**Access to finance, growth, and poverty:**
Assesing empirical evidence for Bolivia

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**Abstract**

In theoretical and empirical terms it has been recognized that well-functioning financial systems are essential for economic growth and poverty reduction. Most of this empirical evidence has focused on financial development as reflected in the depth and efficiency of the financial systems. However, it is important to consider that financial development does not necessarily mean that finance is available for all on an equal basis. Access to finance has received little attention in empirical literature, despite the emphasis it has received in theory and the various recent efforts to measure it. Additionally, recent studies related to the pro-growth role of finance have revealed the need for more empirical knowledge at regional and single country levels.

The present study briefly reviews recent literature related to the issue of access to finance and its effects on growth and poverty. Additionally, given the economic and social peculiarities of Bolivia and the need for country case evidence, the finance-growth and finance-poverty relationships are examined for this country, with an emphasis on the access dimension of finance. With this purpose, after a contextual analysis of the Bolivian financial intermediation, a cross-sectional study at a sub-national level was executed covering data of proxies of access to finance, economic growth, poverty, and other control variables for Bolivian municipalities. The main findings suggest that access to finance is an important factor spurring economic growth and poverty reduction in Bolivia. The results are robust for different measures of financial access and control variables. Additionally, microfinance institutions (MFIs) seem to have a part in the promotion of growth and in poverty alleviation. Among these MFIs, it is worth emphasizing the role of nongovernmental organizations (NGOs) and other semiformal institutions reaching rural and/or “really” poor agents. Moreover, the Bolivian experience in terms of microfinance and the evolution of the financial system in two different scenarios (financial repression and financial liberalization) suggests that the role of the government in building an effective and accessible financial system should focus on regulation and on promoting the supply of financial services rather than on ownership.
1. Introduction

Most of the empirical research until now on the issue of the effects of finance has focused mainly on its depth, efficiency, and stability. Several econometric studies applying cross-sectional, time series, and panel techniques have concluded that financial depth (as an indicator of financial development) is pro-growth and pro-poor. Therefore, in economies with better developed financial systems, one can expect faster drops in income inequality and faster reductions in poverty levels. However, we have to take into account that even well-developed (deep) financial systems may offer limited access to financial services.

In this respect, modern growth theories increasingly emphasize the key role of financial access. Limited access to finance is often the critical mechanism for generating persistent poverty, income inequality, and slower growth. However, despite the emphasis that financial market imperfections have received in theory, development economists often take them as given and focus their attention on redistributive and social policies to reduce poverty and inequality in income distribution. Yet the tasks of redistribution and poverty alleviation may have to be endlessly repeated if financial market frictions are not faced. These market imperfections such as information asymmetries and transaction costs are likely to limit the opportunities of the talented poor, and of the micro and small enterprises, which lack collateral, credit histories, and connections (Beck, Demirgüç-Kunt, & Honohan, 2008a).

Access to financial services is a fundamental aspect in economic development and social welfare. On the one hand, such services give households a tool to save and get credit, which allows them to better manage their inter-temporal spending needs for things such as durable goods, property, their children’s education, or retirement. In the case of firms, access to credit is important to financing working capital and investment. Moreover, households and firms need insurance products to manage unforeseeable events at a reasonable cost. Additionally, access to payment technologies through credit or debit cards, checking accounts, and electronic transfers, among other mechanisms, is essential to facilitating transactions by saving time and improving the security of the transactions (CAF, 2011).

Limited access to finance, even in a scenario of a well-developed financial system, will diminish the benefit of financial development for many households and firms, leaving much of them in poverty. Therefore, financial sector policies that promote competition, give the right incentives to individuals, and help remove financial barriers will lead to growth, inequality reduction, and poverty alleviation (Beck, Demirgüç-Kunt, & Honohan, 2008c).

There is no doubt that interest in financial access has augmented significantly in recent years, as empirical evidence proposes that a lack of access to finance would limit economic growth and poverty alleviation. This interest also comes from the fact that arguments about the channels through which financial development may give rise to economic growth usually incorporate access-related stories. For example, with regard to the Schumpeterian argument that financial development causes growth because it stimulates the process of “creative destruction” by allocating resources to efficient uses, what is relevant in this argument is the finance access dimension.

Another reason explaining the increasing interest and importance of access to finance is the limited access to financial services in developing countries, particularly when we compare it with developed countries. With this respect, recent World Bank studies show that more than 70% of the Latin American population lacks financial access, while only about 20% of the population in developed economies is financially constrained (De la Torre, Gozzi, & Schmukler, 2006). An important issue that should be considered when referring to access to finance is the microfinance system. Microfinance in the sense of access to finance will imply the increased availability of financial services for low-income individuals. The emergence and growth of the microfinance sector has changed attitudes toward helping the poor.

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1 Mainly because lack of access to credit stops lower income households and small firms from engaging in true high-return investment projects.
In some countries, microfinance institutions (MFIs) have provided substantial flows of credit, often to very low-income groups or households, who would normally be excluded by conventional financial institutions. However, among the academic development community there is recognition that we still know little about the impact of microfinance in terms of growth and poverty alleviation (Weiss, 2005).

Despite the importance of the access dimension of finance, there is a relative absence of empirical research on this issue. Most of the research on finance and its relation to growth and poverty rely on indicators and data that measure financial development. One important reason for this fact relates to the scarcity and lack of datasets reflecting this dimension of finance. Specifically, in the last 7 years significant attention has been put on financial access measurement and the building of cross-country datasets. Exploring the concept has been one of the first and most challenging tasks of most of the measurement studies.

Indeed, looking for indicators of financial access is not an easy task, and not only because of data availability limitations but also because of some theoretical misconceptions. In fact, even some recent literature (i.e. CGAP & World Bank, 2009 and 2010) has ignored or understated the distinction between access to finance and use of finance. Access essentially refers to the supply of services, whereas use is determined by demand as well as supply. To show the difference between access and use, one should realize that even wealthy customers in advanced financial systems might choose not to use some financial services. So, non-use cannot be attributed to a problem of access (Beck et al., 2008c).

Less limited access to finance means an absence of price and non-price barriers in the use of financial services. These services need to be available when and where desired, and products have to be shaped according to specific necessities. Additionally, they need to be convenient in terms of the indirect costs incurred by the user, such as having to travel a long distance to a deposit institution (Beck et al., 2008c).

The attempts to measure these aspects involved in access to finance are recent and have significant limitations. One of these limitations is that they do not take into account the financial services supplied by non-bank deposit institutions when measuring access to finance. In this sense, it is important to take into consideration that non-bank deposit institutions account for a significant share of the financial system of some countries (i.e. Bolivia). In other cases, some cross-country data sets such as that of the IMF (2013), while acknowledging the role of non-bank deposit institutions, do not have data about these non-bank institutions. Among these non-bank financial institutions, in the case of Bolivia, one can think of formal institutions such as credit unions, savings and loan mutuals, and private financial funds, but also semiformal institutions such as non-governmental organizations (NGOs).

In this last respect, one recent work highlighting the importance of NGOs in terms of access to finance is that by Cull, Morduch, and Demirgüç-Kunt (2009). In their study, related to microfinance, they show that around 45% of the branches of microfinance institutions are NGOs. Additionally, Cull et al. (2009) reveal that despite NGOs accounting for only around 21% in terms of assets, they reach many more borrowers than microfinance banks. NGOs are serving around 50% of the borrowers, while only around 25% are served by microfinance banks. On average, NGOs make loans that are about four times smaller than microfinance banks, suggesting that NGOs are serving a poorer group of borrowers.

A weak point of most of these empirical studies on finance and growth is that they rely excessively on general evidence. This points to the need for complementing cross-country econometric analysis with more broad-based empirical evidence derived from regional and country case studies. Having already

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2 In the study of De la Torre et al. (2006), this distinction is mentioned in terms of a problem of access and a lack of access. On the one hand, a problem of access to credit exists when a project that would be internally financed if resources were available does not get external financing (from outside financiers). This happens because there is a wedge between the expected internal rate of return of the project (which is generated by the project’s fundamentals) and the rate of return that external investors require to finance it. This wedge is mainly introduced by two well-known constraints that hamper the ability to write and enforce financial contracts, namely, principal-agent problems and transaction costs. On the other hand, a lack of access is simply the fact that financial services are not being used.
presented the need for empirical evidence for the Latin American and Caribbean region, our focus in the present chapter is on a single country study.

Although it would seem that a single country study could offer no heterogeneity, we should note that within a country there are important differences at the sub-national level (i.e. provinces or municipalities) and across time (provinces or municipalities today and in past periods). Therefore, there is the possibility to exploit (depending on data availability) both or any of these dimensions of variation. “Sub-national variation among administrative units is the most easily available strategy to practitioners of single country studies, and it has the great virtue of holding many other potentially causal variables constant” (Culpepper, 2005, p. 2).

Based on the empirical evidence presented earlier, finance seems to be an important factor promoting growth and reducing income inequality in the Latin American and Caribbean region. However, it is important to take into account that when evaluating the role of finance on growth and inequality in the mentioned region, the available cross data and proxies on finance were referring to financial development. In this sense, as we stated above, it is important to note that financial development does not necessarily mean that finance is available for all on an equal basis. It is possible that finance can be allocated in a skewed or even perverse manner, so that not all would have a fair chance at getting their projects financed (Claessens, 2005).

Therefore, it is necessary to complement our previous research by considering now the dimension of access to finance. However, as we already mentioned, this dimension has been overlooked, mostly because of serious data gaps. In fact, the collection and systematization of data across countries is a task that has only recently started. This provides even greater incentive to carry out a country case study.

With regard to some of the main economic and social indicators of our country case study, Bolivia is classified as a lower middle-income country by the World Bank. At a regional level, the country is considered as one of the poorest in Latin America. In fact, 51% of the population in 2009 were considered to be living under the poverty line. Very close related with this fact, the GINI coefficient reveals that Bolivia presents one of the highest levels of income inequality in the region. The averaged GDP growth for the period 1999-2009 has been 3.4%, a percentage that is low in comparison with other developing countries in Latin America and Asia (World Bank, 2013).

Furthermore, considering the issue of the access to finance, Bolivia could be considered as one of the most restricted in the region. In fact, available cross-sectional data on indicators of banking outreach (Beck et al., 2007b) shows Bolivia occupying one of the last positions among a sample of 18 Latin American and Caribbean countries (out of 35 in all). This available data refers to indicators of bank geographic penetration (number of bank branches per 1,000 square km and number of bank ATMs per 1,000 square km) and measures of bank demographic penetration (number of bank branches per 100,000 people and number of bank ATMs per 100,000 people). A very recent data set launched by the World Bank in 2012 about financial inclusion indicators shows similar figures. Bolivia appears to be one of the countries with the most restricted financial access among a sample of 24 Latin American and Caribbean countries.

However, it must be considered that in the case of Bolivia, the non-bank deposit institutions (formal and semiformal) have significant geographical coverage both in urban and rural areas. In addition, they have a high share in terms of number of clients (around 50% of the total of deposit institutions), loan portfolio, and deposits (around 25% of the total of deposit institutions). Therefore, when considering

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4 It is based on an empirical work of the author for Latin America and the Caribbean.
6 The measure of access to finance is the number of commercial bank branches per 100,000 adults.
the issue of financial access in Bolivia, it is important to take into account the role of these non-bank financial institutions.

In this respect, very recent literature highlights the importance of considering the role of other major constituents of a country’s financial system apart from bank institutions. Among this recent and novel research is the study of Majerbi (2010), which examines the impact of the overall structure of the financial system and its degree of institutional diversification on economic growth. Majerbi (2010) suggests that a well-diversified financial system will have a positive impact on economic growth since economic agents will have access to various alternative and competitive sources of financing. The importance of a competitive and diverse financial sector is also highlighted by the World Bank (2014) in its Global Financial Development Report.

Additionally, another particular characteristic of Bolivian financial intermediation that should be highlighted is the emergence and rapid increase of the microfinance sector. In fact, Bolivia is a unique and fascinating case of microfinance advancing far within a short time. Moreover, its rapid growth has been accompanied by the development of the ability and willingness of the microfinance institutions to serve the poor on a commercial basis. The commercialization of microfinance has advanced to such a point in Bolivia that this sector is no longer primarily donor-driven (Rhyne, 2001). It seems that the regulatory environment has played an important role for Bolivian microfinance success, since it is considered as one of the best for microfinance at the regional and world level (Hanning, 2011).

Given the previous considerations, the main goal of the present study is to analyze the finance–economic growth and finance–poverty relationships for the case of Bolivia, focusing on the access dimension of finance. With that purpose, theoretical and empirical studies relating to access to finance and country case studies on the effects of finance on growth and social fairness were reviewed. Additionally, considering the economic and social characteristics of Bolivia, we approach empirically both relationships for the case of this country.

Although inequality and poverty are both relevant and different aspects of social fairness, in the present chapter we stress the impact of finance on poverty. An important reason to focus on it is the fact that the Bolivian financial system is characterized by the existence of a prosperous microfinance sector, considered a leader at even the world level. In this sense, microfinance seems to be a reflection of financial services reaching low income individuals.

Microfinance in Bolivia presents an image of the poor and the informal sector as economic actors. This image is relevant for conceptualizing approaches to poverty. The poor participate actively in their betterment. They are not passive recipients of assistance, not simply refugees from a failed formal sector, but economic actors out to improve the quality of their lives, and as such, they are potential contributors to economic growth. (Rhyne, 2001, p. 216).

Additionally, other factors such as availability and quality of data at a sub-national level have also influenced our poverty aspect choice.

The empirical work is based on a contextual analysis of the Bolivian financial system and a cross-sectional econometric study at a sub-national level. The econometric analysis is executed covering data of proxies of access to finance, economic growth, poverty, and other control variables for Bolivian municipalities (around 300). Available international financial access datasets are cross-country, and since they are recent, they cover a maximum 8 years of data. Additionally, as we already noted, one important limitation of them when measuring access to finance is that they do not have information about the financial services supplied by deposit non-bank institutions. Precisely, one of the novelties of the present study is the consideration of such financial institutions since they account for a significant share of the Bolivian financial system.

Apart from the significant increase in the number of observations (which is desirable for econometric analyses), it is possible that evaluating the role of finance at the sub-national level could bring us closer
to the Bolivian case than considering the country as a whole. Despite the fact that the Bolivian political system is unitary rather than federal, it is evident that there are important within-country differences. Departments, provinces, and municipalities in Bolivia are quite heterogeneous regarding economic and social performance and also their institutions. We cannot even assume that there is a homogenous culture across the country, since there are important regional variations within Bolivia.

Additionally, although growth theories seem more proper to be approached at a macro level (through pure cross-country and panel data analyses), the sub-national level approach could be an option. Thus such theories originally focused on a national case could be tested in subunits (i.e. municipalities) of the national case. Cross-country and country panel studies aim to explain macro growth differences across countries on the basis of structural, institutional, and economic determinants. Within a single country case at a sub-national level, some growth conditions do not hold the same as they do across countries. For example, at a sub-national level the legal system is the same, capital and population mobility is much higher within a country than across countries, and government policies can influence growth and social fairness. However, we should note that there will be some conditions that are reflected both at the macro and sub-national level.

First, the convergence hypothesis (which is central in the growth literature) would be true not only at a macro level but then also at a sub-country level. Following the absolute (neoclassical) convergence approach, poor regions would tend to grow faster than relatively richer ones, which does not seem likely at the municipality level since local growth would follow some spatial patterns. For the modern growth theories, different countries should be described by distinct aggregate production functions, which means that the assumption of the same convergence rate for every country is not realistic. Precisely, this last hypothesis seems more probable not only at a macro level but also at a local level, since economic growth at a municipality level may be affected by spatial dependence and spatial heterogeneity7 (Rodríguez-Gámez & Rodríguez-López, 2013).

Second, recent theoretical approaches to cross country and cross region differences emphasize in the efficiency of production and human capital as potential determinants of income per capita in both national and local economies. Efficiency in production and human capital of the workforce will differ at national and sub-national levels mainly due to institutions (national and local).

