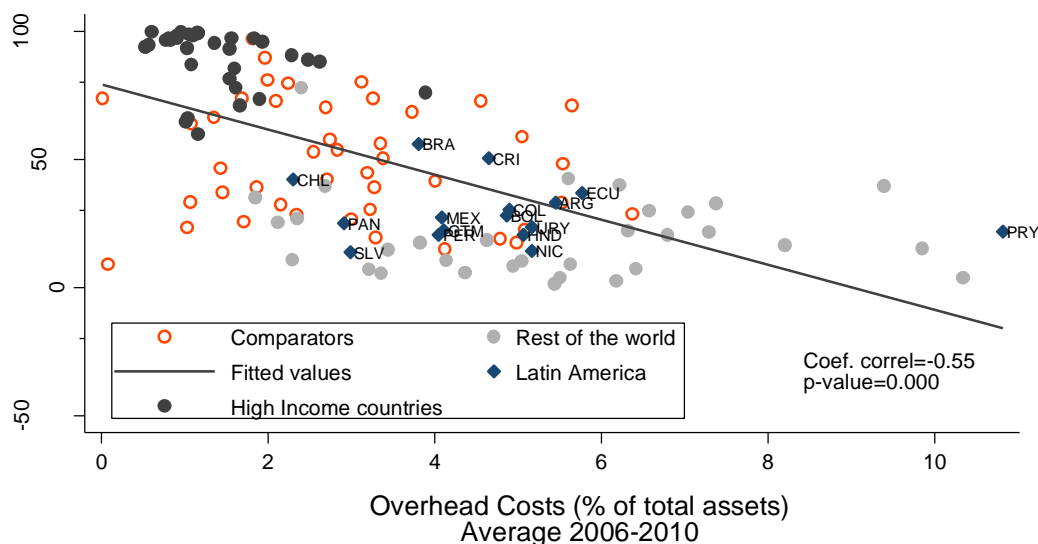
The ratio of overhead (administrative) costs to total assets is commonly used as an indicator of banks' operational inefficiency. High ratios tend to increase the fixed costs of extending loans and maintaining accounts as well as lowering interest payments on savings and other deposits, therefore restricting financial inclusion.

Figure 5, presents the relationship between the ratio of bank overhead costs to total assets and financial inclusion. The correlation coefficient equals -0.55 and is significant at the 1 percent level.

²⁸ A number of financial system inefficiencies can in turn, be associated with inadequate policies and regulations

²⁹ Beck et al (2006) and Allen et al (2012) use survey data to the analyze costs of opening and maintaining bank accounts. However, the data in Beck et al cover only 62 countries and that in Allen et al (2012) is not publicly available.

Figure 5: Financial Inclusion and Bank Inefficiency



Source: Authors' calculations based on Fitch's BankScope database (2010) and Findex (2011)

The figure shows results similar to those in previous graphs in the sense that high income countries display the lowest ratios of operational inefficiency (lower overhead costs).³⁰ Among Latin American countries, Paraguay stands out for having the highest ratios of bank operational inefficiency and one of the lowest values of the indicator of financial inclusion in the region. While Chile displays ratios similar to those in high income countries, the average and the median Latin American country have ratios of operational inefficiency much higher than the average comparator country. Indeed, the median value for Latin America (4.8 percent) is over 50 percent higher than the median value for comparator countries (2.7 percent).

Banking concentration can also be considered a measure of financial inefficiency to the extent that it might lead to oligopolistic behavior. In addition to driving up the costs of providing financial services, high levels of banking concentration might also inhibit lending to individuals and SMEs if concentration is associated with a lack of competitive incentives to assess the quality of borrowers with relative riskier characteristics. However, recent studies have found that highly concentrated banking systems become an obstacle to financial inclusion mostly in those countries with weak institutions and strong restrictions on the range of permissible banking activities.³¹ At places where contract enforcement is weaker,

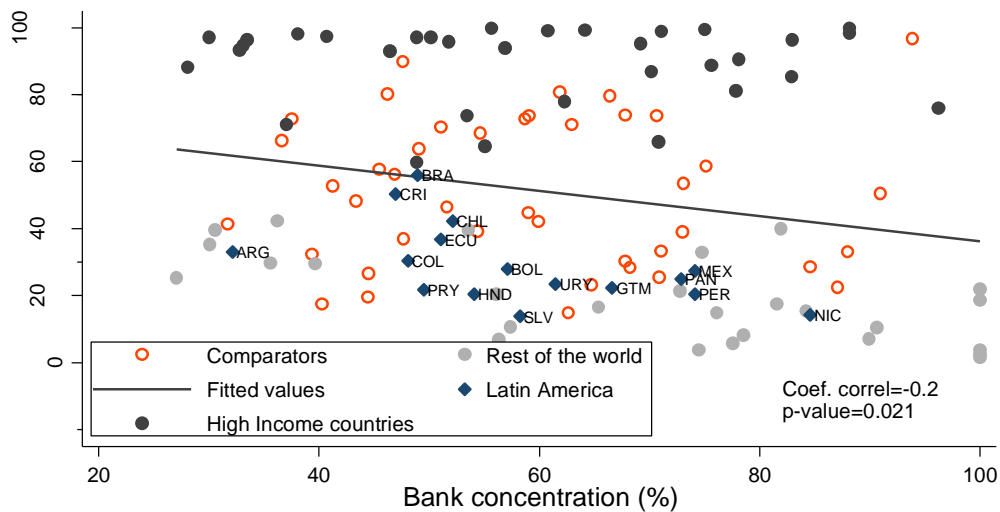
³⁰ The data is the average for 2006-2010 to smooth out the effects of the global financial crisis.

³¹ See, for example, Claessens (2005).

the oligopolistic power arising from a high banking concentration leads to greater discrimination against riskier borrowers (like low-income individuals and SMEs) and to higher costs of opening and maintaining accounts than there would be in a more competitive banking system.

Taken together, figures 6a and 6b are consistent with these claims. In figure 6a the correlation between bank concentration³² and financial inclusion is negative but only reaches the value of -0.2.

Figure 6: Financial Inclusion and Bank Concentration



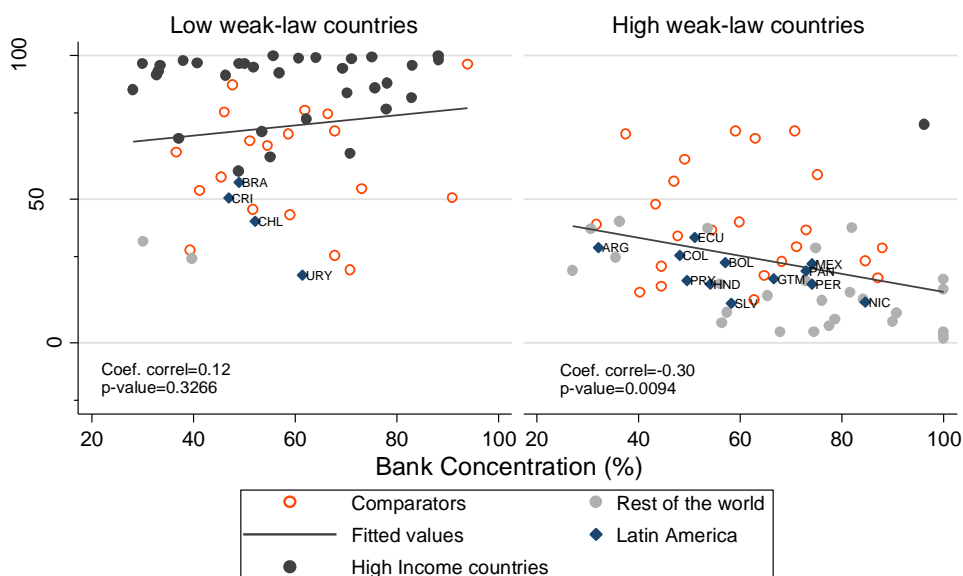
Source: Authors' calculations based on Fitch's BankScope database (2009) and Findex (2011)

Figure 6b plots financial inclusion and bank concentration for two groups of countries. For illustrative purposes we have arbitrarily defined “low weak-law countries” as the ones whose weak law levels are below the average of the sample, and “high-weak law countries” as the ones whose weak law levels are above the average. As expected, almost all high income countries fall into the first category. However, the correlation coefficient between bank concentration and financial inclusion for the sample of “low weak-law countries” is not significant and, therefore, we cannot determine statistically that there is a relationship between those variables. In contrast, in the sample of “high weak-law countries” we find a significant and negative correlation between bank concentration and institutional quality of -0.3. In fact, most Latin American countries are within this group, suggesting that bank

³² Defined as the percentage of total system assets held by the three largest banks.

concentration could be an obstacle to financial inclusion in this region. Nevertheless, the average and mean percentage values of bank concentration in Latin America (59.1 and 57.7 respectively) do not differ significantly from those of its comparators (58.5 and 58.7 respectively).

Figure 6b: Financial Inclusion and Bank Concentration



Source: Authors' calculations based on Fitch's BankScope database (2009) and Findex (2011)
 Note: Low-weak law countries are countries whose weak law levels are below -47.64.
 High-weak law countries are the remaining countries in the sample.

We therefore hypothesize that in countries with strong institutions, such as the high income countries, the net adverse effect of high bank concentration on financial inclusion is much lower (and perhaps even insignificant) than in countries with weak institutions. This issue will be discussed further in the next section when we formally analyze the overall effects of bank concentration.

4. Explaining Low Financial Inclusion in Latin America: An Econometric Analysis

This section conducts an econometric analysis to understand the relatively low degree of financial inclusion in Latin America. First, based on country-level data, we estimate a benchmark equation using a worldwide sample of 137 countries and analyze the Latin American financial inclusion gap -relative to comparator countries-. For this purpose, we

include the different obstacles discussed in the previous section as controls in the benchmark equation. Second, using individual-level data, we evaluate whether belonging to a Latin American country significantly affects individual's probability of being financially included; controlling for demographic characteristics such as age, sex, education and income. Also, we evaluate whether there is any Latin American-specific effect of these individual characteristics. While we acknowledge that there are additional individual characteristics that might be relevant in explaining financial inclusion, our analysis is limited to these four characteristics because of data availability.

a. Understanding Latin America's Financial Inclusion Gap: a country-level analysis

a.1. The model and data

As discussed above, the obstacles affecting financial inclusion at the country-level are taken from the theoretical and empirical literature and can be classified into four categories (following Rojas-Suarez, 2007). Based on that literature, we follow a similar methodology as in Rojas-Suarez and Gonzales (2010) and estimate the following equation:

$$(1) Fin_Inclusion_i = \alpha_0 + \beta Latin_America_i + \lambda Outside_comp_i + \sum_{k=1}^n \alpha_k Y_{ki} + \varepsilon_i$$

Where i denotes a country, $Fin_Inclusion$ is the percentage of the adult population that holds an account at a formal financial institution, Y_k is a vector representing the different obstacles to financial inclusion. $Latin_America$ is a dummy indicating a Latin American country, $Outside_comp$ is a dummy indicating a country outside Latin American comparators (that is, countries that are neither Latin American countries nor their comparators); and ε is assumed to be a disturbance with the usual properties of zero mean and constant variance.

The Latin America dummy is taken here to reflect the region's financial inclusion gap relative to comparators. As discussed above, comparator countries are defined as those with a similar real income per capita as Latin America (see Annex I).

Since there is no time series data available for the dependent variable, $Fin_Inclusion$, we are restricted to using a cross-section data set in the estimation of equation (1). Data for the dependent variable corresponds to 2011. For the explanatory variables, we use the latest available data.

The discussion in Section 3 provided the basis for identifying the variables to conduct the econometric exercise. However, the presence of multicollinearity prevented the simultaneous inclusion of all controls discussed in section 3. For example, the degree of social development and the quality of institutions (reflected by the variable *Weak_Law*) were highly correlated (a correlation coefficient of 0.75). We also considered an additional set of variables that could be classified within any of the four categories of obstacles. Annex III presents the entire list of variables considered and their sources. In some cases, data availability precluded the inclusion of some variables; in others multicollinearity was the constraint.

The explanatory variables included in the regressions presented in Table 5 are:

Income_Inequality: is the latest observation of the Gini coefficient available since 2000. This variable is taken from the World Income Inequality Database (WIID) and represents the category of *socioeconomic factors*.

Inflation_Volatility: is the coefficient of variation of inflation, measured as the ratio of the standard deviation of annual inflation (end of period) to average inflation, for the period 1990-2011. This variable was constructed using the IMF World Economic Outlook database and represents the category *macroeconomic constraints*.

Weak_Law: this variable represents the lack of enforcement of the Rule of Law, an indicator taken from the Worldwide Governance Indicators for the year 2010. The rule of law “reflects perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.”³³ The original variable, rule of law, was rescaled to a range from 0 to 100, and the variable *Weak_Law* is calculated by multiplying the rescaled variable by minus 1. This variable belongs to the category *institutional factors*.

Overhead_Costs: An indicator of banking operational inefficiencies, measured as the ratio of overhead costs to total assets. This variable was taken from the dataset created by Beck et al., and updated in 2012. The original data is from the Fitch BankScope database. The variable used in the regression is the average 2006-2010 and is within the category of *financial sector inefficiencies*.

³³ www.govindicators.org.

Bank_Concentration: measured as the share of the three largest banks' assets to all commercial banks' assets. This variable was taken from the dataset created by Beck et al., and updated in 2012. The original data is from the Fitch BankScope database. The variable used in the regression is from 2009 and is within the category of *financial sector inefficiencies*.

In addition to these obstacles to financial inclusion, we also considered real GDP per capita as a control in the empirical analysis. This is consistent with the discussion in section 3. Real GDP per capita is measured in logs and defined as follows:

Log_GDP_per_capita: corresponds to the logarithm of GDP per capita in constant 2000 US dollars of 2009. The variable is taken from the World Bank World Development Indicators database.

The variables *Log_GDP_per_capita* and *Weak_Law* are highly correlated.³⁴ Thus, to avoid multicollinearity, the analysis that follows presents two sets of regressions. In the first one we control for the effects of institutional quality and in the second one for the effect of real income per capita.

a.2. Econometric strategy

As a first step we estimate a simple OLS regression including the dummy for Latin America and a dummy for countries outside comparators (see table 5 column 1). The coefficient of the Latin America dummy reflects the difference between the average financial inclusion in Latin America and its comparators (18.1 percentage points in absolute terms). As mentioned before, we call this difference: *the Latin American financial inclusion gap*. Our purpose is to evaluate whether the incorporation of alternative obstacles to financial inclusion in the regression can help to understand this gap.

Before proceeding, however, we need to deal with possible endogeneity issues. The strict exogeneity of each obstacle included in the regression is a necessary condition to draw any conclusion about their effects on the gap. As mentioned in section 3, the literature shows evidence of a relationship between financial inclusion and one of the obstacles considered in the regression, *Income_Inequality*, which might be driven by reverse causation. This generates a potential problem of endogeneity of income inequality. We, therefore, test for potential endogeneity and evaluate the convenience of using instrumental variables estimation (IV) to deal with this problem.

³⁴ Both variables present a correlation coefficient that exceeds the practical benchmark of 0.75.

We use the Durbin-Wu-Hausman test to test for endogeneity of *Income_Inequality*. Following the insights in Calderon and Chong (2001) we use trade variables as instruments for *Income_Inequality*. Specifically, we use an indicator of trade openness, *Trade_Openness*, which is the ratio of exports and imports to GDP in 2010³⁵ and the interaction term between trade openness, and a concentration index of merchandise exports and imports of 2010³⁶, *Trade_Concentration*³⁷. The hypothesis is that although higher levels of trade openness decrease income inequality, this effect is reduced at high levels of trade concentration.³⁸ Annex IV verifies the validity of the selected instruments.

The p-values of the Durbin-Wu-Hausman test of endogeneity are shown in Table 4.

Table 4: Instrumented Variable: *Income_Inequality*

| Excluded Instruments | Durbin-Wu-Hausman | p-value |
|---|-------------------|---------|
| <i>Trade_Openness</i> | 0.311764 | 0.5782 |
| <i>Trade_Openness*Trade_Concentration</i> | | |

(*) H₀: variables are exogenous

Results show that it is possible to reject the endogeneity of *Income_Inequality* in the regression, suggesting that OLS is the best estimator, a consistent and more efficient estimator than the Instrumental Variables (IV) estimator.

³⁵ Data for constructing this indicator is obtained from the World Bank Database. <http://data.worldbank.org/>

³⁶ This indicator is the Herfindahl-Hirschmann index, normalized to obtain values ranging from 0 to 1 (maximum concentration). Data is obtained from the United Nations Conference on Trade and Development (UNCTAD) database. <http://unctad.org/en/pages/Statistics.aspx>

³⁷ We argue that these instruments are strictly exogenous –they are not correlated with any shock affecting financial inclusion–.

³⁸ Calderon and Chong (2001) show that trade openness reduce income inequality, measured by the Gini coefficient. They also find that export orientation towards primary activities may be associated with higher income inequality. This last finding supports the hypothesis that higher trade concentration reduces the effect of trade openness on income inequality, since countries with higher levels of exports concentration are mainly commodities exporters.

a.3. Results

Based on OLS estimations, columns (2) to (7) of Table 5 include the variable *Weak_Law* as a control, while columns (8) to (12) include the *Log_GDP_per_capita*. The shadowed columns (7) and (12) indicate the preferred specifications under the two alternatives.

We focus first on the regressions including *Weak_Law* as a control. We expected a negative sign for the coefficients of all the explanatory variables in these regressions since the variables are expressed as obstacles to financial inclusion. There are two central results from the preferred specification in column (7). The first is that all the variables considered are significant and the goodness of fit reaches a high value (the adjusted R-squared equals 0.81). The second is that, in comparison to column (1), the absolute value of the coefficient of the Latin America dummy declines significantly to 8.7 (in absolute terms). This last result, in turn, implies that the obstacles to financial inclusion in the regression can account for more than half of the *Latin American financial inclusion gap*.

How do the alternative obstacles to financial inclusion help to understand the *Latin American financial inclusion gap*? The entire set of regressions (columns (2) to (6)) serves to answer this question since in each consecutive column we add an additional variable representing an obstacle. The order of inclusion of obstacles does not affect the results in any meaningful way.