Local institutions influence how local and regional collective decisions are made; how lower levels of government interact with the national government, and how political power is distributed at the local level. Through these channels, local institutions impact important determinants of the efficiency of production, such as the provision of local public goods and the security of local property rights. At the country level, productive efficiency is determined by the average of local institutions, by national institutions, and by the technology adoption and use decisions of profit-maximizing firms. A country where local institutions in several regions create inefficiencies will exhibit not only within-country differences, but also lower national income. Aggregate output is lowered directly, due to the presence of these low income regions, and indirectly, because low demand from poorer regions will lead to a smaller market size for new technologies, discouraging technology adoption at the national level (Dell & Acemoglu, 2009, p. 2).

Therefore, if we extend the statement above, it is possible that a country where several regions exhibit a low supply of financial services would not only give rise to socio-economic differences across regions, but also would impact national growth and poverty. Under this logic, our sub-national level analysis would have implications at the macro level.

Our main findings suggest that access to finance is a factor spurring economic growth and poverty reduction in Bolivia. Additionally, the role of microfinance institutions is highlighted, showing the

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7 “Spatial dependence occurs when the growth rate at one location depends on the values of observations at other locations; while spatial heterogeneity, on the other hand, occurs when parameters in growth models vary across countries or regions depending on their location” (Rodríguez-Gámez & Rodríguez-López, 2013, p.2).
importance of MFIs in promoting growth and alleviating poverty. Among these MFIs, it is worth emphasizing the role of semiformal institutions such as nongovernmental organizations (NGOs).

The rest of the study is organized as follows. Section 2 presents the most important theoretical and empirical considerations relating to our object of study. Section 3 shows some characteristics of the Bolivian financial system, with an emphasis on its structure and its transformation from a financial repression scenario to a liberalization scheme. In addition, given the particularities of the Bolivian experience in terms of microfinance and its close relation with the issue of access to finance, in this section we also refer to the Bolivian microfinance sector. After that we present some data and trends regarding access to finance in Bolivia. Section 5 lays out the methodology and main data elements of our study. Next, we develop our own empirical evidence on the relationships between access to finance and growth and between access to finance and poverty for the case of Bolivia. Finally, we summarize the conclusions in Section 7.

2. Theoretical and Empirical Considerations

The increasing importance of access to finance

Over the last two decades, access to finance has received more attention and has become a more relevant issue on the development agenda. Claessens (2005) makes reference to some reasons explaining this fact. The first one is related to the theoretical and empirical works showing that finance is an important growth factor. The second reason is that due to changes in economies and economic production, finance may have moved up in the ranking of barriers to growth. Additionally, another explanation is the increasing perception that households and enterprises have had limited access to finance.

Among the main constraints that prevent poor households and small enterprises from using financial services is geography or physical access.

“While well-off customers may be able to access some services over the phone, or via the Internet, others require clients to visit a branch, or use an ATM. Ideally, we would like to know how far customers are from the location of the nearest branch (or ATM); the density of branches per square kilometer, or per capita, provide an initial, albeit crude, alternative indicator. For example, Spain has 96 branches per 100,000 people, and 790 branches per 10,000 sq km, Ethiopia has less than one branch per 100,000 people, while Botswana has one branch per 10,000 sq km.” (Beck et al., 2008a, p. 9).

Another important obstacle is the lack of the documents and other requirements necessary to open an account or to request credit, since financial institutions will require from their customers, at a minimum, identification documents. In many developing countries, many people do not even have such papers, mainly because they are not employed or do not have their business in the formal sector. Additionally, many institutions have minimum account size requirements, fees that are out of the reach of many, or specific collateral requirements (i.e. mortgages).

These financial access barriers vary considerably across countries. Usually lower barriers tend to be associated with more open and competitive financial systems characterized by private ownership of financial institutions and foreign participation; stronger legal, information, and physical infrastructures; regulatory and supervisory approaches that rely more heavily on market discipline; and greater transparency and freedom for the media (Beck et al., 2008a).

8 These financial non-governmental organizations have since 2010 been referred to as “Development Financial Institutions.”

9 For example, in some African countries, banks require as a minimum deposit an equivalent to 50% of that country’s per capita GDP to open a checking account (Beck et al., 2008c).
The finance and growth nexus

Patrick (1966) labels three possible hypotheses regarding the finance-growth nexus. These are: the supply-leading, the demand-following, and the stage of development hypotheses. The supply-leading hypothesis states a causal relationship from finance to economic growth, while the demand-following hypothesis postulates a causal relationship from economic growth to finance. So based on this second hypothesis, finance does not affect economic growth; instead, economic growth gives rise to an increasing demand for financial services that might induce an expansion in the financial sector. In the case of the stage of development hypothesis, supply-leading financial development can induce real capital formation in the early stages of economic growth. Innovation and development of new financial services lead to new opportunities for investors and savers and, in so doing, inaugurate self-sustained economic growth. As financial and economic development proceeds, the supply-leading characteristics of financial development diminish gradually and are eventually dominated by demand-following financial development (Calderon & Liu, 2005).

The finance and poverty nexus

Finance could contribute to poverty reduction through several channels. First and foremost, finance helps through economic growth, thus raising overall income levels and consequently increasing the welfare of all. Specifically, finance could also help reduce poverty by distributing opportunities more fairly. These links between growth and poverty have received much attention in recent years. Theoretical and empirical studies such as the ones of Deininger and Squire (1996), Dollar and Kraay (2000), and Lopez (2004) suggest that growth is beneficial for the poor (Jalilian & Kirkpatrick, 2002).

Besides, there is empirical evidence such as that in Beck, Demirgüç-Kunt and Levine (2004a & 2005) that finance matters, especially for poor households and smaller firms. Recent international cross-country evidence presented by Honohan (2004a & 2004b), Guillaumont and Kpodar (2008), and Ordoñez (2012) reveals the positive effect of financial deepening on poverty reduction. Additionally, Beck et al. (2007a) show that financial development disproportionately boosts incomes of the poorest quintile and reduces income inequality. Furthermore, in the same study, financial development appears associated with a drop in the fraction of the population living on less than one dollar a day.

However, even if financial development in general seems beneficial for growth and poverty, this does not necessarily mean that finance is available on an equal basis. On the contrary, finance could be allocated in a skewed or even perverse manner. In this sense, there is the perception that in developing countries finance often benefits the few.

A fundamental cause of poverty is market failure, and financial market imperfections often prevent the poor from borrowing against future earnings to invest. If the causes of financial market frictions (such as asymmetric information and high lending costs) are addressed, it is possible to improve the chances of the poor to access formal financial services. As a consequence of a more inclusive financial system, the poor would increase their productivity and raise the potential for fulfilling sustainable livelihoods (Jalilian & Kirkpatrick, 2004).

In most developing countries, formal financial markets serve only a small percentage of the populations, often no more than 20-30%. Most households do not have access to even basic financial services, and a majority of these households who do not have access are concentrated in low-income categories. To be sure, financial access is not a magic or unique solution against poverty, but there is a conviction that it could play a potentially significant role in poverty alleviation. Like the rich, poor households can benefit from credit, savings, payment, insurance services, and money transfer facilities. Such services help the poor manage their risks, smooth consumption, take advantage of profitable

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10 Countries that have historically experienced the greatest reduction in poverty are those that have experienced prolonged periods of sustained economic growth. In fact, there is plenty of evidence suggesting that the poor typically do share in rising aggregate income and do suffer from economic contractions (Lopez, 2004).
The necessity of empirical research on access to finance

As shown previously, much empirical evidence—based on datasets that pool developed and/or developing countries—refers to a significant and robust relationship between financial development and growth. However, we have to recognize that the connection between the theoretical models and empirical evidence has not been strong. In fact, while theoretical models focus on the importance of access to finance, most empirical studies stress the outcomes of financial development. A main reason explaining this fact relates to the lack and limitations of data on the access dimension of finance.

2.1 The challenge of measuring access to finance

The first attempts

One of the pioneering attempts relating to the measure of access to finance is reflected in the work of Beck et al. (2007b). The authors present a consistent dataset of cross-country indicators of banking sector outreach, collected through a survey of bank regulatory agencies conducted in 2003-2004 and complemented with publicly available data. This work can be regarded as the first compilation and analysis of consistent and comparable cross-country data on the outreach or penetration of banking systems.

Beck et al. (2007b) stress that broad financial access is the key to development, and this importance is justified by three main arguments. The first one refers to theoretical and empirical finance and growth literature that points to financial development as a factor spurring growth and reducing income inequality and poverty. Financial market imperfections are particularly binding on poor or small entrepreneurs who lack collateral, credit histories, and connections. Lack of access to finance will make it difficult for poor households or small entrepreneurs to finance high-return investment projects (i.e., education, business), reducing the efficiency of resource allocation and having adverse implications for growth and social fairness. A second argument emphasizes that one of the channels through which financial development leads to economic growth and inequality is by means of the entry of new firms (Klapper, Laeven, & Rajan, 2004) and the Schumpeterian process of “creative destruction.” This assumes that talented newcomers have access to the necessary financial services, including external finance. However, considering that these talented newcomers are not necessarily rich or well-connected to financial intermediaries, access to finance is a crucial factor in expanding opportunities (Rajan and Zingales, 2003). The third argument is more socio-political and considers access to finance on a similar level as access to basic needs such as safe water, health services, and education (Peachey & Roe, 2004).

The difference between access and use

The work of Beck et al. (2007b) also establishes an important difference between access to financial services and use of financial services. Access to finance implies an absence of barriers; therefore, economic agents might have access to financial services but decide not to use them, either for socio-cultural reasons or because opportunity costs are too high. In fact, the authors introduce two classes of indicators that correspond to the different concepts of access to and use of financial services. On the one hand, they present data on the number of bank branches and ATMs relative to population and area, to capture the geographic and demographic penetration of the banking system. Higher branch intensity in demographic and geographic terms would indicate higher possibilities of access and the opportunity for households and enterprises to use financial services. On the other hand, to measure the

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13 The indicators are available for around 100 countries, including developed and developing countries.
14 As cited in Beck et al. (2007b).
15 Ibid.
16 Ibid.
actual use of bank services, they present indicators on the number of loan and deposit accounts relative to population and average loan and deposit size relative to GDP per capita. Higher ratios of the number of loan and deposit accounts per capita and lower average loan and deposit amounts relative to GDP per capita would indicate use of deposit and credit services by a greater share of the population and “smaller” clients (Beck et al., 2007b).

**Figure 1. Financial access and use: Voluntary and involuntary exclusion**

![Diagram illustrating financial access and use]

Source: Beck et al. (2008c)

Access essentially refers to the supply of services, whereas use is determined by demand as well as supply. Figure 1 illustrates the difference between these two concepts. Users of financial services can be distinguished from non-users, and in this last group there are different types of non-users. On the one hand are non-users who do not make use of financial services for cultural or religious reasons or simply because they do not see any need to do it. These non-users have access, but they decide not to use financial services and therefore exclude themselves from the financial system. From a policymaker’s viewpoint, this type of non-users is not a problem since their lack of demand is what drives their non-use of financial services. On the other hand are the involuntarily excluded people who have a demand for financial services but do not have access to them. There are several kinds of involuntarily excluded agents. First, there are households and enterprises who are considered unbankable by commercial financial institutions and markets because they do not have sufficient income or present too high a lending risk. Second, there are people who are excluded due to discrimination based on social, religious, or ethnic reasons. Third, the contractual and informational framework could limit financial institutions from reaching out to certain population groups because the outreach is too costly to be commercially viable. Finally, the price of financial services may be too high or the product characteristics might not be appropriate for certain population groups (Beck et al., 2008c).

**Limitations of available indicators and cross-country datasets**

It is essential to observe that the available indicators of financial access have strong limitations due to the fact that they do not take into account the access to financial services supplied by non-bank deposit institutions (formal and semiformal)

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17 By formal non-bank deposit institutions, we are referring to open credit unions, saving and loan mutuals, and private financial funds. These institutions are regulated and supervised by authorities, while the semiformal institutions are exempt
deposit institutions account for a significant share of the financial system of some developing economies. For example, in the case of Bolivia, around 25% of the loan portfolio and deposits correspond to credit unions, savings and loan mutuals, and private financial funds, which are not bank deposit institutions. The importance of these financial intermediaries is even higher if we consider that around 50% of lenders and savers are served by this type of financial institutions.

The presence of these non-bank institutions in the Bolivian financial system would also be relevant in terms of diversification of financial institutions and its effect on growth. In this respect, recent studies such as the one of Majerbi (2010) suggest that an institutionally well-diversified financial system is more likely to promote economic growth than less diversified and more concentrated systems. In this way, the different constituents of the financial sector specialize in providing services to different segments of the economy, and they are only imperfect substitutes for each other\textsuperscript{18}.

In 2010, the IMF launched a new dataset relating to access to finance\textsuperscript{19}. This set is built on the basis of research by Beck at al. (2007b) and so far contains annual data from about 189 countries for an 8-year period (2004-2012). This new attempt regarding the measuring of access and use of financial services across countries includes data about the bank and non-bank branch network, availability of automated teller machines, deposits, loans, debt securities issued, and insurance.

The consideration of access to non-bank financial institutions is an important feature and improvement in this new IMF dataset. However, the role played by non-financial institutions (such as NGOs) is still not considered in the measurement of access to finance. This is mainly due to non-availability of data. Another recent attempt to measure access to finance is the “Financial access report” prepared by the Consultative Group to Assist the Poor (CGAP) and the World Bank. This annual report is available for 2009 and 2010 and presents indicators on access to savings, credit, and payment services in banks and regulated non-bank financial institutions. The data reports are based on a survey of financial regulators in 135 and 142 economies for 2009 and 2010, respectively.

Although the work of CGAP and the World Bank (2009 & 2010) can be regarded as a very important step in financial access measurement, we have to recognize that their indicators have significant measurement limitations. Specifically, Mylenko et al., as authors of these financial access reports sponsored by CGAP and the World Bank, point out:

“\textit{The survey collects information only on regulated financial institutions, leaving out non-regulated providers of financial services. This practice is likely to significantly understate the scale of credit services. As a result the available data understates the true scale of financial services provided by regulated financial institutions and likely understates the size of the non-bank segment in relation to commercial banks.}”

Additionally, we must also mention that in the reports the distinction between access to finance and use of finance is minimized to the point that in terms of measurement, access and use are treated as interchangeable.

More recently, in 2012, the World Bank has introduced the Global Financial Development Database. It is a multidimensional dataset of financial systems for 202 countries, and for most countries it comprises data for the period 2004-2011. It contains indicators of financial depth, access, efficiency, and stability. The access dimension is measured by the number of bank branches per 100,000 adults.

\textsuperscript{18} Previous to the work of Majerbi (2010), there was a study by Boyreau (2010) about the effect of financial development on economic growth for the case of China that already introduced among its indicators of financial development an indicator of financial institution diversification measured by a bank concentration index.

\textsuperscript{19} “\textit{The Project’s data collection effort, with initial financial support from the government of the Netherlands, complements the work done by the United Nations and the World Bank in the context of the UN Advisors Group on Inclusive Financial Sectors in which the IMF is represented. The Project’s periodic surveys make use of the IMF’s existing broad network of country correspondents for the IMF’s flagship statistical publication — the International Financial Statistics (IFS)”} (IMF, 2010).
2.2 Microfinance and the poor

Poor agents have a significant lack of access to credit. This fact is understandable because of the absence of collateral that the poor can offer, in addition to the various complexities and high costs involved for the institutions in dealing with large numbers of small, often illiterate borrowers. The poor thus have to rely on loans from money-lenders at high interest rates or from friends and family, whose supply of funds is limited. Microfinance institutions attempt to overcome these limitations through measures such as group lending and regular savings schemes, as well as the establishment of close links with their poor clients (Weiss, 2005; Chandra, 2009).

Originally, microfinance was born as a practice of providing loans to poor entrepreneurs. However, after almost three decades, microfinance appears to be providing a variety of financial services (i.e. saving, loan, insurance, fund transfers) to poor, underserved customers. Therefore, microfinance in terms of access to finance will imply increased access to financial services for low-income individuals (Helms, 2006).

Microfinance is not the only way to reduce poverty

It is often thought that promoting microfinance institutions (MFIs) is the best or only way to help the poor. However, it is important to keep in mind that a strong mainstream financial system is also pro-poor. There is general evidence that financial depth is associated with lower poverty, while for microfinance the evidence is not yet clear. Thus, it seems that the effects of microfinance and mainstream finance on poverty alleviation should be regarded as complementary and overlapping rather than as competitive options (Honohan, 2004a). In this way, despite the considerable body of theoretical and empirical literature relating to microfinance, there are still few works that attempt to build evidence of the impact of microfinance on economic activity and poverty (Bruhn & Love, 2009).