The analysis shows that the quality of institutions, represented by the variable *Weak_Law* is the relatively most important factor to understand the *Latin American financial inclusion gap*. As shown in column (2), the addition of this variable reduces the coefficient of the Latin America dummy by over 4 percentage points. Moreover, the goodness of fit of the simple model in column (2) is quite high (the adjusted R-squared equals 0.72).

The variables *Overhead_Costs* and *Inflation_Volatility* (incorporated in the regression in columns (3) and (7)) are significant as obstacles explaining the dependent variable, financial inclusion, but play a relatively less important role for understanding the *Latin American financial inclusion gap*; that is, the coefficient of the Latin America dummy only shows a slight decrease in absolute terms when these variables are incorporated in the regression. In addition, *Bank_Concentration*, while significant on its own or when interacted with *Weak_Law* (columns 4 and 5 respectively) cannot explain the *Latin American financial inclusion gap* since the coefficient of the Latin America dummy increases (in absolute terms) when these variables are introduced.

Table 5: OLS Regression – Dependent variable: Financial Inclusion Ratio (2011)

| | Weak Law | | | | | | | Log of GDP per Capita | | | | |
|------------------------------------|-----------------------------|------------------------------|------------------------------|------------------------------|-------------------------------|------------------------------|------------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|------------------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| <i>LatinAmerica (1/0)</i> | -18.15888 *** (4.546336) | -13.72225 *** (4.816083) | -11.32076 ** (4.936394) | -12.67835 *** (4.796148) | -12.80414 *** (4.744306) | -9.15177 * (5.255425) | -8.72522 * (5.196536) | -20.9635 *** (4.284355) | -22.9548 *** (4.550571) | -23.7776 *** (4.182178) | -21.2876 *** (5.626851) | -20.13918 *** (5.167081) |
| <i>Weak_law</i> | | -1.308015 *** (0.0706314) | -1.156918 *** (0.0874124) | -1.140466 *** (0.0908764) | -0.773060 *** (0.1766351) | -0.795198 *** (0.1912717) | -0.718876 *** (0.1941202) | | | | | |
| <i>Overhead_cost</i> | | | -2.202171 ** (0.9491936) | -1.834093 * (0.9592285) | -1.698479 * (0.9709306) | -1.993170 * (1.135075) | -1.881111 * (1.060914) | | 0.3982559 (0.9459415) | | | |
| <i>Bank_concentration</i> | | | | -0.1536257 ** (0.0769543) | -0.4575860 *** (0.1712196) | -0.3337973 * (0.1768811) | -0.3252910 * (0.1727478) | | | -0.095322 (0.0650744) | | |
| <i>Bank_concentration*Weak_law</i> | | | | | -0.0061056 ** (0.0025726) | -0.0047772 * (0.0026923) | -0.0047027 * (0.0026488) | | | | | |
| <i>Income_inequality</i> | | | | | | -0.4774050 * (0.2616939) | -0.5296829 ** (0.2657052) | | | | -0.41509 * (0.2320819) | -0.4575995 ** (0.2201792) |
| <i>Inflation_volatility</i> | | | | | | | -3.922912 ** (1.775368) | | | | | -4.982349 *** (1.499361) |
| <i>Log_GDP_per_capita</i> | | | | | | | | 39.23958 *** (1.531942) | 39.34592 *** (2.911466) | 38.18785 *** (1.71588) | 39.70535 *** (2.451118) | 37.23261 *** (2.540691) |
| <i>Outside_comp (1/0)</i> | 4.044377 (5.605592) | -3.742858 (3.342871) | -2.503732 (3.408189) | -2.094177 (3.437098) | -1.484003 (3.472386) | -5.970238 (3.592808) | -6.31208 * (3.701302) | 5.754031 * (3.224979) | 5.045504 (3.317051) | 3.366423 (3.226487) | 0.262383 (3.337477) | -1.049099 (3.359121) |
| <i>Cons</i> | 47.25263 *** (3.46041) | -12.02297 *** (4.347012) | 2.38253 (7.074009) | 11.63080 (8.078776) | 29.48350 ** (11.63458) | 46.97202 ** (18.15149) | 56.89073 *** (18.98492) | -86.73091 *** (5.817228) | -87.00416 *** (12.84436) | -74.69638 *** (8.324125) | -66.57818 *** (15.93255) | -50.18809 *** (16.85181) |
| Observations | 137 | 136 | 125 | 119 | 119 | 94 | 93 | 133 | 125 | 119 | 100 | 99 |
| Adjusted R-squared | 0.0468 | 0.7295 | 0.7454 | 0.7583 | 0.7638 | 0.8020 | 0.8169 | 0.7666 | 0.7728 | 0.7938 | 0.8099 | 0.8306 |

Note: ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Robust standard errors are in parentheses.

In contrast, controlling for *Income_Inequality* (column (6)) reduces the absolute value of the dummy coefficient from 12.8 to 9.1 and also has a significant effect in explaining financial inclusion.

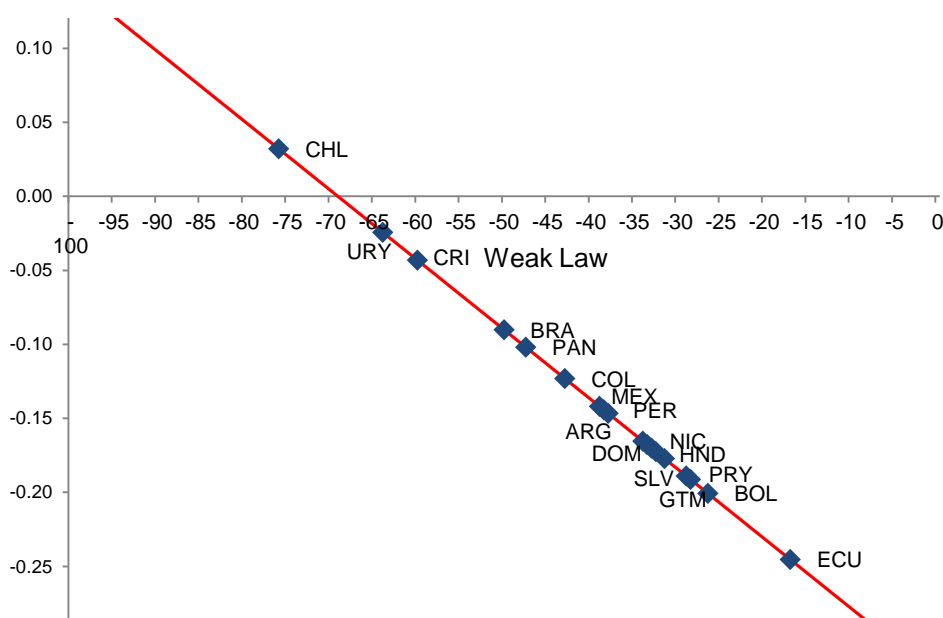
Taken together, these findings imply that, while all obstacles considered significantly explain the behavior of financial inclusion in a world-wide cross-country analysis, institutional deficiencies and income inequality are at the core of understanding the low levels of financial inclusion in the Latin American region *relative* to the region's comparators. To clarify: Improvements in *all* and *every one* of the obstacles analyzed support an increase in the *absolute levels* of financial inclusion for the countries in the sample: Latin America and otherwise. However, to attain large reductions in the financial inclusion gap between Latin America *as a whole* and its comparators, improvements in institutional quality and income inequality are essential.

Before leaving this discussion, it is worth noting that, in line with the hypothesis stated in section 3 regarding the relationship between bank concentration and financial inclusion, we have included an interaction term between *Weak_Law* and *Bank_Concentration* in the regression analysis (columns (5) and (7)). We can, therefore, assess whether the quality of institutions affects the extent to which bank concentration undermines financial inclusion. In particular, we evaluate the significance of the parameter δ_2 in:

$$(2) \frac{\partial \text{Fin_Inclusion}_i}{\partial \text{Bank_Concentration}_i} = \delta_1 + \delta_2 \text{Weak_Law}_i$$

Equation (2) defines the marginal effect of bank concentration on financial inclusion. This marginal effect has two components: the linear effect of bank concentration, δ_1 and the non-linear effect, $\delta_2 \text{Weak_Law}$, that depends on the level of *Weak_Law*. Results in table 5, column 7, indicates that δ_2 is significant and negative. Therefore, we can conclude that in countries with lower levels of institutional quality, the marginal adverse effect of bank concentration on financial inclusion is significantly higher. Figure 7 presents a graph that presents this marginal effect at different values of *Weak_Law*. Individual Latin American countries are identified in the graph. The levels of institutional quality in almost all of these countries are low enough to ensure a negative marginal effect of bank concentration. The only exception is Chile, where its high level of institutional quality more than offsets the negative effect of bank concentration on financial inclusion.

Figure 7: Marginal Effect of Bank Concentration on Financial Inclusion



Source: Authors' calculations based on OLS regressions in table 5, column 7; World wide Governance Indicators (2010).