"...[F]or the 3 billion people living on less than $2 per day, access to even basic financial services can be a critical ingredient in alleviating poverty... Financial services for the poor, often referred to as microfinance, cannot solve all the problems caused by poverty. But they can help put resources and power into the hands of poor and low-income people themselves, letting them make those everyday decisions and chart their own paths out of poverty. The potential is enormous, and so is the challenge” (Helms, 2006, p.1).

Trade-offs for commercial MFIs

The institutions that currently work in microfinance vary in the income levels of the customers they serve, their use of subsidies, and the breadth and quality of services offered. This present scenario presents new opportunities for microfinance institutions as well as trade-offs. One main trade-off relates to providing microfinance on a commercial basis, without long-term subsidies. In this last respect, there are some doubts about the compatibility between self-sustainable microfinance institutions and the goal of serving poor households. Cull et al. (2009) show that most MFIs serving the poorest agents earn profits too small to attract investors seeking purely commercial profits. Therefore, this accounts for the continued importance of subsidies and non-commercial funding to NGOs.

Additionally, if we consider that NGOs make the smallest loans, we have to recognize that they face the highest costs per loan, and consequently they charge very high interest. Therefore, contradictorily, the poorest agents end up paying the most expensive loans. Therefore, the question is whether this kind of socially minded institution should move up-market in order to improve financial performance.

Another key trade-off relates to regulation and supervision. Can NGOs and other socially minded institutions survive regulation without redefining their commitment to the poorest? The study of Cull et al. (2009) shows that rigorous and regular supervision is critical for deposit-taking institutions, but it is also costly, since this regulatory supervision pressures institutions to serve better customers (less poor agents) with larger loans in order to maintain profitability. Additionally, supervision appears related to a higher concentration of staff in the head office, reducing staff that used to work in the branches.
“Overall, microfinance promises to correct market failures by expanding the opportunities of the underserved. For some, the microfinance dream is also to reach the world’s poorest and lift them out of poverty. But evidence suggests that it is difficult to realize both goals at the same time. In reality, microfinance often entails distinct trade-offs between meeting social goals and maximizing commercial outcomes. Reaching the very poor with small-scale services remains a tough business and often entails charging high fees or depending on steady subsidies” (Demirgüc-Kunt, 2010).

2.3 Country level empirical evidence on the finance-growth and finance-poverty relationships

Finance and growth

At a country level, the empirical evidence on the relationship between finance and growth is not so extensive and it covers the reality of developed and developing countries. For Latin America and the Caribbean region, country case studies are present only for Chile, Venezuela, Mexico, and Bolivia.

Considering the issue of the indicators and data, similarly to international and regional empirical literature on the issue of finance and growth, all country case studies except Boyreau (2003), Nasr (2010), and Hussain and Chakraborty (2012) rely on financial development indicators. Indicators such as the ratio of money supply (measured by M2 or M3) to GDP and the ratio of credit to the private sector to GDP are the most common measures in these country case studies. The work of Nasr (2010), a research-action project sponsored and guided by the World Bank for the case of Egypt, incorporates as a novelty some indicators that reflect the access dimension of finance. In the case of Boyreau (2003), despite the fact that the study uses financial depth indicators to evaluate the impact of financial development on economic growth in China, it also uses a bank concentration index as a kind of indicator of financial institution diversification. Specifically, one of the main conclusions of the study by Boyreau (2003) is that Chinese provinces with more diversified banking sectors appear to grow faster. The study of Hussain and Chakraborty (2012) looking at India does not focus specifically on the access dimension of finance. However, in order to measure financial development Hussain and Chakraborty use a composite indicator of four different financial variables. Among them is one related to financial access (the number of bank branches per thousand people).

Regarding the characteristics of the data, most of the empirical single country studies are based on national yearly or quarterly data. In many of the cases with yearly data, the results are based on very few observations20, which is partly due to the lack of finance indicators that go back long enough to provide sufficient data for the purpose of time series analysis. Specifically, in some studies that scarcity of yearly data has been handled by using quarterly information. However, it is important to note that in those cases (i.e. Dritkasis & Adamopoulos, 2004) economic growth would be regarded as a short-term phenomenon instead of a long-term one.

A few studies are based on sub-national data at the level of cities, provinces, districts, or municipalities. This single country strategy has been used by works such as Boyreau (2003), Guiso, Sapienza, and Zingales (2004), Hasan and Zhou (2006), Koetter and Wedow (2006), Valev (2008), Vaona (2008), Zhang, Wang, and Wang (2012), and Hussain and Chakraborty (2012).

With regard to methodological issues, many of the country level studies on the impact of finance on growth rely on time series analysis, with the exception of Aziz and Duenwald (2002), Boryreau (2003), Hasan and Zhou (2006), Hernandez and Parro (2005), Koetter and Wedow (2006), Ljungwall and Li (2007), Nasr (2010), Valev (2008), Vaona (2008), and Zhang et al. (2012). The tri-variate vector autoregressive (VAR) framework21 was applied in a majority of the time series studies22 mentioned

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20 Between 20 and 40 observations.
21 Apart from the growth and finance variables, the third variable that is typically included in these studies is investment.
22 A few studies such as Waquaca (2004) applied bi-variate vector auto-regression.
Panel data analysis is also used in some studies such as the case of Aziz and Duenwald (2002), Boyreau (2002), Hasan and Zhou (2006), Ljungwall and Li (2007), and Zhang et al. (2012). All of them approach the case of China using data at a sub-national level (provinces and cities). In the same methodological line is the work of Koetter and Wedow (2006) that presents empirical evidence for Germany based on panel data analysis prepared from annual data per district for the period 1994-2003. As in the case of international general or regional evidence, most of these country case studies reveal evidence that is consistent with the view that financial development is engine of economic growth. This evidence pertains to countries such as Indonesia, Egypt, Sierra Leone, Malaysia, Pakistan, United Kingdom, India, Korea, Chile, Greece, Tunisia, Turkey, China, Bolivia, Cameroon, Germany, China, Venezuela, Mexico, Singapore, Macau, Sri Lanka, Bangladesh, Namibia, Australia, Bulgaria, Italy, and Fiji.

Only the studies of Akinboade (2000), Chang (2002), Aziz and Duenwald (2002), Boyreau (2003), and Odhiambo (2007) do not support the supply-leading hypothesis. The work of Akinboade (2000) looks at the case of Tanzania, and it surprisingly found a negative and significant relationship between financial depth and economic growth overall and during the period of financial liberalization in this country. The empirical results of Odhiambo (2007) reveal that in Kenya there is a uni-directional causal flow from economic growth to financial development.

Chang (2002), Aziz and Duenwald (2002), Boyreau (2003), Hasan and Zhou (2006), Ljungwall and Li (2007), and Zhang et al. (2012) built empirical evidence for the Chinese case. The results of Chang (2002) do not support the demand-following nor the supply-leading hypothesis. In fact, independence between financial development and economic growth was found for mainland China in the period 1987-1999. In the case of Aziz and Duenwald, the conclusions are mixed. On the one hand, the study shows that financial development as proxied by total bank lending has not significantly boosted growth among China’s provinces. On the other hand, there is evidence that non-state credit has had a statistically significant though small effect on growth and that non-bank sources of finance have played a significant role in financing China’s growth. The empirical results of Boyreau (2003) are also mixed, since they suggest that the credit extended by the banking sector at the state level has a negative impact on provincial economic growth, while they also show that Chinese provinces with more diversified banking sectors appear to grow faster. Regarding more recent evidence for China, the studies of Hasan and Zhou (2006), Ljungwall and Li (2007), and Zhang et al. (2012) conclude that financial development has been robustly associated with economic growth in China.

As we already mentioned, there is country case evidence about the relationship between finance and growth for the case of Bolivia. Part of this evidence includes the studies of Morales (2007) and Humerez and Yañez (2010) that evaluate the effect of financial development on economic growth. The main findings suggest that finance has a positive effect on economic growth in Bolivia, despite this effect being considered modest in both studies. The empirical evidence was built only on financial developing indicators focusing on aspects such as size or efficiency of the financial system and not considering its access dimension.

Finance and social fairness

With respect to the relationship between finance and social fairness, country case literature is scarce. Among those few country case studies that are somewhat related to the influence of finance on poverty (or inequality) are the ones of Ang (2008), Bittencourt (2006), Geda et al. (2006), Kibua (2007), Hamori and Inoue (2010), Ho and Odhiambo (2011), Law and Tan (2009), Liang (2006), Manh Hao (2005), Motonishi (2004), Odhiambo (2010), Quartey (2005), Shahbaz and Islam (2011), Shahbaz et al. (2012), Aliero and Ibrahim (2012), and Umesh (2012) that present evidence for India, Brazil, Ethiopia, Botswana, Kenya, Namibia, China, Malaysia, China, Vietnam, Thailand, Kenya, Ghana, Pakistan, Nigeria, and Iran. The works of Manh Hao (2005), Quartey (2005), Geda et al. (2006), Kibua (2007), Hamori and
Inoue (2010), Ho and Odhiambo (2011), and Aliero and Ibrahim (2012) examine the relationship between finance and poverty, while the rest consider the effect of finance on inequality.

The access dimension of finance is considered only in the studies of Manh Hao (2005), Geda, Shimeles and Zerfu (2006), Kibua (2007), and Aliero and Ibrahim (2012) for the cases of rural Vietnam, Ethiopia, Botswana, Kenya, Namibia, and Nigeria. Some proxies of access to credit are used in these studies in order to measure financial access. Bittencourt (2006) in his work on the case of Brazil also mentions the issue of financial access as part of its theoretical framework and conclusions, although in the empirical analysis pure financial development proxies are used.

In terms of methodology and data, most of the studies applied time series and panel data analyses. Except for the study of Law and Tan (2009) about the relationship between finance and inequality in the case of Malaysia, all the studies rely on annual data analysis, covering periods of financial repression and financial liberalization. This last consideration is important if we consider that financial repression is usually associated with low levels of financial development.

With respect to the results, all the studies except the one of Law and Tan (2009) and Ho and Odhiambo (2011) found that financial development has a positive effect in terms of social fairness. In fact, the main findings suggest that financial development helps in reducing income inequality and alleviating poverty. In the work of Ho and Odhiambo (2011), for the case of China, the evidence is mixed since the causal relationship between financial development and poverty appears to be sensitive to the finance indicator used. When domestic credit to the private sector is used, both financial development and poverty reduction are found to cause each other in the short term. But when money supply to GDP is used, poverty reduction causes financial development, both in the short and in the long term, while financial development only causes poverty reduction in the short term.

**Microfinance, growth, and poverty: The limitations in the empirical literature**

In completing this review of country cases studies regarding the relationships between finance and economic growth and finance and social fairness, it is also important to mention the empirical attempts to evaluate the effect of microfinance on economic growth and poverty. Among some of these studies we can mention the ones by Hulme and Mosley (1996), Mosley (2001), Banegas et al. (2002), Dunn and Arbuckle (2001), McNelly et al. (1996), Khandker (1998 & 2003), Pitt and Khandker (1998), Coleman (1999 & 2004), Chen and Snodgrass (2001), Park and Ren (2001), Duong and Izumida (2002), Kaboski and Townsend (2002), Amin et al. (2003), and Pitt et al. (2003) (as cited in Weiss, 2005 and Morduch, 2011) regarding the cases of Bolivia, Ecuador, Peru, Indonesia, India, Thailand, Bangladesh, Vietnam, and China (Weiss, 2005).

The findings of these microfinance studies are mixed, and they have been highly debatable since there are significant methodology observations to be made about the empirical work. Most of the early microfinance impact studies focused on particular microfinance programs and were based very often on anecdotes from successful MFI clients, while less successful clients were ignored. These studies that hoped to measure the impact of microfinance on consumption or income made observations in a variety of ways, but they often failed to make comparisons to credible control groups. In response to this, a growing number of impact evaluations were carried out by independent researchers that introduced more rigorous forms of impact evaluation, such as the randomized control trial (RCT) methodology. Randomized control trials do far better in terms of credibility, but researchers often tend to investigate narrow populations and short-term outcomes (Bateman, 2011; Morduch, 2011).

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23 These proxies of financial access are more measures of use of finance than access to finance.

24 The study of Bittencourt (2006) suggests that this is not only because the poor can invest the acquired credit in all sorts of productive activities, but also because those with access to financial markets can insulate themselves against recurrent poor macroeconomic performance, which is exemplified by high inflation rates.

25 Overviews of these studies are presented by Weiss (2005) and Armendáriz & Morduch (2010).

26 *This aims to avoid the selection bias in the choice of treatment and control groups that might occur if, for example, those receiving a microloan were already more entrepreneurial than those in the control group. Any impact here would have to be
Additionally, most of the studies of the impact of microfinance on growth or poverty have been supported by micro-level evidence based on household data or entrepreneurial data. Macro-level studies are very limited, mainly given the scarcity of reliable macro data on microfinance (Imai, Gaiha, Thapa, & Kobina, 2012). In this sense, it is evident that there is still much research to be done to evaluate the effects of microfinance on economic growth and social fairness.

To conclude this empirical literature review, we have to stress again the scarcity of empirical literature on the access dimension of finance and its effect on growth and social fairness (poverty and inequality). As shown before, the relevance of access to financial services is ample. Therefore, there is a necessity for empirical studies in this field at the international and country case level.

3. Some Considerations about the Bolivian Financial System

3.1 The structure of the financial system

The financial system of Bolivia, as any other in the world, is the medium where transactions take place between those economic agents who have a shortage of savings and those who have a surplus of savings. These resource movements are made possible by means of institutions that generate, manage, and channel savings resources to investments. This channeling of resources is made possible by means of financial intermediation and the securities market.

*The share of bank and non-bank deposit institutions*

In financial intermediation, the financial resources are channeled by means of financial intermediaries. This group of intermediaries includes deposit institutions, insurance companies, investment companies, and pension funds. The highest share of financial intermediation (around 88%)\(^{27}\) is provided by deposit institutions. This top share of the financial system is the reason why many authors refer to the deposit institutions as the whole financial system.

Deposit institutions include functioning bank and non-bank institutions. In this second group, there are a variety of intermediaries: credit unions, savings and loan associations, and private financial funds. Despite the fact that the share of bank institutions in terms of the total loan portfolio is around 75%, it is important to highlight that non-bank institutions serve a very significant number of customers. In 2008, the non-bank institutions were near to representing 50% of the total customers in the system.

*Figure 2. Bolivia: Deposit institutions’ share of loan portfolio and customers among regulated institutions (2008)*

*Source: Author’s own preparation on basis of PROFIN data*

*Regulated and non-regulated institutions*

Another important characteristic of the financial system in Bolivia is the existence of regulated and non-regulated institutions. The regulated institutions are under the regulatory supervision of the national

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\(^{27}\) Based on Banco Central de Bolivia’s data (2008), Memoria Annual.
supervisory authority (Autoridad de Supervisión del Sistema Financiero, ASFI)\textsuperscript{28}. Also known as formal financial institutions, they consist of banks, savings and loan mutuals, open credit unions, and financial private funds.

The non-regulated sector consists of semiformal and informal institutions. In the case of the semiformal ones, they are legal but they are out of the national regulatory supervision exerted by the authorities (Villafani and Ibarneagaray, 2002). However, this does not mean that they do not follow any rules or norms. They usually follow some normative framework and internal rules related to their functioning and their legal status. As semiformal institutions are mainly closed credit unions and non-governmental organizations (also known as development financial institutions, or IFDs), it is possible that their non-regulated status will no longer be maintained, since in 2009 the financial supervisory authority called on them to function as regulated deposit institutions. Closed credit unions and NGOs are in the process of being incorporated into the regulatory and supervisory framework of ASFI. In order to have the complete picture, we must also refer to a group of agents or institutions that could be regarded as purely informal and illegal, such as usurers, lenders, pawn agencies, and other agents\textsuperscript{29}.