The results of the regression analysis in Table 5 differ when *Log_GDP_per_capita* is included, instead of *Weak_Law* (columns 8 to 12). First, the absolute value of the coefficient of the Latin American dummy does not decline when controlling for income per capita; in fact, it slightly increases from 18 percentage points in column (1) to 20.9 percentage points in column (8). This result is consistent with the findings in figure 1b in section 3. In that figure, most Latin American countries are below the fitted line, suggesting that a higher level of financial inclusion could be obtained in these countries given their income per capita. In other words, real GDP per capita does not seem to be a binding constraint for achieving greater financial inclusion in Latin America. Another important difference is that not all the identified obstacles for financial inclusion are significant when *Log_GDP_per_capita* is included. In particular, neither *Overhead_Costs* nor *Bank_Concentration* are included in column (12). In this new specification, *Log real GDP per capita* plays a central role in explaining financial inclusion and its presence renders insignificant a number of other variables. Only two obstacles: *Income_Inequality* and *Inflation_Volatility* are significant when *Log_GDP_per_capita* is included. Notice that under the specifications containing *Log_GDP_per_capita* the absolute value of the coefficient of the Latin American dummy

decreases relative to its initial value in column 1 only in column (12) when the variable inflation volatility is included.

In the preferred specification of this second set of regressions (column (12)) the overall fit of the regression is similar to the regression where *Weak_Law* was included (column (7)). How to choose between the two alternative specifications? It depends on objectives. If the objective is to obtain the best fit for the dependent variable in a parsimonious way, then the regression in column (12) needs to be the choice. This could explain why a number of empirical papers aiming to explain financial inclusion consistently incorporate real GDP per capita as a control.³⁹ However, if the objective is to understand the factors behind the low levels of financial inclusion in Latin America relative to the rest of the world, then the specification in column (7) is preferable. Based on our objectives, we favor the specification in column (7).

As a robustness analysis we present in Table V.I of Annex V an additional set of regressions which evaluate an alternative definition of the Latin American financial inclusion gap; namely, the Latin American gap relative to High Income countries. The main results obtained in this paper are robust to this alternative definition of the gap which equals 60 percentage points. First, *Weak_law* and *Income_Inequality* are the main obstacles explaining the gap with high income countries. Second, taken together, all the obstacles to financial inclusion (column 7 of Table V.I) account for more than half of the gap. Thus, alternative measures of the Latin American financial inclusion gap can be largely accounted by the same obstacles.

A final result from Table 5 is that, while a large proportion of the gap is explained by our analysis, there remains an unobservable Latin American fixed effect that cannot be accounted for the observable variables included in the regressions.

To further understand the financial inclusion gap and evaluate the effect of additional variables that are only available at the household level, we need to change the data dimension and use an alternative methodology⁴⁰. In the next section we use individual-level data to explore whether demographic characteristics constitute additional obstacles that affect financial inclusion in Latin American countries. The presence of a Latin American specific

³⁹ See, for example Allen et al (2012) and Martinez Peria (2011)

⁴⁰ Results in section (b) below are not strictly comparable to those in this section due to the change in methodology.

effect of these demographic obstacles can contribute to further understanding the Latin American financial inclusion gap.

b. Further Insights into the Latin America Financial Inclusion Gap: an individual-level analysis

This section analyzes whether belonging to a Latin American country significantly affects individuals' probability of being financially included; controlling for individual characteristics as well as for the country-level obstacles previously analyzed.

While the number of individual characteristics considered in the literature on financial inclusion is quite large, limitations on data availability restricts our analysis to a few individual-level variables. Specifically, we control for age, sex, education level and income. This data is obtained from the Global Findex Database⁴¹.

Our analysis has two parts. First, controlling for the four individual characteristics mentioned above, we explore whether there is a significant negative effect of belonging to a Latin American country on the individual's probability of having an account at a financial institution. In this analysis, we acknowledge that there are other characteristics such as employment, marital status or geographic location of the household (urban/rural), which are shown in the literature to be determinants of financial inclusion (see Allen et al., 2012)⁴².

Second, to get further insights into the Latin American financial inclusion gap, we evaluate whether there is a Latin American-specific effect of sex, education level and income, on the individual's probability of having an account at a financial institution.

Using a sample of 92 countries and 96,124 individuals we estimate the following equation as a probit model by maximum likelihood.

⁴¹ The complete microdata for the Global Findex is available at <http://microdata.worldbank.org/index.php/catalog/global-findex/>. However, among individual-level characteristics collected from the survey, only age, sex, education level and income are publicly available. Respondents in the survey are randomly selected adults within the selected household.

⁴² In the working paper "The Foundations of Financial Inclusion", Allen et al. (2012) do have availability to the whole set of individual characteristics collected from the survey that shaped the Global Findex Database. In their analysis, they show that a number of individual-level characteristics, additionally to those we are including in this paper, are significant in explaining financial inclusion.

$$(3) \text{Bank_Account}_{ij}^* = \theta_0 + \tau \text{Latin_America}_i + \sigma \text{Outside_comp}_i + \sum_{k=1}^n \gamma_k Y_{ki} + \sum_{l=1}^m \varphi_l Z_{lij} + \varepsilon_{ij}$$

$$\text{Bank_Account}_{ij} = 1 \quad \text{if } \text{Bank_Account}_{ij}^* > 0$$

$$\text{Bank_Account}_{ij} = 0 \quad \text{if } \text{Bank_Account}_{ij}^* \leq 0$$

Where *Bank_Account* is a binary dependent variable that takes the value of 1 if the individual owns a bank account and 0 otherwise⁴³. *Bank_Account** is a latent variable⁴⁴; countries and individuals are denoted by *i* and *j* respectively. Y_k is a vector of country level obstacles, Z_l is a vector of individual level characteristics, ε is assumed to be a disturbance with the usual properties of zero mean and constant variance. As in the previous section, *Latin_America* is a dummy indicating a Latin American country and *Outside_comp* is a dummy indicating a country belonging neither to Latin America nor its comparators.

The results of the probit estimation are presented in Table 6. In this set of estimations we include the four individual-level characteristics mentioned above and control for the country-level obstacles from the preferred specification in Table 5 (column 7)⁴⁵. Results show that there is a significant negative effect of belonging to a Latin American country on the probability of having an account at a financial institution (see columns (1) to (4)). Average marginal effects are calculated in Table 7⁴⁶. Column 1 shows that the probability of having an account is on average 11.9 percentage points lower for someone in Latin America than for someone in comparator countries.

⁴³ Specifically, the question stated in the Global Findex survey is the following: Do you, either by yourself or together with someone else, currently have an account at any of the following places? An account can be used to save money, to make or receive payments, or to receive wages and remittances. Do you currently have an account at a bank or credit union (or another financial institution, where applicable - for example, cooperatives in Latin America). <http://microdata.worldbank.org/index.php/catalog/1162/search?vk=q1a&search=Search&vf%5B%5D=name&vf%5B%5D=label&vf%5B%5D=qstn&vf%5B%5D=catgrv>.

⁴⁴ In this case, this latent variable represents subjective elements that might be behind the individual's decision of demanding a bank account or the bank's decision of supplying a bank account. In other words, it represents the unobservable elements behind the supply and demand decisions reflected in the observable variable *Bank_Account*.

⁴⁵ When we introduce controls for individual characteristics, the sign and significance of country level obstacles remain the same. However, when we control for age and education, *Income_Inequality* is no longer significant. We found a high and significant correlation between the gini coefficient and the average values of education and age. Correlations suggest that the more educated and older a country's population is on average, the lower the country's levels of inequality. We conclude, therefore, that age and education are capturing most of the effect of inequality on financial inclusion.

⁴⁶ In a binary model, the influence of the regressors on the dependent variable does not only depend on their coefficients but also on the values taken by these variables. Thus, the magnitudes of the coefficients in table 6 are not directly interpretable.

We also obtain the expected effects of individual characteristics. That is, there is a positive effect of the respondent's age on his/her probability of having an account at a formal financial institution⁴⁷. Also, being a woman is an obstacle to financial inclusion since it implies having, on average, 3.3 percentage points lower probability of owning a financial account relative to a man. Moreover, relative to the poorest quintile, the probability of having an account increases for individuals in the higher quintiles of the income distribution. For example, column 1 shows that belonging to the second quintile implies having, on average, 3.5 percentage points higher probability of owning an account than individuals in the poorest quintile. Additionally, belonging to the richest quintile implies having, on average, 16.5 percentage points higher probability than individuals in the poorest quintile.

Having secondary education as the highest level of attained schooling allows, on average, 14.6 percentage points higher probability of owning an account than having attained only primary education. And, by completing tertiary education, an individual increases his probability of having an account by 28.5 percentage points relative to individuals with only primary education.

In order to get further insights into the Latin American financial inclusion gap we evaluate whether there is a region-specific effect of individual characteristics on the probability of being financially included. To test this hypothesis, we include interaction terms between individual characteristics and the dummy for Latin America (see Table 6 columns 2 to 4). Column 2 shows that the interaction between sex (represented by the dummy variable *Female*) and the dummy for Latin America is negative and not significant. This implies that the difference in the probability of being financially included between women and men is similar in Latin America than in comparator countries. (See Figure 8).

Column 3 shows the interaction term between the Latin American dummy and income group. This interaction is positive and significant for the 5th quintile of the income distribution. This implies that the difference in the probability of being financially included between the poorest individuals (1st quintile) and the richest individuals (5th quintile) is significantly higher in Latin America than in comparator countries (see figure 9).