Regarding the regulated and non-regulated sector (except informal institutions), around 69\% of the total loan portfolio is represented by banks. However, this substantial share of the total loan portfolio corresponds to around 36\% of the total customers of regulated and non-regulated institutions. On the contrary, non-regulated institutions such as NGOs, whose share of the total loan portfolio is about 5\%, are serving around 27\% of the total customers. This shows that these non-regulated institutions are reaching a group of customers different than banks\textsuperscript{30} and even different than those served by private financial funds, which manage 11\% of the loans with 22\% of the customers. As we will see later, both NGOs and private financial funds are microfinance institutions (MFIs) (See Figure.2).

The importance of non-bank deposit institutions

Figure 3 again highlights the importance of non-bank deposit institutions, in this case adding to the picture the non-regulated institutions. Despite the fact that all non-bank institutions represent as a maximum 30\% of the total portfolio, their significance is great in terms of the number of customers. Non-bank institutions represent around 64\% of the customers. Therefore, it seems that non-bank institutions are serving lower-income households and entrepreneurs, who demand loans of smaller amounts. This feature is very important in terms of access to finance by “poor” agents.

Figure 3. Bolivia: Deposit institutions’ loan portfolio and share of customers among all regulated and non-regulated institutions (2008)

Source: Author’s own preparation on basis of PROFIN data

\textsuperscript{28} In the framework of the new Political State Constitution (February, 2009) and Supreme Decree 29894 (May, 2009), the superintendent of banks and financial entities came to be called the Supervisory Authority of the Financial System (Autoridad de Supervisión del Sistema Financiero, ASFI). This governmental institution regulates and supervises the deposit institutions.

\textsuperscript{29} Additionally, since May 2009 it is in charge of the regulation and supervision of the securities and insurance market.

\textsuperscript{29} Given the restrictions of micro and small-sized enterprises, it is probable that they invoke friends, family, and relatives as lenders.

\textsuperscript{30} Except for Banco Sol, Banco Los Andes, and Banco FIE, which are immersed in the microfinance industry.
The importance of non-bank institutions is also reflected in the number of institutions. Indeed, in June 2010, Bolivia had in operation 13 banks, 8 savings and loan mutuals, 5 private financial funds, 23 open credit unions, 64 closed credit unions, and 15 NGOs (ASFI, 2010a and 2010b).

The second floor bank

With respect to the deposit financial institutions, it is also important to mention the existence of a “second floor bank” under the figure of the Banco de Desarrollo Productivo, Sociedad Anonima Mixta (BDP SAM). Like other financial intermediary entities, this is regulated by the national financial authority (ASFI). Its main goal is to channel funds to private financial entities that are functioning under the permission of the ASFI. These funds come from the Central Bank and other external sources and are geared toward financing, production, commerce, and service activities. In addition, the ASFI works as a fiduciary bank, managing autonomous worth, assets, and other financial components.

The securities market

The direct financial system in the case of Bolivia has its origins in 1989. The beginning of the operations of the Bolivian stock exchange opened a new scheme of finance where savers and investors, on their own account and risk, can invest in securities, or the securities market provides financing through the issuing of securities. The main transactions executed in the Bolivian stock exchange involve debt instruments issued by private and public entities (around 98% of the total transactions in 2009). Its participation in the financial system is very small and its role as an alternative to financing is still very restricted.

3.2 From financial repression to financial liberalization

A key characteristic of the financial system in Bolivia is related to the transition from a financial repression to a financial liberalization scenario. This transition that took place in August 1985 involved the change of a regulated economy to a market economy. The critical point that led to the fragmentation of the regulated economy was the hyperinflation experienced during 1984 and 1985.

In terms of the financial system, the economic model that was based on strong participation and intervention by the state until August 1985 meant a scenario of financial repression. This stage was mainly characterized by controls on the interest rates and the direct participation of the state in financial intermediation by means of the state or development banks. The beginning of a new stage for the financial system in Bolivia involved mainly the liberalization of interest rates in August 1985. However, as we will see later, other important reforms related to the regulatory normative framework came later (since 1987). These regulatory normative reforms led to the consolidation and development of the Bolivian financial system. In fact, as we can observe in Figure 4, the Bolivian financial system had a positive evolution from 1987 until 1999, when the Bolivian economy suffered a crisis that lasted until 2004. Nevertheless, the levels of financial intermediation and depth, measured by M2/GDP and M3/GDP respectively, and the proportion of private credit in relation to the GDP remained higher than in the period of financial repression.

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31 Bank of Productive Development, Sociedad Anónima Mixta (essentially a public-private partnership).
32 Supreme Decree 28999 (January 2007) established the institutional adaptation of NAFIBO SAM to BDP SAM. In this way, BDP SAM became the financial arm of the central government in the framework of the “Development National Plan.” In this plan, one priority of the national productive development is financing with solidarity and promotion characteristics. The goal is to establish convenient financing conditions that take into account the different productive cycles and regions, particularly those excluded from traditional financing.
33 For more details, see Informe de Estabilidad Financiera (2010), Banco Central de Bolivia, p. 35.
34 In general, financial liberalization in developing countries has been considered as a necessary and significant part of the economic policy package promoted by what used to be called the “Washington Consensus” (Ghost, 2005).
35 This slowdown in the Bolivian economy meant for the financial system an increase of the non-performing loan portfolio and difficulties in getting savings and allocating credit (given the increase of adverse selection). In this period the liquidation of some commercial banks also took place due to some cases of mismanagement in loan allocation (linked credit).
Following the argument of McKinnon and Shaw against financial repression, repressive policies are seen to be hostile for financial deepening and consequently for growth. Financial repression has a depressive effect on saving rates, giving rise to capital shortages. McKinnon and Shaw also argued that financial repression tends to selectively ration out riskier projects, irrespective of their social relevance, because interest rate ceilings prevent the charging of adequate risk premiums (Ghost, 2005).

3.2.1 The stage of financial repression before the application of the New Economic Policy

Low financial institutional diversification and financial development

One main characteristic of this phase is the existence of banks as the only financial intermediaries in the credit market. This bank system had grown, supported by the trust of substantial foreign capital inflows and the strong intervention of the state. Government intervention was reflected not only in the control of interest rates and the manipulation of reserve ratios, but also by means of the property of banks (state or development banks).

With respect to this last point, empirical studies such as La Porta et al. (2002), Brath et al. (2001), and Caprio and Martinez (2000) (all cited in Mishkin, 2005) show that greater state ownership of banks is associated with less financial development and lower growth, and this effect is found to be larger for poorer countries. Additionally, these authors conclude that greater state ownership tends to be anti-competitive, resulting in a larger share of credit going to the largest firms, and it is also associated with a higher likelihood of financial instability and banking crises (Mishkin, 2005).

As we can see in Figure 4, under this scenario of financial repression the financial system (reduced to the bank system) reflected low levels of financial development in comparison with the ones registered under the financial liberalization period that began in August 1985. Nevertheless, the tendency in terms of depth, financial intermediation, and the private credit share of GDP was positive until 1982. This process was interrupted by various economic and social events such as: a) a drastic reduction in net capital flows, b) a slowdown in economic activity, c) deep changes in the political system of the government, d) the de-dollarization in 1982, and e) the hyperinflation of 1984-85. All these factors together gave rise to financial disintermediation, and thus the main role of the financial intermediation in terms of the channeling of savings resources to investment was reduced drastically (Afcha, Larrazabal, & Cuevas, 1992).

Deficiencies in the regulatory and normative framework

In terms of the regulatory and normative framework at the end of the 1970s there were some modifications related to the Law of Banks, particularly involving the capital requirement norms. However, in addition to being very continuous and sometimes even contradictory, these modifications
were not clear since they were characterized by conceptual confusion. Therefore, under a law that was not even well established in conceptual terms, the supervision was very limited in its role. This limitation was exacerbated during the economic crisis; if the regulation was inefficient in stable periods, it was even more inefficient and useless during the hyperinflation of 1984-1985. In this respect, this experience is a reflection of what economic literature (i.e. Demirgüç-Kunt, 2009; Mishkin, 2005) established regarding the important role of a well-established, effective, and efficient regulatory normative supervisory framework in terms of financial development.

The crisis of the mid 1980s

The necessity of a new economic model in Bolivia arose from the economic, political, and social crisis experienced in Bolivia during the first half of the 1980s. Until then, the economic model was based on the state’s capitalism, with the state participating in productive activities. This model, despite leading to positive results in terms of economic growth, especially during the 1970s, could only be sustained while the government had the financing of external resources. Additionally, the actions of the government were not based on efficiency and effectiveness. The capacity of the state to design and carry out its expenditures and its investment policies and programs was continually deteriorating. Therefore, starting already in the 1980s, the figure of an inefficient state, functioning with high and increasing fiscal deficits, was evident (Antelo, 2000).

To make the situation worse, with the reduction of external financing, these fiscal deficits being financed by the Central Bank gave rise to increasing money issuance and consequently inflation. Additionally, the act of establishing price controls had an immediate effect on public enterprise revenues, leading to negative interest rates. In the case of the exchange rate, the control price triggered an overvaluation of the real exchange rate. The commercial policies that had until then aimed to protect the national industry generated inefficiency in resource allocation and gave rise to low internal savings that were insufficient to promote investment.

Table 1. Bolivia: Selected macroeconomic indicators (1981-1985)

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<tr>
<td>Inflation rate (%)</td>
<td>25.1</td>
<td>296.6</td>
<td>328.5</td>
<td>2177.2</td>
<td>8170.5</td>
</tr>
<tr>
<td>GDP growth rate</td>
<td>0.3</td>
<td>-3.9</td>
<td>-4.0</td>
<td>-0.2</td>
<td>-1.7</td>
</tr>
<tr>
<td>Public deficit (% GDP)</td>
<td>-8.9</td>
<td>-15.9</td>
<td>-19.8</td>
<td>-25.4</td>
<td>-9.8</td>
</tr>
<tr>
<td>M1 growth rate</td>
<td>20</td>
<td>230</td>
<td>210</td>
<td>1782</td>
<td>5929</td>
</tr>
<tr>
<td>Degree of financial intermediation (M2/GDP)</td>
<td>20.36</td>
<td>27.12</td>
<td>21.11</td>
<td>20.95</td>
<td>12.14</td>
</tr>
<tr>
<td>Net capital flows (Millions of USD)</td>
<td>28</td>
<td>-74</td>
<td>-232</td>
<td>-183</td>
<td>-139</td>
</tr>
<tr>
<td>Net international reserves (Millions of USD)</td>
<td>-172.3</td>
<td>-102.1</td>
<td>298.7</td>
<td>134.8</td>
<td>32.2</td>
</tr>
<tr>
<td>Exchange rate gap official/black market (%)</td>
<td>27</td>
<td>112</td>
<td>176</td>
<td>188</td>
<td>55</td>
</tr>
<tr>
<td>Real interest rate for fixed term deposits (%)</td>
<td>2.6</td>
<td>-4.7</td>
<td>-17.6</td>
<td>-30.6</td>
<td>-6.6</td>
</tr>
<tr>
<td>Debt service (% exports)</td>
<td>32.3</td>
<td>34.3</td>
<td>43.7</td>
<td>47.7</td>
<td>39.5</td>
</tr>
</tbody>
</table>

Source: Author’s own preparation based on Antelo (2000) and WDI (2012)

In terms of the external context, until the end of the 1970s the increase in commodity prices and the excess of international capital flows meant a favorable situation for the Bolivian economy. But starting

---

36 There was deep confusion about the use of terms such as capital, reserves, liquid capital, non-liquid capital, concentration of portfolio, non-performing portfolio, and irrecoverable portfolio.

37 Government regulation can promote transparency by increasing the amount of information available in financial markets. Many developing and transition countries, unfortunately, have an underdeveloped regulatory apparatus that retards the provision of adequate information to the marketplace. For example, these countries often have weak accounting standards and disclosure requirements, making it hard to ascertain the quality of a borrower’s balance sheet. As a result, asymmetric information problems are more severe, and the financial system is severely hampered in channeling funds to the most productive uses. The institutional environment of weak property rights, a lack of collateral, government intervention through directed credit programs and state ownership of banks, an inefficient legal system, and weak government regulation to promote transparency all help explain why many countries stay poor while others grow richer” (Mishkin, 2005, p. 8).

38 These included high import tariffs, import prohibitions for around 500 products, preferential import tariffs for inputs and capital goods for the agriculture sector, and subsidized credits for the productive sectors (Antelo, 2000).

39 That was a very important factor when we consider that Bolivian exports were mainly commodities (minerals and fuel, among others).
in the 1980s, the economic deceleration in Western countries gave rise to a different international context characterized by increasing international interest rates, reversion of capital flows (see Table 2.3), and decreasing commodity prices. So not only did the capital flows that were financing the fiscal deficit decrease, but so did the government revenues earned from commodity exports (which mostly benefited public enterprises). Additionally, the increasing international interest rates meant a higher debt service. This situation increased the pressure even more on the public accounts.

Given this situation and the loss of net international reserves, the Central Bank recommended that the government “de-dollarize” the economy in 1982. This measure had among its goals to reduce the demand for dollars, to restore the exchange rate as an economic policy instrument, and to relieve the obligations of the enterprises that were indebted in dollars. The de-dollarization implied the prohibition of transactions in foreign currency in the banking system, and all the obligations of the banks denominated in dollars (that obviously implied deposits) were given back in Bolivian pesos with an exchange rate 45% inferior to the parallel market (Antelo, 2000). This meant a significant capital loss for the savers and subsequently promoted a process of financial disintermediation and capital outflow. Implicitly, the financial system was harmed for the years to come, in terms of the loss of confidence in it.

The government had no other option than to declare a moratorium on the debt service payment to the international private banks in 1984. This caused more reduction of capital inflows, considering that these international banks cut their credit lines to Bolivia, even short-term lines to finance international trade transactions.

As a consequence of the economic crisis, the bank system also faced a difficult situation. The problems with getting back their loans, the growth of the non-performing portfolio, and the scarcity of internal and external sources of funds were revealing that the banks were not financially sustainable. The case of the state banks was even worse, since even they registered a non-performing portfolio that was greater than their outstanding loans (see Table 2).

<table>
<thead>
<tr>
<th>Table 2. Portfolio structure of the Bolivian banking system, 1981-1985 (% of the total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial banks</td>
</tr>
<tr>
<td>Outstanding loans</td>
</tr>
<tr>
<td>Non-performing loans</td>
</tr>
<tr>
<td>State banks</td>
</tr>
<tr>
<td>Outstanding loans</td>
</tr>
<tr>
<td>Non-performing loans</td>
</tr>
</tbody>
</table>

Source: Antelo (2000)

To complicate the macroeconomic situation even more, Bolivia experienced strong internal supply shocks. These were the result of the “El Niño” phenomenon that caused droughts and floods that obviously had negative effects on the agricultural sector. Specifically, this sector suffered a decrease in real terms of 14.2% in 1983. This fact plus a decrease of more than 5% in production by the mining sector led to a GDP decline of about 4% (Antelo, 2000).

Finally, regarding the political scenario, already at the end of the 1970s Bolivia started to experience political instability. This instability was characterized by several civil and military governments that attempted to consolidate the transition towards democracy. However, during these governments the social and redistributive conflicts grew. Therefore, in the economic sphere this meant more pressure to

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40 This loss of net international reserves from 1980 to 1983 was caused mainly by the increase of the short-term external debt. Since 1983, the reserves became positive as a result of the updating of delayed payments for sales of gas to Argentina and the suspension of payments of a part of the external debt service.

41 It is still possible today to find people reluctant to trust their savings to the financial system, given their fear of a government measure similar to the one of 1982.
increase the expenditures and transfers from the state to the private sector and consequently to worsen the state of the public accounts.

The stabilization program and the structural reforms of 1985

Given the hyperinflation crisis, beginning in August 1985 an ambitious program of stabilization and structural reforms was carried out. The stabilization policies were based on macroeconomic fiscal, monetary, and exchange rate policies and the relief of the external debt. The common goal of these measures was to promote economic stability and establish the basis for economic growth. The structural reforms were more related to microeconomic policies that aimed to restructure the system of incentives of the economy and to improve the regulatory framework for productive activities. With regard to the incentives, the Bolivian economy opened up to external markets; therefore the market became the main mechanism for economic resource allocation (Antelo, 2000).