Finally, column 4 shows that the interaction term between the Latin American dummy and education level is positive and significant only for secondary education. This implies that the

⁴⁷ This marginal effect incorporates both, the direct effect of age and its negative indirect effect mediated by age squared (see table 7).

difference in the probability of being financially included between the less educated and the ones with secondary education, is significantly higher in Latin America than in comparator countries (see figure 10).

The finding that the relative exclusion of the poorest individuals or those with the lowest levels of education is higher in Latin America than in comparator countries helps to provide further insights into the Latin American financial inclusion gap and complements the country-level analysis in the previous section. Future lines of research can be oriented to explore the effects of additional individual characteristics as they become publicly available.

Table 6: Probit Regression - Dependent variable: Account at a financial institution (0/1)

| Controlled for Country Level Determinants | | Weak Law | | | |
|---|---|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| | | (1) | (2) | (3) | (4) |
| <i>Country Group:</i> | | | | | |
| | <i>Latin_America (1/0)</i> | -0.4583421 ** (0.181933) | -0.4194070 ** (0.1878264) | -0.5673966 *** (0.1895855) | -0.5549952 *** (0.1993096) |
| | <i>Outside_Comp (1/0)</i> | -0.0312811 (0.1163772) | -0.0252660 (0.1143764) | 0.0505538 -0.119894 | -0.2480619 * (0.1384153) |
| | <i>Age</i> | 0.0596689 *** (0.0041873) | 0.0596907 *** (0.0041843) | 0.0598480 *** (0.0042155) | 0.0605083 *** (0.0040979) |
| | <i>Age squared</i> | -0.0005675 *** (0.0000514) | -0.0005679 *** (0.0000514) | -0.0005697 *** (0.0000517) | -0.0005771 *** (0.0000501) |
| | <i>Female (0/1)</i> | -0.1277768 *** (0.0250613) | -0.1100063 ** (0.0474025) | -0.1260320 *** (0.0251061) | -0.1262995 *** (0.0252364) |
| <i>Country Group*Female</i> | | | | | |
| | <i>Latin_America*Female</i> | | -0.0789147 (0.056037) | | |
| | <i>Outside_Comp*Female</i> | | -0.0111958 (0.0568383) | | |
| <i>Income:</i> | | | | | |
| | <i>2nd quintile (0/1)</i> | 0.1354465 *** (0.0269293) | 0.1353349 *** (0.0268985) | 0.1444633 *** (0.0492389) | 0.1384982 *** (0.0271176) |
| | <i>3rd quintile (0/1)</i> | 0.2853038 *** (0.0346172) | 0.2849206 *** (0.0346076) | 0.2914528 *** (0.0492557) | 0.2875610 *** (0.0351359) |
| | <i>4th quintile (0/1)</i> | 0.4284168 *** (0.0468422) | 0.4277796 *** (0.0468485) | 0.4962260 *** (0.0783089) | 0.4329894 *** (0.0472038) |
| | <i>5th quintile (0/1)</i> | 0.6344226 *** (0.0492638) | 0.6334404 *** (0.0492159) | 0.6576324 *** (0.0764781) | 0.6378588 *** (0.0499796) |
| <i>Country Group*Income</i> | | | | | |
| | <i>Latin_America*2nd quintile</i> | | | 0.0529030 (0.0828447) | |
| | <i>Latin_America*3rd quintile</i> | | | 0.1013285 (0.0948265) | |
| | <i>Latin_America*4th quintile</i> | | | 0.0567621 (0.087223) | |
| | <i>Latin_America*5th quintile</i> | | | 0.2636247 ** (0.1028558) | |
| | <i>Outside_Comp*2nd quintile</i> | | | -0.0357772 (0.0642504) | |
| | <i>Outside_Comp*3rd quintile</i> | | | -0.0390384 (0.0715009) | |
| | <i>Outside_Comp*4th quintile</i> | | | -0.1855474 * (0.0971332) | |
| | <i>Outside_Comp*5th quintile</i> | | | -0.1824519 * (0.0990047) | |
| <i>Education</i> | | | | | |
| | <i>Secondary (0/1)</i> | 0.5332856 *** (0.0625379) | 0.5332117 *** (0.0625056) | 0.5288045 *** (0.0630364) | 0.3415279 *** (0.0730049) |
| | <i>Completed tertiary or more (0/1)</i> | 1.0526010 *** (0.0783876) | 1.0524730 *** (0.0784504) | 1.036217 *** (0.078208) | 0.9499514 *** (0.1095945) |
| <i>Country Group*Education</i> | | | | | |
| | <i>Latin_America*Secondary</i> | | | | 0.1677718 * (0.1009869) |
| | <i>Latin_America*Tertiary or more</i> | | | | 0.1106493 (0.1596766) |
| | <i>Outside_Comp*Secondary</i> | | | | 0.4089311 *** (0.1120918) |
| | <i>Outside_Comp*Tertiary or more</i> | | | | 0.1582531 (0.1418323) |
| | <i>Cons</i> | -2.1895580 *** (0.6640635) | -2.200715 *** (0.6660247) | -2.222720 *** (0.6611317) | -1.968255 *** (0.6445112) |
| Observations | | 96124 | 96124 | 96124 | 96124 |
| Pseudo R-Squared | | 0.3388 | 0.3389 | 0.3398 | 0.3413 |

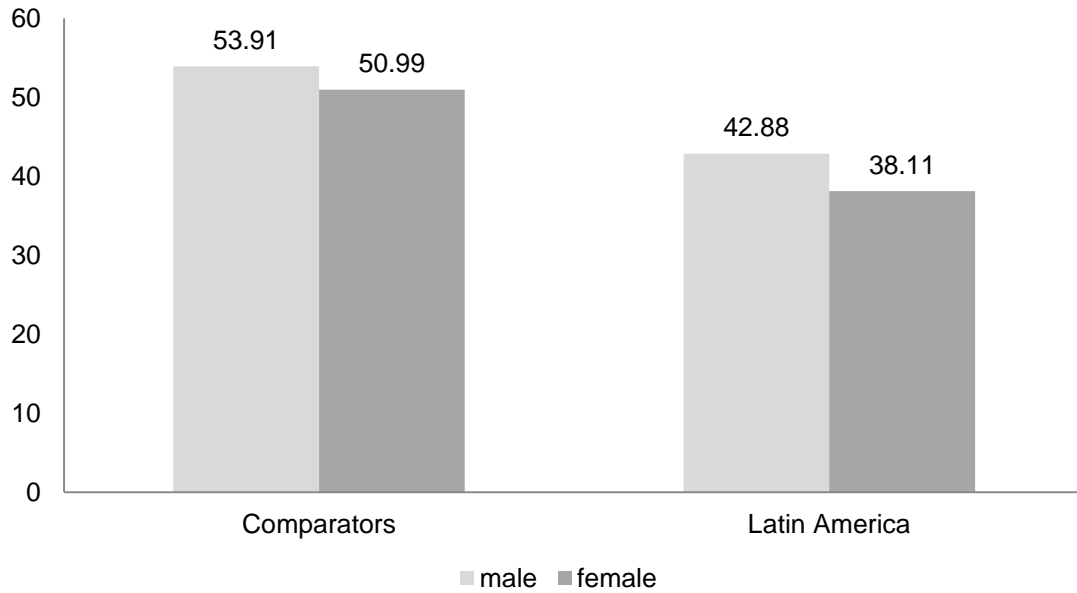
Note: From columns 1 to 4, country level controls are the ones included in the regression of column 7 in table 5. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively. Standard errors are in parentheses and are clustered at the country level. The reference category for education variables is completed primary or less.

Table 7: Average Marginal Effects on the probability of having an account at a financial institution

| Average Marginal Effects | | (1) | (2) | (3) | (4) |
|--------------------------|---------------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| Country Group: | | | | | |
| | <i>Latin_America (d)</i> | -0.1194365 ** (0.0478292) | -0.1197848 ** (0.0477922) | -0.1236958 ** (0.0478921) | -0.1209495 * (0.0468411) |
| | <i>Outside_Comp (d)</i> | -0.0082991 (0.0308529) | -0.008239 (0.0308541) | -0.00876 (0.0308914) | -0.00646 (0.0289058) |
| Age | | | | | |
| | | 0.0034661 *** (0.0002976) | 0.0036589 *** (0.0002979) | 0.0036704 *** (0.0002943) | 0.0036523 *** (0.0003008) |
| Female (d) | | | | | |
| | | -0.0328802 *** (0.0065227) | -0.0326871 *** (0.0066506) | -0.0323833 *** (0.0065163) | -0.0324004 *** (0.0065353) |
| Income: | | | | | |
| | <i>2nd quintile (d)</i> | 0.0346149 *** (0.0071732) | 0.0345882 *** (0.0071658) | 0.0348002 *** (0.0072736) | 0.0352347 *** (0.0071477) |
| | <i>3rd quintile (d)</i> | 0.0735429 *** (0.009553) | 0.0734448 *** (0.0095495) | 0.0745024 *** (0.0095061) | 0.073824 *** (0.0095164) |
| | <i>4th quintile (d)</i> | 0.1110592 *** (0.0130019) | 0.1108914 *** (0.0130029) | 0.1118339 *** (0.0122147) | 0.1118484 *** (0.0128124) |
| | <i>5th quintile (d)</i> | 0.1650335 *** (0.013784) | 0.1647686 *** (0.0137689) | 0.1650851 *** (0.0132615) | 0.1654246 *** (0.0136315) |
| Education | | | | | |
| | <i>Secondary (d)</i> | 0.1465366 *** (0.0179424) | 0.1465157 *** (0.0179332) | 0.1452616 *** (0.0180427) | 0.1481582 *** (0.0155814) |
| | <i>Completed tertiary or more (d)</i> | 0.2854457 *** (0.0230658) | 0.2853827 *** (0.0230779) | 0.2808583 *** (0.0230099) | 0.2833148 *** (0.0210078) |