3.2.2 The New Economic Policy and financial liberalization

Financial reforms under the new economic policy since August 1985

The New Economic Policy applied beginning in August 1985 had two components: one of stabilization and another of structural adjustment. These two components related to different goals. The short-term one related to the restitution of the macroeconomic disequilibrium, and the long-term one aimed at the transformation of the economy. Both components of the program implied a deep transformation of the financial system, leading to a stage of financial liberalization.

The financial reforms included in the New Economic Policy aimed to improve the efficiency of financial intermediation and the use of resources (including the allocation of investments). The goal was to reduce the distortions in credit allocation, leaving this allocation to the market. To reach this goal, the normative, regulatory, and supervisory framework reforms played important roles in guaranteeing the stability and solvency of the financial system.

Although the stabilization package was not exclusively designed for the financial system, it succeeded in its goal of stabilizing the economy, establishing a necessary condition for the achievement of any economic activity. In addition, some of the stabilization package policies were related directly or indirectly with the financial system. These policies aimed to deregulate and liberalize the financial system, eliminating financial repression.

One of the first policies was the liberalization of interest rates. The purpose was to reduce the high levels of (active) interest rates and in this way to stimulate saving and private investment in the country. In the same way, in order to promote financial intermediation, the bank reserve rates (legal reserve ratio) were reduced and made uniform. In addition, the strategic role of channeling and allocating financial resources was left to the private financial sector, leaving the government out of credit allocation decisions. This in practice meant restricting the state’s banking activity until almost its liquidation (Antelo, 2000).

Another important measure was the reintroduction of foreign currency transactions in the banking system. Additionally, the tasks relating to operations of external trade were returned to the banking system. These operations were until then performed almost exclusively by the Central Bank.

Consolidating financial liberalization through the regulatory and supervisory framework

Despite the application of the above-mentioned policies, it is important to consider that the deregulation of the financial system took place without the presence of a proper regulatory and supervisory framework. It was not until July 1987 that reforms at this level were executed. Therefore, financial liberalization became more solid.

One of the first measures in terms of the normative and regulatory framework was to return independence to the supervisory authority (July 1987). Until then, this supervision had fallen to the
Central Bank. Together with this measure, patrimonial requirements and policies on the fortification and capitalization of banks were established (For example, the concept of universal bank was enabled). Additionally, the creation of new mechanisms of supervision and the application of sanctions for financial institutions that act outside of the normative framework were introduced.

Later, from 1993-1997 other important reforms were implemented. Some of these reforms were reflected in the enacting of a new Law of Banks and the Law of the Central Bank. Both laws implied important changes regarding the activities of deposit institutions. Additionally, by means of these regulatory instruments the role of the supervisory authority was re-defined and strengthened. In this period, the creation of new financial institutions was also enabled (mainly microfinance institutions). These new financial deposit institutions that became part of the financial system (i.e. private financial funds)\(^2\) later played an important role in terms of inclusive financial services.

In fact, the emergence of non-bank deposit institutions was an important characteristic of the Bolivian financial system after the application of the New Economic Policy. These new institutions under the figure of savings and loan mutuals, credit unions, and private financial funds (PFFs) represent only around 20% of the total loan portfolio. Nevertheless, the positive evolution and participation of these non-bank institutions in terms of the number of lenders served reflects their importance in terms of allowing access to finance for those agents who were excluded from the bank system. As we can see in Table 3, during the period 1999-2010, the non-bank institutions represented around 50% of the total number of lenders.

### Table 3. Number of lenders by financial institution, 1999-2010 (in %)

<table>
<thead>
<tr>
<th>Years</th>
<th>Banks</th>
<th>PFFs</th>
<th>Credit Unions</th>
<th>S&amp;L Mutuals</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>51.28</td>
<td>26.65</td>
<td>13.89</td>
<td>8.18</td>
<td>100.00</td>
</tr>
<tr>
<td>2000</td>
<td>46.67</td>
<td>27.02</td>
<td>17.15</td>
<td>9.16</td>
<td>100.00</td>
</tr>
<tr>
<td>2001</td>
<td>50.19</td>
<td>23.69</td>
<td>19.17</td>
<td>6.95</td>
<td>100.00</td>
</tr>
<tr>
<td>2002</td>
<td>51.24</td>
<td>29.01</td>
<td>13.52</td>
<td>6.23</td>
<td>100.00</td>
</tr>
<tr>
<td>2003</td>
<td>49.97</td>
<td>30.07</td>
<td>14.08</td>
<td>5.88</td>
<td>100.00</td>
</tr>
<tr>
<td>2004</td>
<td>43.17</td>
<td>39.43</td>
<td>12.41</td>
<td>4.99</td>
<td>100.00</td>
</tr>
<tr>
<td>2005</td>
<td>48.68</td>
<td>31.94</td>
<td>14.45</td>
<td>4.94</td>
<td>100.00</td>
</tr>
<tr>
<td>2006</td>
<td>49.49</td>
<td>32.30</td>
<td>13.82</td>
<td>4.38</td>
<td>100.00</td>
</tr>
<tr>
<td>2007</td>
<td>48.75</td>
<td>33.80</td>
<td>13.62</td>
<td>3.83</td>
<td>100.00</td>
</tr>
<tr>
<td>2008</td>
<td>49.76</td>
<td>36.41</td>
<td>11.38</td>
<td>2.45</td>
<td>100.00</td>
</tr>
<tr>
<td>2009</td>
<td>49.05</td>
<td>37.68</td>
<td>10.99</td>
<td>2.29</td>
<td>100.00</td>
</tr>
<tr>
<td>2010</td>
<td>48.78</td>
<td>38.00</td>
<td>10.94</td>
<td>2.28</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Source: Author’s own preparation on basis of ASFI

Since 1998, other regulatory and normative financial reforms have been mainly destined to strengthen the financial system and to guarantee its stability. In this sense, some complemented and others modified the measures already applied in the previous periods. Additionally, during the period 2000-2001 some specific measures were formulated and applied in order to make the economy more dynamic, given the economic crisis experienced since 1999. This crisis had a significant effect on the financial system in terms of non-performing portfolios and the rationalization of credit. Therefore, some governmental policies allowed the productive, service, commerce, and consumption sectors to reprogram their portfolio. With this purpose, funds were injected into the financial system through the figure of a second floor bank.

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\(^2\) Supreme Decree 24000 of May 12, 1995 authorized the organization and operation of Private Financial Funds (PFFs). The primary target of such financial intermediaries was the financing of micro and small-sized enterprises in the productive and commercial sectors, traditionally marginalized from bank financing.
As we can see in Figure 5, after the economic slowdown that lasted until 2003, the financial system recovered its dynamics. Private financial funds kept growing in terms of loan and portfolio even during the crisis period. In addition, they kept solidly demonstrating that “poor lenders” were good customers even when the time came to pay back their loans. Since 2004 the trend has remained positive for the entire system despite the world crisis. However, it is evident that the difference between deposits and loans requires a more active role by financial intermediaries in the channeling of savings to investment. In the last 5 years, the only institutions that are allocating almost all of their deposits are the microfinance institutions (MFIs). Giving the importance of microfinance in Bolivia in economic and social terms, we will discuss this sector in the next sub-section.

Figure 5

![Bolivian Financial System: Evolution of Loans and Deposits (1997-2010)](source: Author’s own preparation on basis of ASFI)

### 3.3 The microfinance miracle

**The beginnings of microfinance in Bolivia**

The case of microfinance in Bolivia is unique in the world, both in terms of its origin and its evolution over more than two decades. The microfinance industry in Bolivia emerged in the late 1980s in economic and social circumstances that are regarded by some authors (i.e. Rhyne, 2001; Mosley, 2001) as a “fertile seeding-ground” for microfinance operations. Mosley (2001) refers to this fertile ground as characterized by four circumstances: a) the virtual collapse of the formal financial sector, b) deregulated interest rates (financial liberalization), c) growth in the economy, and d) high urban population density, making it possible to expand operations rapidly and at low cost.

These circumstances, which appeared in 1985, derived mainly from the application of a new economic policy, and they favorably transformed the environment for the financial sector in general. In the case of microfinance, both the successes and the difficulties of the adjustments arising from the application of the new economic policy contributed to the development of the microfinance sector.

Before 1985, the banking system in Bolivia was characterized by extreme inefficiency and an inability to reach small savers and lenders.

“Both the three main state-financed banks and the twelve main commercial banks, before 1985, were hampered by the natural instinct of all Bolivians who could engineer it to place their money in overseas accounts at world market interest rates rather than locally at controlled, and in real terms negative, interest rates. The consequent shortage of savings in local currency bred financial conservatism among Bolivian banks and, in particular, a reluctance to embark on high-risk projects such as lending to small farmers or micro-entrepreneurs” (Mosley, 2001, p. 104).
To make the situation worse, the hyperinflation experienced in the Bolivian economy in 1984-85 severely hampered an already weak financial system. Therefore, when microfinance institutions set up operations in the later 1980s, they did so in an environment of widespread mistrust in the formal banking system.

As stated earlier, with the application of the New Economic Policy in August 1985, the Bolivian government laid the foundation of a modern financial sector. At the same time, this economic reform led to favorable conditions for the establishment and expansion of MFIs. First, the stabilization policies succeeded in controlling inflation and liberalizing all prices (including interest rates). A low level of inflation made it possible for lenders to maintain the value of their assets over time. For their part, liberalized interest rates meant that lenders could compensate for the higher operating costs of small loans by means of higher interest rates. Second, despite the fact that the growth was slow in coming, it has been positive since 1987. Third, the decision of the government to close its inefficient development banks together with the negative effects of hyperinflation on the financial system left a space that was filled by MFIs. Finally, the economic reform introduced in 1985 increased demand for microfinance services, since the number of unemployed workers grew dramatically. Since 1985 and over the course of the next 10 years, the government closed, sold, or shrank a variety of state-owned enterprises, mainly mine and oil companies. The main consequence was a flood of migrants into the main cities. A few were able to find employment in the formal manufacturing and services sector, or in the relief projects established by the government, but the majority found their way into the informal sector. These people became the main clients of MFIs (Mosley, 2001; Rhyne, 2001).

The first initiatives in the microfinance sector were taken by entities without profit goals (NGOs). The idea was that those institutions would offer credit to those low-income agents. So from the beginning the NGOs had an important role in the finance of low-income households and micro-entrepreneurs that until then had had access to finance only by means of informal sources such as illegal lenders, family, friends, and rotating credit.

The formalization of MFIs

In 1992, with the creation of Banco Sol under the auspices of an existing NGO, the process of formalization of MFIs started. These were established on the basis of the existing NGOs. This process was benefited by the government in 1995 with the issuing of Decree 24000, which lists the norms relating to the creation and functioning of Private Financial Funds (PFFs) as deposit financial institutions specialized in financial services for micro and small agents. In July 2005 Caja Los Andes started operations as the first PFF. After that, other PFFs were created under the auspices of existing NGOs. That was the case of FIE (since 2010 Bank FIE), PRODEM, and ECOFUTURO. Additionally, other PFFs were created by exclusive private initiative (FASSIL, Fondo de la Comunidad, and Fortaleza).

With the formalization of the MFIs, the alternatives for obtaining funds increased in a significant way – and with them, the possibility to become self-sustainable. As formal institutions the MFIs had more chances to get internal and external funds. Additionally, they could benefit in terms of risk evaluation and operation costs through access to the information of the Risk Center, which is part of the supervisory financial intendancy in Bolivia.

The crisis at the end of the 1990s

The entrance into the market by formal MFIs or the exclusive microfinance departments of some already existing financial entities, offering consumption credit, caused an excess credit supply between 1996 and 1999. This excess of supply often led to over-indebtedness by the borrowers, due additionally

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43 For organizations that work actively with the informal sector, including MFIs, the agents involved in the informal sector are regarded as micro-entrepreneurs. This perspective stresses the positive role of this sector in the provision of employment and income in the survival and the improvement of the lives of many people by their own efforts and also as a basis of enterprise growth, as some micro-enterprises could grow to become small and even medium-sized businesses (Rhyne, 2001).
to the lack of proper credit technologies and personnel to evaluate the payment capacity and debt of the micro-sized enterprises. Furthermore, these institutions applied very aggressive policies in order to win a greater market segment, and then they established incentive mechanisms for their personnel in order to promote allocation of more resources. The problem was that many times this financial allocation did not give proper attention to the quality of the loan portfolio. Its consequence was an increase in the non-performing loan portfolio.

Additionally, this credit supply explosion caused a temptation for many people to get loans in different institutions at the same time for amounts that were higher than their payment capacity. When the agents perceived this excess of supply and relatively easy access to credit, they lost interest in paying on time. They followed the premise that if they got a bad name in one institution, another would be able to lend to them.

During the period 1999-2003 the Bolivian economy suffered a crisis that was also reflected in the financial system. This period saw a decrease of micro and small-sized enterprise sales due to the reduction of demand, the devaluation policies of other countries of the region, restrictions on external trade, the eradication of coca, and the application of the new Custom Law.

The period 1999-2002 was the most difficult stage of the crisis for the economy and the financial system. At the same time it was the most difficult period for the microfinance institutions. The situation of over-indebtedness in the case of many micro and small entrepreneurs would not have had grave consequences if their income levels had not been diminished by the economic crisis. However, due to the reduction of the firms’ revenues, their payment capacity was affected significantly, and consequently the non-performing loan portfolio of MFIs increased (See Table 4).

### Table 4. Bolivia: Microfinance gross loan portfolio, default portfolio, and net earnings by type and institutions 1990-2004 (in thousands of Bs.)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Regulated Non-regulated Total</td>
<td>Regulated Non-regulated Total</td>
<td>Regulated Non-regulated Total</td>
<td>Regulated Non-regulated Total Total</td>
</tr>
<tr>
<td>1990</td>
<td>10350 0 10350</td>
<td>2 0 2</td>
<td>0 0 0</td>
<td>313 -35 278</td>
</tr>
<tr>
<td>1991</td>
<td>22353 1052 23405</td>
<td>166 111 277</td>
<td>1 11 1</td>
<td>689 104 793</td>
</tr>
<tr>
<td>1992</td>
<td>53864 6050 59914</td>
<td>1542 251 1793</td>
<td>3 4 3</td>
<td>590 259 850</td>
</tr>
<tr>
<td>1993</td>
<td>140935 20679 161614</td>
<td>3919 1033 4952</td>
<td>3 5 3</td>
<td>2312 1565 3877</td>
</tr>
<tr>
<td>1994</td>
<td>187601 27086 214687</td>
<td>8936 2006 10942</td>
<td>5 7 5</td>
<td>10123 4448 14571</td>
</tr>
<tr>
<td>1995</td>
<td>239056 71547 310063</td>
<td>7314 5205 12520</td>
<td>3 7 4</td>
<td>6940 14396 21337</td>
</tr>
<tr>
<td>1996</td>
<td>413662 127410 541072</td>
<td>11965 5202 17167</td>
<td>3 4 3</td>
<td>18524 20515 39039</td>
</tr>
<tr>
<td>1997</td>
<td>609063 175667 866630</td>
<td>20312 10603 30915</td>
<td>3 6 4</td>
<td>28796 19484 48280</td>
</tr>
<tr>
<td>1998</td>
<td>917529 228160 1145688</td>
<td>52369 14231 66601</td>
<td>6 6 6</td>
<td>41657 39745 81401</td>
</tr>
<tr>
<td>1999</td>
<td>1076817 376343 1451159</td>
<td>66040 25099 91139</td>
<td>6 7 6</td>
<td>12727 47258 59985</td>
</tr>
<tr>
<td>2000</td>
<td>1258221 413062 1671283</td>
<td>92815 40695 133509</td>
<td>7 10 8</td>
<td>13310 49635 62946</td>
</tr>
<tr>
<td>2001</td>
<td>1470548 454291 1924839</td>
<td>142108 53129 195237</td>
<td>10 12 10</td>
<td>3057 38780 41837</td>
</tr>
<tr>
<td>2002</td>
<td>1775977 246214 2022191</td>
<td>131104 77318 208422</td>
<td>7 31 10</td>
<td>12655 32069 44724</td>
</tr>
<tr>
<td>2004</td>
<td>2996216 789461 3785677</td>
<td>79568 63563 143131</td>
<td>3 8 4</td>
<td>2996216 58908 3055124</td>
</tr>
</tbody>
</table>

Source: Author’s own preparation on basis of FINRURAL data

Additionally, in this period associations of small borrowers were created in some departments of the country as a consequence of the economic crisis that harmed many micro and small entrepreneurs. The associations were attempting to get the remission of their debts by means of pressure measures against the financial entities and the government. Such a remission would have meant the end of micro-credit in Bolivia.

**The fast recovery of MFIs**

Since 2003, despite the persistence of the economic crisis, the microfinance entities have recovered in terms of deposits and loan portfolios and proven to be very solid. This recovery has been even more...
rapid than in the case of the banks. In this sense, as most of the loan portfolio is in micro-entrepreneurs’ hands, they have learned to adapt to the current conditions of the market. Additionally, it seems that micro and small lenders have understood how important is to comply on time with financial commitments. In general, the non-performing loan portfolio of the MFIs was the lowest of all deposit institutions during the period 2003-2004.

Furthermore, the MFIs have made many changes with respect to the traditional way of managing their businesses. These changes have made it possible to manage the crisis and to keep competing in the financial intermediation sector. Among the changes we can point out are: the extension of the market segments also serving the rural population, employees, and small and medium enterprises; greater diversification of their credit products and lines; greater supply of non-credit financial products such as bank giros and national/international transfers, insurance sales, among others; adjustments of credit technologies; a process of expansion to urban and rural areas filling the space left by the traditional institutions; changes in the human resources profile of their employees and administrative personnel; changes in their customer services and greater emphasis on marketing and publicity. All this has had a positive impact in terms of profitability for formal (banks and financial private funds) and semiformal institutions (NGOs).

From 2004 until the present, despite the international crisis, the microfinance industry has continued growing in terms of deposits, loan portfolio, geographical coverage, and number of lenders, among other indicators. During the period 2006-2009, the national supervisory authority launched some modifications in the normative with the purpose of stimulating higher geographical coverage of financial institutions, including the MFIs (by means of the opening of new branches). Additionally, the modifications of the regulative framework have aimed to include all financial institutions in the regulated supervision of the national financial supervisory authority.

The composition of the Bolivian microfinance sector

Currently, the microfinance sector in Bolivia is composed of a variety of institutions, which make this market complex (comparable only to the case of Indonesia). Among the institutions that supply microfinance services in Bolivia are NGOs, credit unions, commercial banks44, and private financial funds. All MFIs are private, and there is significant participation by formal financial institutions, which in 2002 represented around 79% of the total microfinance loan portfolio.

As we have seen, the presence of formal financial institutions has been an important characteristic of the microfinance sector since the 1990s. During this time several MFIs that were NGOs became banks or financial private funds (i.e. Banco Sol, Banco Los Andes, PRODEM financial private fund)45. In fact, the transformation from NGOs to formal financial institutions is an important issue in the evolution of the microfinance industry in Bolivia.

The importance of NGOs

However, it is also important to mention that there is still significant participation by NGOs in the sector, mainly in the rural areas. In fact, even though non-regulated MFIs represented only around 21% of the microfinance portfolio loan, they represented around 49% of the microfinance lenders and 56% of the lenders in rural areas in 2002 (see Table 5). Additionally, in 2008 around 50% of NGO branches were located in rural areas (PROFIN, 2009).

Most NGOs aspire to become financial private funds and then banks when they mature, mainly because they have the expectation of competing more efficiently as formal financial institutions. However, this

---

44 Those that are exclusively microfinance banks, as is the case of Banco Sol, Banco Los Andes, and Banco FIE, as well as some mainstream banks that supply loans to micro-enterprises and saving services for some micro-level clients.

45 The conversion is not directly from the status of NGOs to banks. Usually, NGOs first become financial private funds, since the minimum capital requirements are lower than those required for commercial banks. So some microfinance formal institutions in Bolivia such as Banco Sol and Banco Los Andes started as NGOs, then later became financial private funds and finally converted into commercial banks.
is not the aspiration of all NGOs involved in the Bolivian microfinance sector, since some of these financial development institutions (i.e. ProMujer) are village banking programs whose goal is to reach the poorest people. This aim is reflected in their low average loan balances, which are about 15 USD. The main reason of these institutions for not becoming formal financial institutions is that as financial private funds or banks, the supervisory authority would indirectly force them to abandon their commitment to the poorest groups (Rhyne, 2001).

Table 5. Number of microfinance lenders by type of MFI & area 1990-2002 (in %)

<table>
<thead>
<tr>
<th>Years</th>
<th>Regulated institutions</th>
<th>Urban</th>
<th>Rural</th>
<th>Non-regulated institutions</th>
<th>Urban</th>
<th>Rural</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>100.00</td>
<td>100.00</td>
<td></td>
<td>1.22</td>
<td>100.00</td>
<td>0.00</td>
</tr>
<tr>
<td>1991</td>
<td>98.78</td>
<td>0.00</td>
<td>100.00</td>
<td>8.62</td>
<td>94.36</td>
<td>5.64</td>
</tr>
<tr>
<td>1992</td>
<td>91.38</td>
<td>76.54</td>
<td>23.46</td>
<td>14.38</td>
<td>42.11</td>
<td>57.89</td>
</tr>
<tr>
<td>1993</td>
<td>85.62</td>
<td>78.58</td>
<td>21.42</td>
<td>15.34</td>
<td>57.78</td>
<td>42.22</td>
</tr>
<tr>
<td>1994</td>
<td>84.66</td>
<td>87.24</td>
<td>12.76</td>
<td>19.63</td>
<td>63.83</td>
<td>36.17</td>
</tr>
<tr>
<td>1995</td>
<td>80.37</td>
<td>86.72</td>
<td>13.28</td>
<td>21.49</td>
<td>58.46</td>
<td>41.54</td>
</tr>
<tr>
<td>1996</td>
<td>78.51</td>
<td>82.97</td>
<td>17.03</td>
<td>22.17</td>
<td>60.12</td>
<td>39.88</td>
</tr>
<tr>
<td>1997</td>
<td>77.83</td>
<td>84.81</td>
<td>15.19</td>
<td>37.53</td>
<td>28.09</td>
<td>71.91</td>
</tr>
<tr>
<td>1998</td>
<td>62.47</td>
<td>80.16</td>
<td>19.84</td>
<td>42.47</td>
<td>27.76</td>
<td>72.24</td>
</tr>
<tr>
<td>1999</td>
<td>57.53</td>
<td>72.91</td>
<td>27.09</td>
<td>43.34</td>
<td>28.81</td>
<td>71.19</td>
</tr>
<tr>
<td>2000</td>
<td>56.66</td>
<td>79.89</td>
<td>20.11</td>
<td>47.19</td>
<td>40.25</td>
<td>59.75</td>
</tr>
<tr>
<td>2001</td>
<td>52.81</td>
<td>82.26</td>
<td>17.74</td>
<td>48.89</td>
<td>43.10</td>
<td>56.90</td>
</tr>
<tr>
<td>2002</td>
<td>51.11</td>
<td>83.57</td>
<td>16.43</td>
<td>51.11</td>
<td>43.10</td>
<td>56.90</td>
</tr>
</tbody>
</table>

Source: Author’s own preparation on basis of FINRURAL data

In 2009 the national authority required NGOs (also known as financial development institutions, or IFDs) and other semiformal institutions such as closed credit unions to get a kind of license extended by this supervisory institution. Such a license permitted these MFIs to keep functioning and to be regulated by the supervisory financial authority. In fact, since 2009 several closed credit unions and NGOs have been incorporated into the regulatory and supervisory framework. As of the end of 2009, there were around 79 institutions, 64 closed credit unions, and 15 NGOs (ASFI, 2010b).

As mentioned, Cull et al. (2009) refers to some trade-offs derived from this transformation. Specifically, one important trade-off relates to regulation and supervision. The study by Cull et al. shows that rigorous and regular supervision is critical for deposit-taking institutions, but it is also costly since this regulatory supervision pushed institutions to serve better customers (i.e. less poor agents) with larger loans in order to maintain profitability. Additionally, supervision appears related to a higher concentration of staff in the head office, reducing the number of staff that work in the branches. Can NGOs and other socially minded institutions survive regulation without redefining their commitment to the poorest? This question has yet to be answered in the Bolivian case.

Limited outreach in rural areas

Finally, in order to have a complete picture of the microfinance industry in Bolivia, it is also important to recognize that MFIs have had a reduced effect in reaching rural “poor” people. Despite the significant presence of financial NGOs in rural locations and the continuous increase of the loan portfolio in rural areas, around 75% of the microfinance loan portfolio corresponds to urban areas (See Figure 6). To provide financial services and therefore to ease access to finance in the rural area is still a challenge for microfinance. This challenge becomes transcendental when we consider that about 64% of the rural population in Bolivia lives below the poverty line.
4. What Data Say about Access to Finance in Bolivia

*Following international cross-country datasets*

As said in Section 2, there are important limitations regarding international cross-country datasets about access to finance. These attempts at measuring this dimension of finance are recent and refer to the works of Beck et al. (2007), IMF (2010), the CGPA and the World Bank (2010 and 2011) and the World Bank (2012). Beck et al. (2007b) present a consistent dataset of cross-country indicators of banking sector outreach, collected through a survey of bank regulatory agencies conducted in 2003-2004 and complemented with publicly available data for a sample of 99 countries including Bolivia. As indicators of financial development they present data on the number of bank branches and ATMs relative to population and area, to capture the geographic and demographic penetration of the banking system. Higher branch intensity in demographic and geographic terms would indicate higher possibilities of access and the opportunity to use financial services by households and enterprises. The posterior datasets include data about the bank and non-bank branch network, availability of automated teller machines, deposits, loans, debt securities issued, and insurance. Certainly an important improvement of these last new datasets is the consideration of financial access related to non-bank institutions. However, data availability on these non-bank institutions is limited or even nonexistent for most countries. We are referring particularly to the last versions of the Financial Access Survey dataset prepared by IMF and the Global Financial Development Database prepared by the World Bank.

Based on the cross-country data prepared by Beck et al. (2007), Bolivia appears to be occupying one of the last positions in Latin America with respect to access to finance. In fact, as we can observe in Figure 7, considering as indicators of access to finance the number of bank branches per 10,000 people and per 1,000 square km on the one hand and on the other hand the number of ATMs per 10,000 people and per 1,000 square km, Bolivia appears to be one of the most limited in terms of access to finance in the region, together with countries such as Honduras, Guyana, Nicaragua, and Peru. However, there is the possibility that this limitation in terms of supply of financial services (at least in Bolivia) is being overestimated, since the available indicators in this cross dataset are limited to measures referring only to bank institutions, while in the Bolivian financial system the role of non-bank institutions seems very important in terms of access to finance.
Building and following indicators that include non-bank and non-regulated financial institutions

Given the limitations of the available cross-data sets, in Table 6 we prepared some financial access indicators referring to the case of Bolivia. Non-bank financial institutions were considered in the making of these proxies. In addition to considering the role played by formal and semiformal non-bank institutions in term of access to finance, we have also attempted to evaluate the evolution of financial access over time. In this last respect, the availability of data has allowed us to cover the period 1986-2003.

Table 3.8 shows the evolution of the number of bank and non-bank financial branches in Bolivia. The significant number of non-bank financial branches across the country suggests that these financial institutions are important in terms of inclusive financial services. As we mentioned in Section 3.3, these non-bank institutions have their origins at the end of the 1980s, and since then their supply of financial services – measured by the number of branches – has grown significantly. As we can see in Table 3.8, in 1990 there were five non-bank financial institution branches, while in 2003 there were 461, a number even higher than bank branches. In relative terms, non-bank financial branches in 1990 represented 3.5% of the total of bank and non-bank branches, while in 2003 this percentage was around 65%. Among these non-bank institutions the share of private financial funds (PFFs) and NGOs was significant (See also Table 7).

<table>
<thead>
<tr>
<th>Period</th>
<th>Number of bank branches</th>
<th>Number of non-bank branches</th>
<th>Number of bank and non-bank branches by 100,000 people</th>
<th>Number of bank branches by 1,000 square km</th>
<th>Number of non-bank branches by 1,000 square km</th>
<th>Number of bank branches by 100,000 people</th>
<th>Number of non-bank branches by 100,000 people</th>
<th>Number of bank and non-bank branches by 1,000 square km</th>
</tr>
</thead>
<tbody>
<tr>
<td>1986</td>
<td>108</td>
<td>0</td>
<td>1.77</td>
<td>0.00</td>
<td>0.10</td>
<td>1.77</td>
<td>0.10</td>
<td>1.77</td>
</tr>
<tr>
<td>1989</td>
<td>142</td>
<td>0</td>
<td>2.28</td>
<td>0.00</td>
<td>0.13</td>
<td>2.28</td>
<td>0.13</td>
<td>2.28</td>
</tr>
<tr>
<td>1990</td>
<td>138</td>
<td>5</td>
<td>2.17</td>
<td>0.08</td>
<td>0.13</td>
<td>2.24</td>
<td>0.13</td>
<td>2.24</td>
</tr>
<tr>
<td>1991</td>
<td>156</td>
<td>26</td>
<td>2.39</td>
<td>0.40</td>
<td>0.14</td>
<td>2.79</td>
<td>0.17</td>
<td>2.79</td>
</tr>
<tr>
<td>1992</td>
<td>183</td>
<td>59</td>
<td>2.74</td>
<td>0.88</td>
<td>0.17</td>
<td>3.63</td>
<td>0.22</td>
<td>3.63</td>
</tr>
<tr>
<td>1993</td>
<td>249</td>
<td>93</td>
<td>3.65</td>
<td>1.36</td>
<td>0.23</td>
<td>5.01</td>
<td>0.31</td>
<td>5.01</td>
</tr>
<tr>
<td>1994</td>
<td>244</td>
<td>117</td>
<td>3.49</td>
<td>1.67</td>
<td>0.22</td>
<td>5.17</td>
<td>0.33</td>
<td>5.17</td>
</tr>
<tr>
<td>1995</td>
<td>278</td>
<td>124</td>
<td>3.89</td>
<td>1.73</td>
<td>0.25</td>
<td>5.62</td>
<td>0.37</td>
<td>5.62</td>
</tr>
<tr>
<td>1996</td>
<td>285</td>
<td>191</td>
<td>3.90</td>
<td>2.61</td>
<td>0.26</td>
<td>6.51</td>
<td>0.43</td>
<td>6.51</td>
</tr>
<tr>
<td>1997</td>
<td>276</td>
<td>266</td>
<td>3.69</td>
<td>3.56</td>
<td>0.25</td>
<td>7.24</td>
<td>0.49</td>
<td>7.24</td>
</tr>
<tr>
<td>1998</td>
<td>323</td>
<td>308</td>
<td>4.22</td>
<td>4.03</td>
<td>0.29</td>
<td>8.25</td>
<td>0.57</td>
<td>8.25</td>
</tr>
<tr>
<td>1999</td>
<td>334</td>
<td>369</td>
<td>4.27</td>
<td>4.72</td>
<td>0.30</td>
<td>9.00</td>
<td>0.64</td>
<td>9.00</td>
</tr>
<tr>
<td>2000</td>
<td>355</td>
<td>357</td>
<td>4.45</td>
<td>4.47</td>
<td>0.32</td>
<td>8.92</td>
<td>0.65</td>
<td>8.92</td>
</tr>
<tr>
<td>2001</td>
<td>257</td>
<td>395</td>
<td>3.15</td>
<td>4.85</td>
<td>0.23</td>
<td>8.00</td>
<td>0.59</td>
<td>8.00</td>
</tr>
<tr>
<td>2002</td>
<td>230</td>
<td>412</td>
<td>2.77</td>
<td>4.95</td>
<td>0.21</td>
<td>7.72</td>
<td>0.58</td>
<td>7.72</td>
</tr>
<tr>
<td>2003</td>
<td>241</td>
<td>461</td>
<td>2.84</td>
<td>5.43</td>
<td>0.22</td>
<td>8.27</td>
<td>0.64</td>
<td>8.27</td>
</tr>
</tbody>
</table>

Source: Author’s own preparation on basis of FINRURAL (2003) and WDI (2010)

Table 6 also includes the number of bank and non-bank branches per 100,000 people and per 1,000 square km as indicators of access to finance in Bolivia. Additionally, both indicators are desegregated for bank and non-bank financial institutions. These indicators show that access to finance has had a positive evolution in general terms. However, the disaggregated indicators show that the supply of financial services offered by banks has declined since 2000, while in the case of non-bank institutions the number of branches per 1,000 square km and per 1,000 people has grown continuously.