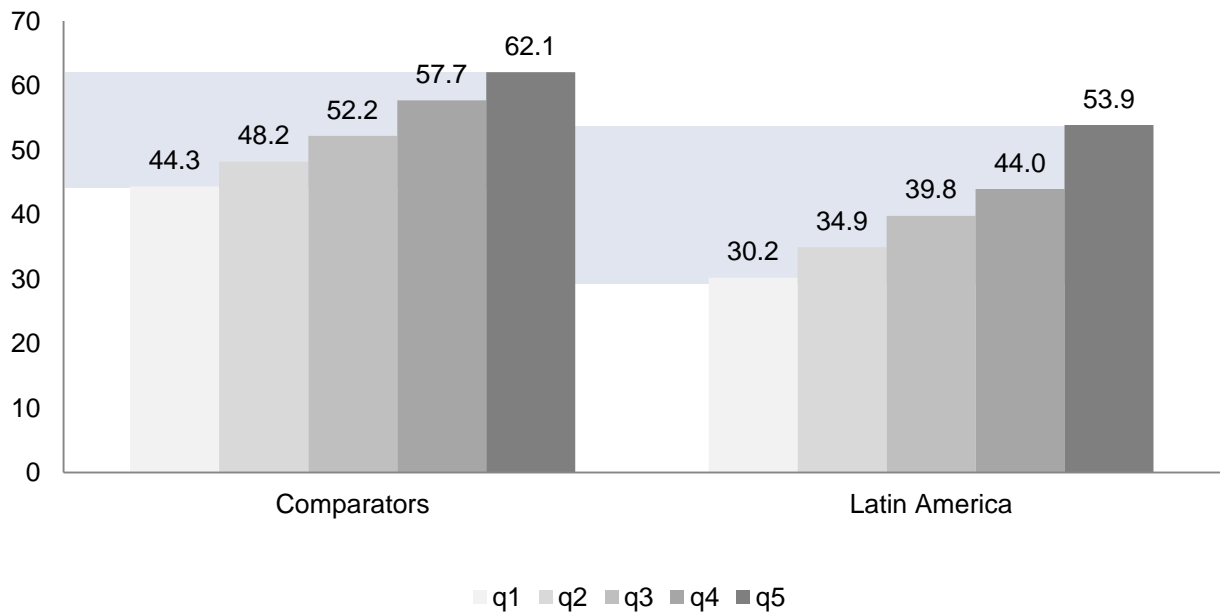
Note: Estimated marginal effects from columns 1 to 4 are based on the corresponding regressions in columns 1 to 4 of table 6. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively. Standard errors are in parentheses and are clustered at the country level. The reference category for education variables is completed primary or less. (d) for discrete change of dummy variable from 0 to 1. Since age is computed as a continuous variable, the average marginal effect will provide the instantaneous rate of change.

Figure 8:
Predicted probability of being financially included: By gender
 (in percentage points)



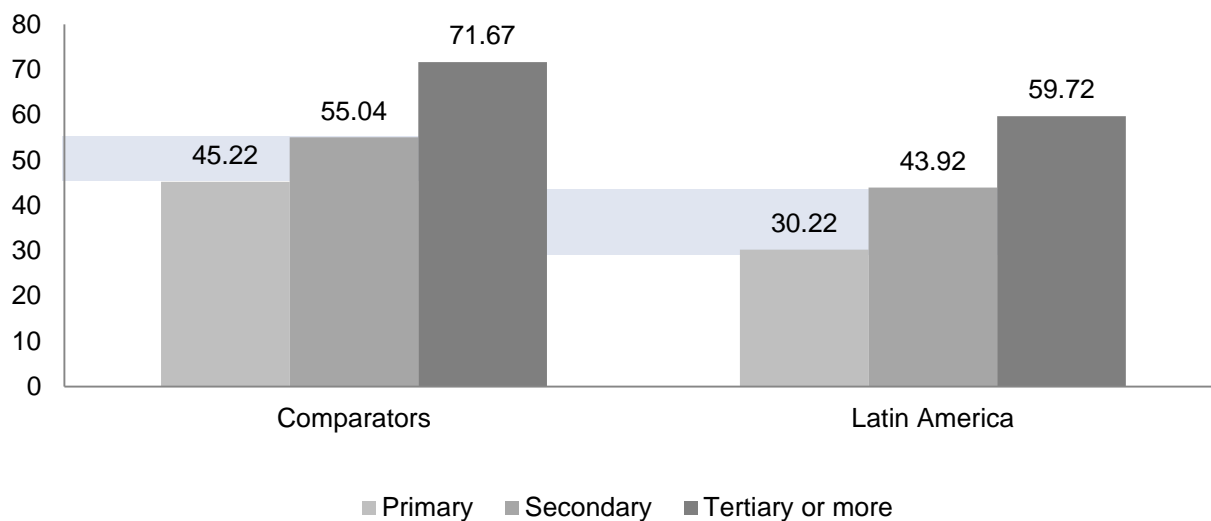
Note: Figures show predicted probabilities. Calculations are based on probit regressions in table 6 column 2.
 Source: Authors' calculations based on Findex (2011) database.

Figure 9:
Predicted probability of being financially included: By income quintiles
 (in percentage points)



Note: Figures show predicted probabilities. Calculations are based on probit regressions in table 6 column 3.
 Source: Authors' calculations based on Findex (2011) database.

Figure 10:
Predicted probability of being financially included: By education level
(in percentage points)



Note: Figures show predicted probabilities. Calculations are based on probit regressions in table 6 column 4.
 Source: Authors' calculations based on Findex (2011) database.

5. Conclusions

This paper built on existing research and new databases to address a fundamental question: What are the relevant factors explaining the observed low ratios of financial inclusion in Latin America relative to comparable countries in terms of real income per capita? That is, what explains the *Latin American financial inclusion gap*?

At the country level we identified four types of obstacles: socio-economic constraints, macroeconomic vulnerabilities, institutional deficiencies and financial system inefficiencies that impede the adequate provision of financial services. A key finding of the paper is that, although the four types of obstacles explain the *absolute level* of financial inclusion, the particularly high levels of income inequality and institutional deficiencies in Latin America can be assessed as the most important obstacles explaining the region's financial inclusion gap. These results shed some light on the direction of policies needed to improve the relative position of Latin America.

Analysis at the individual level, where characteristics such as age, sex, education and individual income are included, shows that the probability of being financially included is significantly lower for an individual in Latin America than for someone in comparator

countries. We also found that the relative exclusion of the poorest individuals or those with the lowest levels of education is higher in Latin America than in comparator countries. As data on additional individual characteristics become publicly available, further research might help to obtain the full picture regarding the peculiar features of Latin Americans regarding financial inclusion and shape the adequate policy responses.

References

- Acemoglu, D., S. Johnson, and J. A. Robinson (2005). 'Institutions as a Fundamental Cause of Long-Run Growth'. In Aghion, P. and S. N. Durlauf (eds), *Handbook of Economic Growth*, Vol. 1A. Amsterdam: Elsevier.
- Allen, F., A. Demirgüç-Kunt, L. Klapper and M. Martinez Peria (2012). 'The Foundations of Financial Inclusion: Understanding Ownership and Use of Formal Accounts'. Policy Research Working Paper No. 6290. Washington, DC: World Bank.
- Beck, T. (2009). 'The Econometrics of Finance and Growth'. In Mills, T. and K. Patterson (eds), *Palgrave Handbook of Econometrics*, Vol. 2. Palgrave Macmillan.
- Beck, T., A. Demirgüç-Kunt, and P. Honohan (2008). 'Finance for All? Policies and Pitfalls in Expanding Access'. Policy Research Report. Washington, DC: World Bank.
- Beck, T., A. Demirgüç-Kunt, and R. Levine (2007). 'Finance, Inequality and the Poor'. *Journal of Economic Growth*, 12, 27-49.
- Beck, T., A. Demirgüç-Kunt, and M. Martinez Peria (2006). 'Banking Services for Everyone? Barriers to Bank Inclusion and Use around the World'. World Bank Policy Research Working Paper No. 4079. Washington, DC: World Bank.
- Beck, T., A. Demirgüç-Kunt, and M. Martinez Peria (2005). 'Reaching Out: Inclusion to and use of Banking Services across Countries'. World Bank Policy Research Paper No. 3754. Washington, DC: World Bank.
- Beck, T., A. Demirgüç-Kunt, and V. Maksimovic (2003). 'Bank Competition, Financing Obstacles and Inclusion to Credit'. World Bank Policy Research Paper No. 2996. Washington, DC: World Bank.
- Beck, T., A. Demirgüç-Kunt, R. Levine, M. Cihak, and E. H.B. Feyen. 'A New Database on Financial Development and Structure'. (Updated 2012). World Bank Economic Review 14, 597-605.
- Behrman, J., N. Birdsall, and G. Petterson (2009). 'Schooling Inequality, Crises and Financial Liberalization in Latin America'. CGD Working Paper No. 165. Washington, DC: Center for Global Development.
- Birdsall, N., N. Lustig, and C. Meyer (2013). 'The New Poor in Latin America: Challenges and Risks'. Center for Global Development.
- Brune, L., X. Giné, J. Goldberg, and D. Yang (2011). 'Commitments to Save: A Field Experiment in Rural Malawi'. World Bank, Policy Research Working Paper No. 5748. Washington, DC: World Bank.
- CAF (2011). 'Servicios Financieros para el Desarrollo: Promoviendo el Acceso en América Latina'. Bogota, April.
- Calderon, C., and A. Chong (2001). 'External sector and income inequality in independent economies using a dynamic panel data approach'. *Economic Letters*, 71(2), 225-231.

- Claessens, S., and L. Leaven (2003). 'Financial development, property rights, and growth'. *Journal of Finance*, 58(6), 2401–2436.
- Claessens, S. (2005). 'Universal Inclusion to Financial Services: A Review of the Issues and Public Policy Objectives'. OECD-World Bank, Fifth Services Experts Meeting. OECD, Paris, February.
- Claessens, S., and E. Perotti (2005). 'The Links between Finance and Inequality: Channels and Evidence'. University of Amsterdam, March.
- Clarke, G., L. Colin Xu, and H. Zou (2006). 'Finance and Inequality: What Do the Data Tell Us?'. *Southern Economic Journal*, 72(3): 578–96.
- Demetriades, P., and S. Andrianova (2004). 'Finance and Growth: What We Know and What We Need to Know'. In C. Goodhart (eds), *Financial Development and Economic Growth: Explaining the Links*, 38-65. Palgrave Macmillan: Basingstoke and New York.
- Demirgüç-Kunt, A., and R. Levine (2008). 'Finance and Economic Opportunity'. World Bank Policy Research Paper No. 4468. Washington, DC: World Bank.
- Dupas, P., and J. Robinson (2009). 'Savings Constraints and Microenterprise Development: Evidence from a Field Experiment in Kenya'. NBER working paper No. 14693.
- Ferreira, F., J. Messina, J. Rigolini, L. López-Calva, M. Lugo, and R. Vakis (2012). 'Economic Mobility and the Rise of the Middle Class in Latin America'. The World Bank.
- Gratius, S. (2008). 'The International Arena and Emerging Powers: Stabilizing or Destabilizing Forces?'. Comment, FRIDE, April.
- Honohan, P. (2007). 'Cross-Country Variation in Household Access to Financial Services'. The World Bank, January.
- Latin America Shadow Financial Regulatory Committee (2004). 'Small and Medium-Size Enterprises in Latin America: Developing Markets, Institutions and Instruments'. Statement No, 11. Washington, DC, September.
- Levine, R. (2005). 'Finance and Growth: Theory and Evidence'. In Aghion, P. and S. Durlauf (eds), *Handbook of Economic Growth*. Elsevier Science. The Netherlands.
- Lopez-Calva, L. and E. Ortiz-Juarez (2011). 'A Vulnerability Approach to the Definition of the Middle Class'. World Bank, Policy Research Working Paper No. 5748. Washington, DC: World Bank.
- Martínez Pería, M. (2012). 'Financial Inclusion: Where does LAC stand?'. In De la Torre, A., Ize, A. and Schumkler, S. (eds), *Financial Development in Latin America and the Caribbean, The Road Ahead*. World Bank, Flagship Report. Washington, DC: World Bank.
- Milanovic, B. (2010). 'The Haves and the Have-Nots: A Brief and Idiosyncratic History of Global Inequality'. New York: Basic Books.

- Pritchett, L. (2010). 'Birth Satisfaction Units (BSU): Measuring Cross-National Differences in Humal Well-Being'. United Nations Development Program, Research Paper 2010/03, Human Development Reports, June.
- Rojas-Suarez, L. (2007). 'The Provision of Banking Services in Latin America: Obstacles and Recommendations'. CGD Working Paper No. 124. Washington, DC: Center for Global Development.
- Rojas-Suarez, L. (2009). ed. 'Growing Pains in Latin America: An Economic Growth Framework as Applied to Brazil, Colombia, Costa Rica, Mexico and Peru', Center for Global Development, July.
- Rojas-Suarez, L. and V. Gonzales (2010). 'Inclusion to Financial Services in Emerging Powers: Facts, Obstacles and Policy Implications'. OECD Development Centre, March.
- Singh, A., A. Belaisch, C. Collyns, P. de Masi, R. Krieger, G. Meredith and R. Rennhack (2005). 'Stabilization and Reform in Latin America: A Macroeconomic Perspective on the Experience Since the Early 1990s'. IMF Occasional Paper No. 238, February.
- Wilson, D. and A. Stupnytska (2007). 'The N-11: More than an Acronym'. Global Economic Papers No. 153, Goldman Sachs, March 28.
- (2003). 'Dreaming with BRICs: The Path to 2050'. Global Economics Paper No. 99, Goldman Sachs, October.

Annex I: Grouping of countries by category

| Latin America ⁽¹⁾ | Latin American comparators | | | High Income countries | | Rest of the world | | |
|------------------------------|----------------------------|--------------------|----------------------|-----------------------|----------------------|--------------------------|---------------|--------------------|
| Argentina | Albania | Indonesia | Saudi Arabia | Australia | Kuwait | Afghanistan | Lesotho | Tajikistan |
| Bolivia | Algeria | Iran, Islamic Rep. | Slovak Republic | Austria | Luxembourg | Bangladesh | Liberia | Togo |
| Brazil | Angola | Jamaica | South Africa | Bahrain | Malta | Benin | Madagascar | Uganda |
| Chile | Armenia | Jordan | Sri Lanka | Belgium | Netherlands | Burundi | Malawi | West Bank and Gaza |
| Colombia | Azerbaijan | Kazakhstan | Swaziland | Canada | New Zealand | Cameroon | Mali | Yemen, Rep. |
| Costa Rica | Belarus | Latvia | Syrian Arab Republic | Cyprus | Oman | Central African Republic | Mauritania | Zambia |
| Ecuador | Bosnia and Herzegovina | Lebanon | Thailand | Denmark | Portugal | Chad | Mongolia | Zimbabwe |
| El Salvador | Botswana | Lithuania | Tunisia | Finland | Qatar | Comoros | Mozambique | |
| Guatemala | Bulgaria | Macedonia, FYR | Turkey | France | Singapore | Congo, Dem. Rep. | Nepal | |
| Honduras | China | Malaysia | Turkmenistan | Germany | Slovenia | Ghana | Niger | |
| Mexico | Congo, Rep. | Mauritius | Ukraine | Greece | Spain | Guinea | Nigeria | |
| Nicaragua | Czech Republic | Montenegro | Uzbekistan | Hong Kong, China | Sweden | Haiti | Rwanda | |
| Panama | Djibouti | Morocco | | Ireland | Trinidad and Tobago | India | Senegal | |
| Paraguay | Estonia | Philippines | | Israel | United Arab Emirates | Iraq | Sierra Leone | |
| Peru | Gabon | Poland | | Italy | United Kingdom | Kenya | Somalia | |
| Uruguay | Georgia | Romania | | Japan | United States | Kyrgyz Republic | Sudan | |
| | Hungary | Russian Federation | | Korea, Rep. | | Lao PDR | Taiwan, China | |

⁽¹⁾We have removed Venezuela from the sample because it is an outlier based on the studentized residuals criterion.