Table 7. Bolivia: Distribution of branches by type of financial institution (in %)

<table>
<thead>
<tr>
<th>Period</th>
<th>Banks</th>
<th>S&amp;L mutuals</th>
<th>Credit unions</th>
<th>Private financial funds</th>
<th>NGOs</th>
<th>Total non-bank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1986</td>
<td>100.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>100.00</td>
</tr>
<tr>
<td>1989</td>
<td>100.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>100.00</td>
</tr>
<tr>
<td>1990</td>
<td>96.50</td>
<td>0.00</td>
<td>0.00</td>
<td>3.50</td>
<td>0.00</td>
<td>100.00</td>
</tr>
<tr>
<td>1991</td>
<td>85.71</td>
<td>9.34</td>
<td>11.99</td>
<td>3.50</td>
<td>0.00</td>
<td>100.00</td>
</tr>
<tr>
<td>1992</td>
<td>75.62</td>
<td>8.68</td>
<td>9.50</td>
<td>6.20</td>
<td>0.00</td>
<td>100.00</td>
</tr>
<tr>
<td>1993</td>
<td>72.81</td>
<td>7.89</td>
<td>11.99</td>
<td>7.31</td>
<td>0.00</td>
<td>100.00</td>
</tr>
<tr>
<td>1994</td>
<td>67.59</td>
<td>6.65</td>
<td>12.47</td>
<td>13.30</td>
<td>0.00</td>
<td>100.00</td>
</tr>
<tr>
<td>1995</td>
<td>69.15</td>
<td>5.97</td>
<td>9.45</td>
<td>15.42</td>
<td>0.00</td>
<td>100.00</td>
</tr>
<tr>
<td>1996</td>
<td>59.87</td>
<td>5.67</td>
<td>9.45</td>
<td>22.06</td>
<td>0.00</td>
<td>100.00</td>
</tr>
<tr>
<td>1997</td>
<td>50.92</td>
<td>6.09</td>
<td>14.94</td>
<td>24.17</td>
<td>0.00</td>
<td>100.00</td>
</tr>
<tr>
<td>1998</td>
<td>51.19</td>
<td>5.71</td>
<td>13.79</td>
<td>22.82</td>
<td>0.00</td>
<td>100.00</td>
</tr>
<tr>
<td>1999</td>
<td>47.51</td>
<td>5.12</td>
<td>14.65</td>
<td>26.32</td>
<td>0.00</td>
<td>100.00</td>
</tr>
<tr>
<td>2000</td>
<td>49.86</td>
<td>5.06</td>
<td>12.64</td>
<td>18.26</td>
<td>0.00</td>
<td>100.00</td>
</tr>
<tr>
<td>2001</td>
<td>39.42</td>
<td>6.44</td>
<td>13.96</td>
<td>23.31</td>
<td>0.00</td>
<td>100.00</td>
</tr>
<tr>
<td>2002</td>
<td>35.83</td>
<td>7.01</td>
<td>18.69</td>
<td>29.13</td>
<td>0.00</td>
<td>100.00</td>
</tr>
<tr>
<td>2003</td>
<td>34.33</td>
<td>6.13</td>
<td>12.25</td>
<td>27.92</td>
<td>0.00</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Source: Author’s own preparation on basis of FINRURAL data (2004)

The data reflected in Tables 6 and 7 shows that access to finance has improved in recent decades and that both banks and non-bank institutions have contributed to this task. However, access to finance is still limited in Bolivia compared to other countries in the region. One important manifestation of this
limitation is illustrated in Figure 8. Around 70% of the financial institution branches are concentrated in urban areas. The only financial institutions that have more than 50% of their branches in rural areas are the financial NGOs and some credit unions (See Figure 9). It seems that NGOs are playing a central role in terms of extending the supply of financial services to rural areas. However, we are aware that this role has its limitations since NGOs are not self-sustainable and their financial services are focused on credit allocation.\(^{46}\)

**Figure 8. Bolivia: Number of branches of bank and non-bank institutions by area (1986-2003)**

![Figure 8. Bolivia: Number of branches of bank and non-bank institutions by area (1986-2003)](image)

Source: Author’s own preparation on basis of FINRURAL data (2004)

The limited access to finance in Bolivia is also revealed in more detailed data. Specifically, statistics on the number of financial institution branches (formal and semiformal) per municipality show that in 2008 around 55% of the 327 municipalities in Bolivia did not have access to financial services offered by formal institutions or by semiformal institutions.\(^{47}\) Therefore, in those municipalities it is highly probable that pure informal credit sources (lenders, rotating credit, family, and relatives) would be the only option in terms of the financial services supply.

**Figure 9. Bolivia: Number of NGO branches by area (1986-2003)**

![Figure 9. Bolivia: Number of NGO branches by area (1986-2003)](image)

Source: Author’s own preparation on basis of FINRURAL data (2004)

### 4.1 Recent regulatory measures related to access to finance

During the period 2006-2009 the national supervisory authority issued some rules whose purpose was to extend the supply of financial services across the country.

\(^{46}\) Some NGOs also offer some training programs and technical support in addition to supplying credit.

\(^{47}\) In 1998 the situation was more dramatic – only 29% of the municipalities had financial services, while this percentage grew to 36% in 2003 (FINRURAL 2004).
One of the first regulatory measures enacted in 2006 was “the mandate of intermediation.” By means of this rule, a financial intermediary (the principal) could contract any non-financial natural or juridical person (agent) to carry out some specific financial operation and services within a determined territory (i.e. municipality, city) and time. All the activities executed by the contracted agent were under the exclusive responsibility of the principal. In this sense, it seems that the purpose was to ease the supply of financial services for financial institutions in a determined territory by contracting an agent (i.e. a micro-market, a drugstore) that was already established there, without the need to open a new branch.

Another measure established in 2007 was the transformation and re-launching of a second floor bank already established in 1995 by the Law of the Central Bank. As a second floor bank, the Banco de Desarrollo Productivo (BDP) cannot allocate credits directly but rather by means of deposit institutions. The purpose is to promote the financing of productive and rural initiatives.

Finally, in 2009 the regulations related to the opening, removal, and closing of branches and other customer service points were modified. The procedure was improved and the concept of “moving branches” was introduced, with the purpose of promoting the supply of financial services in rural areas by means of this type of branches. Also in 2009 the regulatory disposition to incorporate NGOs and closed credit unions under normative regulatory supervision was launched, and it has been executed since 2010.

5. Methodology and Data

Methodological strategy

The present research has two main research components: a review of theoretical and empirical literature related to our research problem and our own empirical work regarding the case of Bolivia.

We have started by establishing some theoretical and empirical considerations based on the existing literature. The main purpose of such a review has been to find some preliminary answers to our research question. Additionally, this theoretical and empirical reassessment has been useful in determining the proper concept of financial access and orienting the measurement of this financial dimension. A main conclusion of this literature examination is that while theoretical models focus on the importance of access to finance, most empirical literature has been built on indicators of financial development. This fact is principally explained by the lack of data regarding access to financial services.

Our empirical work is based on two approaches: a contextual analysis of the Bolivian financial system, presented already in the previous section, and a pure cross-sectional econometric study. The results of this econometric analysis are presented in the next section.

The contextual analysis

In light of the particular characteristics of our single country study, we have considered it important to examine the context in which the financial system operates in Bolivia. In this diagnosis various dimensions of the financial intermediation in Bolivia such as financial structure, financial development, and institutional diversification have been considered. Additionally, two issues that seemed closely related with access to finance in Bolivia were also part of this contextual analysis. One is the transition of the Bolivian financial system from repression to a liberalized scenario, and the second issue is microfinance, which is quite particular and relevant in the case of Bolivia.

The cross-sectional analysis based on sub-national data

The other main element of our empirical analysis is based on cross-sectional econometric techniques to assess the impact of financial access on growth and poverty, using data at a sub-national level, specifically at the municipality level. The important differences between Bolivian municipalities

48 Currently, municipal data is of increasing relevance due to the fact that Bolivia has experienced a process of administrative decentralization since the end of the 1990s. This delegation gives more decision-making and planning space to the municipalities. The Bolivian strategy of poverty reduction applied since 2001 has viewed the municipalities as the development
Regarding social, economic, and financial aspects are the reason for this data choice. This fact is relevant if we consider that heterogeneity between individual observations is a key condition for statistical and econometric analysis. In general, sub-national variation among administrative units seems the most readily available strategy to approach a single country study.

International studies such as Dell and Acemoglu (2009) show that within Latin America, cross-municipality differences in incomes are greater than cross-country differences. Disparities in physical capital across municipalities seem unlikely to be the primary factor explaining these differences, due to the relatively free mobility of capital within national boundaries. In any case, the authors stress the importance of local differences in production efficiency and human capital, which are likely determined by local institutions.

**Data sources**

Our database at the municipality level was collected and prepared on the basis of national sources. The indispensable data for the elaboration of financial access proxies comes from FINRURAL and various municipality datasets prepared for the National Institute of Statistics (INE) in Bolivia with available information from the 2001 census. Although a new census was carried out in November 2012, its results at the municipality level had still not been disclosed as of the end of 2013. Data on measures of economic growth, poverty, and other variables explaining growth and poverty come also from INE and the Analysis Unit of Economic Policy (UDAPE). Additionally, in the particular case of some geographical indicators such as elevation, ecological region, precipitation, and temperature that are considered as part of the set of control variables, due to the lack of availability of quantitative or qualitative datasets, data has been extracted and systematized from departmental maps where information about demographic, geographic, socio-economic, and health aspects is referenced geographically at a municipality level.

**Models, variables, and indicators**

The two basic regression models to be estimated by cross-sectional data techniques are summarized in equations (1) and (2). Equation (1) points to the relationship between access to finance and growth, and equation (2) reflects the relationship between access to finance and poverty.

\[
Y_{it} = \beta_0 + \beta_1 FA_{i(t-1)} + \beta_2 CV_{i(t-1)} + \epsilon_{it} \quad (1)
\]

\[
P_{it} = \alpha_0 + \alpha_1 FA_{i(t-1)} + \alpha_2 CV_{i(t-1)} + \epsilon_{it} \quad (2)
\]

In model (1), the dependent variable (\(Y_i\)) is an indicator of economic growth. The explanatory variables are \(FA\) and \(CV\). \(FA\) is an alternative measure of financial access (lagged one period), and CV is a set of variables that in addition to access to finance explain economic growth (control variables). The indicator of financial access is lagged one period to fix the causality reversion problem (since economic prosperity could also influence financial services outreach and other control variables such as human capital or life expectancy), although it does not fully prevent endogeneity. The inclusion of other variables influencing economic growth corrects for other, probably more important, non-financial determinants of economic growth such as geographical conditions across municipalities.

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50 The abbreviation corresponds to its name in Spanish: Instituto Nacional de Estadística (INE).

51 The last census in Bolivia with data available for this study took place in 2001. A new one was executed in November of 2012, but its results at the municipality level had still not been disclosed as of September 2013.

52 The abbreviation corresponds to its name in Spanish: Unidad de Análisis de Política Económica (UDAPE).

53 Specifically, we have used the atlas prepared periodically by the Bolivian Ministry of Health (Ministerio de Salud y Deporte) and the Pan-American Health Organization (Organización Panamericana de la Salud). This publication is available for the nine departments that are part of Bolivia (Pando, Beni, Santa Cruz. Chochabamba, Chuquisaca, Tarija, La Paz, Potosí, and Oruro), and in addition to containing geo-referenced data about health variables, it also considers information about geographical, demographic, and social aspects of every department at the municipality level.
Although our growth and poverty equations have been formulated by lagging both the financial access and the control variables, the availability of data allowed this to be done only partially. In the case of the access to finance indicators there are some particular institutions in Bolivia (i.e. FINRURAL) that have periodically collected information about financial outreach across municipalities since the year 2000. So, given the relative availability of data across time, the lagging of our financial access proxies has not been a problem. However, in the case of the control variables most information about demographic and socio-economic indicators at the municipality level is only available at the census level. In the case of Bolivia, although the last census took place at the end of 2012, data at the municipality level has not been disclosed yet. Most data at the municipal level is available from the previous census of 2001. And a few socio-economic indicators such as the income and the human development index by municipalities have been estimated for the year 2005 by the Bolivian National Institute of Statistics on the basis of household surveys and some demographic projections.

Specifically, having the data about income for the years 2005 and 2001 allowed the elaboration of an indicator of growth in terms of output variation. Therefore, in the equation of growth in terms of output change, both financial access and control variables were lagged one period. In the case of the growth equation expressed in terms of level of output and the poverty equation, data availability allowed only the lagging of our financial access proxies.

The growth equation

For the economic growth variable, two different proxies are used: one expressed in terms of output level and another expressed in terms of variation. Endogenous growth theories consider finance as a factor affecting growth both in terms of output level and output change. For the output level, the available indicator at the municipality level is the GDP per capita of 2001 expressed in PPP terms, and for the output change, the only existing option is the income variation between 2001 and 2005. In the case of the output level as a dependent variable, the econometric estimations aim to determine if access to finance and other non-financial variables are explaining the differences of output between municipalities. Regarding the output change as a dependent variable, the estimations aim to analyze the effect of financial access and other variables on output variations.

Regarding the set of control variables, we collected and prepared data for indicators such as: human capital, population growth, fertility rate, life expectancy at birth, ethnological fractionalization, and other factors that theoretically would have an impact on growth (based on Barro, 1997).

Although the convergence hypothesis is a key issue in growth theories, we did not consider the estimation of convergence in our output change regressions. While it would have been possible to estimate the absolute convergence coefficient at the municipality level given the data availability of the income variation between 2005 and 2001 and the initial income, we do not think that the assumption of the same convergence rate for every municipality is realistic. As modern growth theory suggests, we should include spatial effects (spatial dependence and spatial heterogeneity) in order to capture differences in convergence across space. However, the calculation of these local convergence coefficients is not possible by the Ordinary Least Square (OLS) method. This task demands the use of spatial econometrics methods and specific additional data (i.e. distance between municipalities) at the municipal level, which is not the case of the present study.

Additionally, given the apparent relevance of geographical variables explaining output levels, growth rates, and poverty between and within municipalities, we have included several geographical indicators. These are: 1) two dummy alternative indicators to capture urban-rural differences between municipalities (one categorizing the municipalities as urban and rural and another classifying the municipalities as big urban, small urban, and rural); 2) a dummy proxy in order to identify the ecological

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55 Despite the fact that we are studying the case of a specific country (Bolivia), there are differences in the level of price between departments and municipalities, so that is why the per capita GDP is expressed in PPP terms.
region of the municipality (Highlands, Valley, and Lowlands); 3) an indicator reflecting the minimum elevation; 4) an indicator measuring the average temperature registered in the municipality; and 5) a proxy for temperature.

The importance of geography’s influence on socio-economic aspects (i.e. growth rate, poverty, inequality) of countries, municipalities, and other regional units has been recognized by empirical literature. Among these studies are those by Dell, Jones, and Olken (2008 & 2009), Morales, Galoppo, Jemio, Choque, and Morales (2000), and Vargas (2004). In the case of Dell et al. (2008 & 2009) the empirical evidence is based on international data, and in the case of Morales et al. (2001) and Vargas (2004) the empirical work is about Bolivia.

Dell et al. (2008) use annual variation in climate to examine the impact of temperature and precipitation on national economies. Based on panel data regressions, the authors find that higher temperatures substantially reduce economic growth in poor countries. Higher temperatures appear to reduce not only the level of output but also the growth rates. Additionally, higher temperatures have wide-ranging effects, reducing agricultural and industrial output, investment, innovation, and political stability.

The paper of Dell et al. (2009) also analyzes the climate-income relationship. However, one of the main novelties in this work is the cross-sectional evidence obtained by considering the temperature-income relationship using not just cross-country data but also sub-national data at the municipal level (for 12 countries in the Americas including Bolivia). At this level, the authors regress mean municipal labor income on municipal temperature and precipitation and add additional geographic controls for elevation, slope, and the distance from the municipality to the sea. Their results show that a negative relationship between income and temperature exists when looking within countries, and even when looking within municipalities. Additionally, the five explanatory geographical variables included in the regressions (temperature, precipitation, elevation, slope, and distance to the sea) appeared to explain around 60% of the variation in municipal income across these 12 countries.