Annex II: Correlation matrix of country-level variables

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
|-----------------------------|---|------------|------------|------------|-----------|------------|------------|---------|---|
| <i>Latin_America (1/0)</i> | 1 | 1 | | | | | | | |
| <i>Weak_Law</i> | 2 | -0.1157 | 1 | | | | | | |
| <i>Overhead_Costs</i> | 3 | 0.2349*** | 0.6389*** | 1 | | | | | |
| <i>Bank_Concentration</i> | 4 | -0.0671 | 0.1464 | 0.2108** | 1 | | | | |
| <i>Income_Inequality</i> | 5 | 0.5877*** | 0.5663*** | 0.5440*** | 0.0428 | 1 | | | |
| <i>Inflation_Volatility</i> | 6 | 0.0406 | 0.3642*** | 0.2406*** | 0.0579 | 0.1446 | 1 | | |
| <i>Log_GDP_per_capita</i> | 7 | 0.0402 | -0.8437*** | -0.6896*** | -0.2354** | -0.4490*** | -0.2431*** | 1 | |
| <i>Outside_Comp (1/0)</i> | 8 | -0.3898*** | -0.1865** | -0.0212 | 0.1274 | -0.4070*** | -0.1677* | -0.0294 | 1 |

Note: ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Annex III: Additional Variables included in the preliminary estimations

| Variable | Description | Source | Available years |
|--|--|---|-----------------|
| Non performing loans to total loans | Bank nonperforming loans to total gross loans are the value of nonperforming loans divided by the total value of the loan portfolio (including nonperforming loans before the deduction of specific loan-loss provisions). The loan amount recorded as nonperforming should be the gross value of the loan as recorded on the balance sheet, not just the amount that is overdue. | World Bank (WB) | 2000-2011 |
| Bank Provisions to non performing Loans | | Financial Soundness Indicators (IMF) | 2005-2010 |
| Regulatory capital to risk weight assets | | Financial Soundness Indicators (IMF) | 2005-2010 |
| Bank Capital to Assets | | Financial Soundness Indicators (IMF) | 2005-2011 |
| Liquidity Ratio | Bank liquid reserves to bank assets ratio (%) | WB | 2001-2011 |
| Banking assets held by government-owned banks (% of total banking assets)-2005 | | Barth, Caprio and Levine database | 2005 |
| Lending Interest Rate | | WB | 1960-2010 |
| Deposit Interest Rate | | WB | 1960-2010 |
| Interest rate spread | | WB | 1960-2010 |
| Net interest margin | Accounting value of bank's net interest revenue as a share of its interest-bearing (total earning) assets. | Fitch's BankScope database | 1987-2009 |
| BANK ROA | | Fitch's BankScope database | 1960-2009 |
| BANK ROE | | Fitch's BankScope database | 1960-2009 |
| volatility of gdp growth | 1990-2000/2001-2011 | World Economic Outlook database (IMF) | |
| GDP acceleration (2000s vs 1990s) | average of gdp growth (2011-2001) minus average gdp growth (2000-1990) | Authors' calculations based on World Economic Outlook database (IMF) | |
| Poverty ratio % | | PovcalNet: the on-line tool for poverty measurement developed by the Development Research Group of the World Bank' http://iresearch.worldbank.org/PovcalNet/index.htm?2 | various |
| Rural population (% of total population) | | World Development Indicators (WDI) | 1960-2010 |
| Doing Business, legal right index | Strength of legal rights index measures the degree to which collateral and bankruptcy laws protect the rights of borrowers and lenders and thus facilitate lending. The index ranges from 0 to 10, with higher scores indicating that these laws are better designed to expand access to credit. | Doing Business | 2004-2011 |
| Doing Business, credit information index | Credit depth of information index measures rules affecting the scope, accessibility, and quality of credit information available through public or private credit registries. The index ranges from 0 to 6, with higher values indicating the availability of more credit information, from either a public registry or a private bureau, to facilitate lending decisions. | Doing Business | 2004-2011 |
| Heritage Financial Freedom Index | The <i>Index</i> scores an economy's financial freedom by looking into the following five broad areas: The extent of government regulation of financial services, The degree of state intervention in banks and other financial firms through direct and indirect ownership, The extent of financial and capital market development, Government influence on the allocation of credit, and Openness to foreign competition | Heritage | 1995-2012 |

Annex IV: Validity of Instruments in the Endogeneity Analysis

The **relevance** of the instruments is analyzed through the statistics of the first stage regression in Table IV.I. The R-squared and the adjusted R-squared are around 0.7, which means that there won't be significant loss of precision because of IV estimation. Also, both instruments are significant when explaining *Income_Inequality*, controlling for the remaining obstacles (excluded instruments).

Table IV.I: OLS Regression – First-stage regression
Dependent variable: Income Inequality

| | (1) |
|---|-------------------------------|
| <i>Latin America (1/0)</i> | 8.71101 *** (1.713146) |
| <i>Weak law</i> | 0.088894 (0.1155747) |
| <i>Overhead cost</i> | 0.467423 (0.3515685) |
| <i>bank concentration</i> | 0.0527601 (0.0871163) |
| <i>bank concentration*weak_law</i> | 0.0012515 (0.0015521) |
| <i>Trade Openness</i> | -0.0579027 *** (0.0209949) |
| <i>Trade Openness*Trade_Concentration</i> | 0.105755 ** (0.0456942) |
| <i>Inflation Volatility</i> | -1.717728 *** (0.5982767) |
| <i>Outside Comparators (1/0)</i> | -4.145863 ** (1.651272) |
| <i>Cons</i> | 48.86809 *** (6.610664) |
| Observations | 90 |
| R-squared | 0.7034 |
| Adjusted R-squared | 0.6700 |

Note: ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively. Robust standard errors are in parentheses.

The **exclusion** restriction is also fulfilled. Table IV.II column 1 shows the OLS estimation of equation (1) controlling simultaneously for *Income_Inequality* and the corresponding instruments. Under this specification, both instruments are not significant in explaining financial inclusion. However, when removing *Income_Inequality*, *Trade_Openness* becomes significant and its interaction term is very close to be significant⁴⁸ (see column 2). This exercise supports the argument that the effect of the instruments on financial inclusion is only through their effect on *Income_Inequality*.

Table IV.II: Regression - Dependent variable: Financial Inclusion Ratio (2011)

| | (1) | (2) |
|---|------------------------------|------------------------------|
| <i>Latin America (1/0)</i> | -8.05355 (5.053559) | -10.42202 ** (4.867017) |
| <i>Weak_Law</i> | -0.757209 *** (0.2100573) | -0.820972 *** (0.1991836) |
| <i>Overhead_Costs</i> | -1.164410 (1.061411) | -1.540701 * (0.8578353) |
| <i>Bank_Concentration</i> | -0.3411860 * (0.1783621) | -0.3927155 ** (0.1655031) |
| <i>Bank_Concentration*Weak_Law</i> | -0.0044996 (0.0028479) | 0.0050765 * (0.0026924) |
| <i>Income_Inequality</i> | -0.5340706 * (0.3022005) | |
| <i>Trade_Openness</i> | 0.0249903 (0.0361353) | 0.0527909 * (0.0322554) |
| <i>Trade_Openness*Trade_Concentration</i> | -0.062706 (0.1035126) | -0.145660 (0.1085976) |
| <i>Inflation_Volatility</i> | -3.354288 * (1.757216) | -1.397752 (1.535763) |
| <i>Outside_Comp (1/0)</i> | -5.053559 (4.275802) | 0.142222 (3.770228) |
| <i>Cons</i> | 51.47901 ** (19.83234) | 23.90974 * (12.65929) |
| Observations | 90 | 111 |
| R-squared | 0.8197 | 0.7924 |

Note: ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively. Robust standard errors are in parentheses.

⁴⁸ Statistically significant at the 18% level.

Annex V: Results under an Alternative Definition of the Financial Inclusion Gap (Latin America relative to High Income countries)

Table V.I: OLS Regression - Dependent variable: Financial Inclusion Ratio (2011)

| | Weak Law | | | | | | |
|------------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|-------------------------------|------------------------------|------------------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| <i>Latin_America (1/0)</i> | -60.23311 *** (3.564747) | -26.00768 *** (5.81143) | -23.48866 *** (6.128063) | -26.37723 *** (6.219678) | -27.62997 *** (5.96395) | -19.06786 ** (7.33746) | -18.97034 ** (7.282937) |
| <i>Weak_Law</i> | | -1.031015 *** (0.1183783) | -0.897276 *** (0.1232726) | -0.861673 *** (0.1313036) | -0.413902 ** (0.1918728) | -0.479442 ** (0.2153179) | -0.420305 * (0.2217809) |
| <i>Overhead_Costs</i> | | | -2.061473 ** (0.9087449) | -1.605704 * (0.9103235) | -1.380773 (0.9078429) | -1.993904 * (1.149645) | -1.897226 * (1.104352) |
| <i>Bank_Concentration</i> | | | | -0.1751761 * (0.0734331) | -0.5405857 *** (0.1558478) | -0.4490912 ** (0.1734661) | -0.4478388 ** (0.1674374) |
| <i>Bank_Concentration*Weak_Law</i> | | | | | -0.0073595 *** (0.0025373) | -0.0063791 ** (0.0026718) | -0.0063449 ** (0.0026211) |
| <i>Income_Inequality</i> | | | | | | -0.3312317 (0.2597597) | -0.3445690 (0.2571944) |
| <i>Inflation_Volatility</i> | | | | | | | -3.147173 * (1.652687) |
| <i>Log_GDP_per_capita</i> | | | | | | | |
| <i>Outside_High_income (1/0)</i> | -54.451110 *** (3.359178) | -17.337270 *** (5.076848) | -15.91417 *** (5.212547) | -17.15868 *** (5.522648) | -17.92617 *** (5.32658) | -12.13076 * (5.533436) | -12.35295 ** (5.592893) |
| <i>Cons</i> | 89.32686 *** (2.003171) | 11.87579 (9.172523) | 24.76691 ** (10.05539) | 37.18776 *** (12.01966) | 59.66467 *** (13.98804) | 65.42503 *** (19.22661) | 72.29192 *** (20.2336) |
| Observations | 137 | 136 | 125 | 119 | 119 | 94 | 93 |
| Adjusted R-squared | 0.5564 | 0.7502 | 0.7645 | 0.7824 | 0.7904 | 0.8056 | 0.8203 |

Note: ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Robust standard errors are in parentheses.