Regarding the studies concerning Bolivia, the purpose of the work of Morales et al. (2000) is to identify the main relationship between economic development and geography at the province level in Bolivia. To achieve this, they study simultaneously the relationship between an indicator of poverty (index of unsatisfied basic needs, NBI) and GDP per capita with geographical, demographical, institutional, and structural economic variables. One of the main findings of the research of Morales et al. is that geographical variables such as elevation and urbanization matter in the explanation of poverty, labor income, and GDP per capita disparities between municipalities. Similar findings were established by the research of Vargas (2004), which shows, based on municipal data analysis, that the location of the municipalities is important in determining their poverty levels.

**The poverty equation**

For equation (2), the explained variable is a 2001 measure of poverty, and the explanatory variables are: an alternative indicator of access to finance (FA) and a set of variables that also impact poverty besides access to finance (CV). This set of control variables includes human capital, ethological fractionalization, initial per capita income, fertility rate, and geographical municipality characteristics. As in equation (1), our alternative proxy of financial access is lagged one period (2000), considering the possibility of reverse causation. It is possible that financial institutions would consider expanding their supply of financial services in municipalities with low poverty levels.

Since there is no international consensus about a unique method to measure poverty, we have used two alternative proxies for poverty. One is the percentage of poor population calculated by the unsatisfied basic needs method, and another is the percentage of poor population estimated by means of the high poverty line method. These two methods are the ones most often used to measure poverty. The method of unsatisfied basic needs considers a set of indicators related to structural basic needs
(housing, education, health, public infrastructure, etc.). The poverty line method uses income or consumption as welfare measures. It establishes the per capita value of a minimum subsistence consumption basket that permits the differentiation of poverty levels.

**Measuring financial access**

A crucial point was related to the preparation of financial access indicators, since the challenge is that these proxies capture the access dimension of finance. Beck et al. (2008c) defines broad access to financial services as an absence of price and non-price barriers to the use of financial services. This does not mean that all households and firms should be able to borrow unlimited amounts at prime lending rates or transmit funds across the world instantaneously. Even if service providers are keenly competitive and employ the best financial technology, prices and interest rates charged and the size of loans and insurance coverage on offer in a market economy will necessarily depend on the creditworthiness of the customer. Therefore, improving access to financial services means improving the degree to which financial services are available to all at a fair price.

Usually it is easier to measure the use of financial services since use is observable; however, use is not always the same as access. Access essentially refers to the supply of services, whereas use is determined by demand as well as supply. Despite having access to finance, some people might decide not to use it due to cultural reasons or because of opportunity costs that are too high (Beck et al., 2008c).

Regarding financial access, Beck et al. (2007b, 2008a, 2008b, and 2008c) introduce two types of measures in terms of access to financial institutions’ physical outlets. One type of measures refers to geographical penetration, and the other type of indicators reflects demographic penetration\(^56\). Higher geographic penetration would mean smaller distance and easier geographical access in relation to financial intermediaries. Higher demographic penetration would suggest that there are fewer potential clients per branch and consequently reflects easier access.

Both types of indicators are presented in the international cross-country datasets prepared by Beck, Demirgüç-Kunt and Martinez (2007b), the IMF (2013), the Financial Access Reports for 2009 and 2010, prepared by the Consultative Group to Alleviate Poverty (CGAP), and the Global Financial Development dataset, recently prepared by the World Bank. However, in general an important limitation of these datasets is to consider only bank institutions or only formal institutions, while in the case of some countries such as Bolivia, the role of non-bank institutions and particularly semiformal ones seems important in terms of access to finance.

**Our financial access proxies**

In light of the indicators used in the international cross-country datasets and the availability of data, information about the number of financial institution branches per municipality was collected. Given the importance of non-bank institutions (formal and semiformal) in Bolivia, data about this type of financial institutions was considered too.

The total number of branches of financial institutions (bank and non-bank, formal and semiformal) per municipality was used as an indicator of geographical penetration (Access), since it reveals the physical presence of financial institutions. Access to finance essentially refers to the supply of financial services, as the existence of financial institution branches in a municipality is an indicator of the existence of a financial services supply.

Since a size effect of municipalities in terms of land and people is likely in terms of the supply of financial services, an additional geographical penetration measure (Access-area) and two demographic

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\(^{56}\)Indicators of geographic penetration introduced and collected for Beck et al. (2007b, 2008a, 2008b, and 2008c) are: number of bank branches per 1,000 square km and number of bank ATMs per 1,000 square km. The measures of demographic penetration are: number of bank branches per 100,000 people and number of bank ATMs per 100,000 people.
proxies (Access-pob and Access-adult) were calculated. The Access-area indicator measures the number of financial institution branches per 1,000 square km, while our demographic indicators reflect the number of financial institution branches per 10,000 people in one case and in another the number of financial institution branches per 10,000 adults. This last demographic indicator was introduced under the logic that financial services are not available for people of all ages. In addition, we have prepared three kinds of disaggregated alternative measures (geographical and demographic) of financial access. One type of these proxies indicates the availability of financial services supplied by formal financial institutions such as banks, private financial funds, and open credit unions (formal, formal-area, and formal-adult). Since the role of semiformal institutions seems important in terms of access to finance, another type of indicators exclusively measures the supply of financial services by semiformal institutions such as NGOs (denominated since 2010 as development financial institutions) and closed credit unions (semiformal, semiformal-area, and semiformal-adult). Finally, in another category of proxies we have exclusively considered the supply of financial services of microfinance institutions (microfinance, microfinance-area, and microfinance-adult). These microfinance access indicator proxies made it possible to establish some empirical evidence about the effects of microfinance on economic growth and poverty in Bolivia.

Possible shortcomings of our financial access indicators

Although our financial access indicators are comparable with those of international cross country datasets, there is the possibility of some shortcomings. One limitation relates to the fact that within a country there are not significant mobility restrictions (apart from distance) between provinces or municipalities. So the fact that in a specific municipality there is no presence of financial institution branches does not necessarily mean that financial outreach for the individuals of this municipality is zero. It is likely that households and firms look for financial services in other near or even far municipalities, since major cities could offer more options in terms of financial services.

Another possible deficiency relates to the fact that our access proxies do not capture size characteristics and the sort of services supplied by the financial institution branches. An example might be the case of a municipality with the presence of one large financial institution branch in comparison with another where there are five small financial branches. However, it is possible that in the municipality with one financial branch the supply of financial services is equal or even higher than in the case of the municipality with various small financial branches.

Additionally, it is likely that our disaggregated financial access measures that regard separately the financial services supplied by formal, semiformal, and microfinance financial institutions are strongly correlated with our aggregate measures of access to finance, which are the total number of financial institution branches, and the total number of financial institution branches per 1,000 square km and per 10,000 people (adults). If this is true, it is possible that both aggregate and disaggregated financial access proxies are measuring the same thing, financial access in general.

Evaluating the effect of microfinance on growth and poverty

Although the main focus of the present research is not microfinance, the contextual analysis of the financial intermediation in Bolivia suggests that microfinance is a transcendental feature of the Bolivian financial system and it could play a part in terms of economic growth and poverty reduction in the country. Therefore, our cross-sectional analysis also aims to evaluate the effect of financial services supplied by microfinance institutions on growth and poverty.

Our study redirects the attention to macro studies in this field by means of a single country study. As mentioned, most of the empirical literature regarding the socio-economic impacts of microfinance is based on micro level approaches (i.e. randomized control trials, financial diaries, and/or portfolios of the poor and the use of other variants of quasi-experimental estimation techniques). Evidence from such micro-studies is mixed mainly due to different microfinance outcome measures and/or different methodologies adopted by these studies, leading to the perception that microfinance is likely to have
little impact on poverty. Our econometric analysis aims to find some evidence based on data for a whole country.

One of the challenges for empirical macro studies on the impacts of microfinance is to identify available measures of microfinance activities. In our case, we have three microfinance indicators given by the absolute number of microfinance branches, the number of microfinance branches per 1,000 square km and the number of microfinance branches per 10,000 adults.

**Other econometric considerations and possible limitations of the econometric analysis**

Regarding the econometric analysis, we have to make sure that they follow some basic properties. In this sense, in the estimated models we look for statistically highly significant coefficients based on the probability of the t-statistic at different significance levels (1%, 5%, and 10%). Also, in order to warrant a high goodness of fit, our estimations should have a high value of R-square (simple and adjusted) and the statistic F should be significant at least at a level of 5%.

Additionally, it is important that the estimated parameters follow the basic assumptions of ordinary least square estimators. Therefore, we also have to discard the presence of autocorrelation, multicollinearity, and heteroskedasticity\(^{57}\) in the estimated models. Autocorrelation was practically discarded since it is more a typical problem of time series analysis. In the case of multicollinearity, we have prevented this problem by not including in the estimations all explanatory variables (control variables) at once\(^{58}\). Since there is the possibility that some control variables are highly correlated, to mention a few cases, the elevation indicator appears to be highly correlated with temperature and precipitation, while our indicator of human capital (education) appears to be negatively correlated with the fertility rate. Finally, considering that the probability of finding heteroskedasticity in cross-sectional models is very high, after verifying the presence of heteroskedasticity\(^{59}\), the estimations are replaced by their corrected robust version.

Moreover, there is the probability that our econometric estimations are biased because of endogeneity. Although various instruments (i.e. legal origin, governmental commitment to macroeconomic stability, corruption and financial repression, banking sector concentration) have been used so far in the cross-country finance-growth empirical studies to deal with this problem, we must be aware that in a single country study at a sub-national level, most of these employed instruments are either not relevant or not available.

In fact, the instrumental variable approach is not a feasible endogeneity solution in our econometric analysis, given important data constraints at the municipality level or the impracticality of certain instrumental variables at this disaggregated level. However, by lagging one period the financial access variable both in the growth and poverty regressions we have tried to prevent reverse causation and then to solve – at least partially – the endogeneity problem. Additionally, we should note that studying a single country using regional (municipal) data helps to address the omitted variable problem, which is another typical cause of endogeneity\(^{60}\).

Finally, we should regard the possibility of spatial dependence in two ways. First, the economic growth of each municipality would be influenced directly by the economic growth of neighboring municipalities. Second, there may exist also spatial heterogeneity, where municipalities do not directly affect each other, but neighboring municipalities are similar in various features. For example, a municipality may be similar to its neighbors in aspects such as weather or soil, so that the municipality

\(^{57}\) This problem implies that the error terms in the model are no longer independently and identically distributed (homoskedasticity). In such cases, the OLS estimators may still be unbiased or consistent, but they will lose efficiency and no longer be the best linear unbiased estimator (BLUE property).

\(^{58}\) Therefore, we have some alternative estimated models where the variations are some control variables and in some cases also the proxy of access to finance. This task also contributes to the robustness of the results.

\(^{59}\) The Breush Pagan test was used for this purpose.

\(^{60}\) This advantage of single country studies based on disaggregate (regional) data is also highlighted in recent works such as Kendall (2009) and Majumber and Eff (2012), which examine the impact of financial development on growth for the cases of India and Bangladesh, respectively.
agricultural production is likely to show a similar pattern to that of its neighbors (Majumder & Eff, 2012).

Given this situation, spatial models would be a better way to approach the econometric analysis. However, we should consider that minimally we should introduce among the explanatory variables a matrix (of 314 x 314) that registers the distances between municipalities. Unfortunately, this type of information was not available at the municipality level.

6. Results and Discussion

Below, the econometrics results about the relationships between access to finance and economic growth on the one hand and poverty reduction on the other are presented. As stated previously, the econometrics analysis is based on data from around 314 municipalities in Bolivia. The specification of the regression models for growth and poverty take into account geographical features as an important control variable. Two types of equations of growth were estimated, one in terms of output level and another in terms of output (income).

It is known that above the level of the sea in the Andean region, elevation determines temperature and precipitation. It suggests that the variable altitude in the case of Bolivia serves also to summarize and represent the influence of other geographical variables such as temperature and precipitation. This is precisely proven in our pairwise correlation analysis that reveals strong correlation coefficients between these three geographical variables. The strong association between two other geographical variables, namely altitude (elevation) and the variable lowlands (one of three ecological regions present in Bolivia besides highlands and valleys), is another correlation between geographical variables to be considered in the regression analysis in order to avoid multicollinearity problems.

Other specific correlation matrix is the one presenting pair-wise associations between our aggregated and disaggregated indicators of financial access. As expected, our aggregated measures of financial access are strongly correlated, showing that all of them are measuring the same thing (access to finance) and that they could be used as alternative financial access proxies. However, it came to our attention that our disaggregated financial access measures that regard separately the financial services supplied by formal, semiformal, and microfinance financial institutions appeared to be strongly correlated with our aggregate measures of access to finance. Although these strong associations between aggregate and disaggregated financial access proxies could be expected, since formal and semiformal financial institutions are part of the Bolivian financial system, it is possible that both aggregate and disaggregated financial access proxies are just measuring financial access in general. Therefore, the econometric results regarding disaggregated financial access indicators should not be considered as totally robust and should not lead to definitive conclusions.

This particular correlation problem and other potential shortcomings of our econometric analysis, already referred to in the previous section, could diminish the robustness of our results in general. However, we believe that despite these possible limitations, our econometrics complemented with the contextual analysis of the Bolivian financial system could give some insights and preliminary answers to our research problem.

In general terms, the results summarized throughout this section show that access to finance in Bolivia is pro-growth and pro-poor. Additionally, regarding the access to financial services offered by microfinance institutions and particularly by semiformal financial institutions (NGOs and closed credit unions), we found econometric evidence that suggests that microfinance and particularly semiformal institutions play a role in the promotion of growth and poverty reduction. However, as Honohan (2004b) established, it is important to keep in mind that not all microfinance services are directly related to the poor. Therefore, the effect of microfinance on poverty reduction could have some limitations, and more if we regard that microfinance financial institutions (except NGOs) in Bolivia seem
to serve “urban poor” better than “rural poor”. The case of semiformal MFIs, mainly NGOs, is different if we consider that they have more presence in rural areas. Additionally, we must consider some limitations of our econometric analysis. In any case, we believe that further studies are necessary in order to determine the effect of microfinance on growth and poverty reduction in Bolivia.

6.1 Access to finance and economic growth

Tables 8A and B and Table 9 summarize the econometric results regarding the relationship between access to finance and economic growth both in terms of output level and output change, respectively. For all the estimated regressions, the values and probabilities of the t-statistic of the estimated coefficients for the explanatory variables (access to finance and control variables) are presented. The value and the probability of F are also reported, as well as the value of the R-square.

As we can see in Table 8A and part of Table 9, access to finance was measured by four alternative proxies denominated in our estimations as Access, Access-area, Access-pop, and Access-adult. The first one refers to the total number of financial institution branches in absolute terms, while the second is the number of branches per 1,000 square km. The last two proxies are more demographic, showing the number of financial institution branches per 10,000 people and per 10,000 adults, respectively.

The estimated regressions that consider disaggregated financial proxies (Formal, Formal-area, Formal-adult, Microfinance, Microfinance-area, Microfinance-adult, Semiformal, Semiformal-area and Semiformal-adult) attempt to capture the particular role of formal, semiformal, and microfinance institutions on economic growth, and they are presented in Tables 8B and part of Table 9.

In all the estimated growth regressions, in addition to an alternative indicator of access to finance, a set of control variables is included as explanatory variables. In the results presented in Tables 8A and B, the explained variable is the real per capita GDP of 2001 in its natural logarithm form. Therefore, the estimations reflect the factors that explain the differences in output levels between municipalities. In the case of Table 9 the economic growth proxy is the variation of income between 2001 and 2005, as an indicator of output change. In that way, the calculated regressions in Table 9 show which variables explain the output changes across Bolivian municipalities.

Consistently with one of the pioneering sub-national studies (Guiso et al., 2004) our estimated growth regressions suggest that higher (local) financial access promotes growth. The results imply that greater outreach by financial institutions could influence positively on municipality output levels and also on its growth rate. Similar results are shown in the study of Kendall (2009) about India demonstrating that districts with greater banking sector outreach grow faster.

Estimations of economic growth in terms of output level

Considering our estimations in terms of output level (Table 8A), in all regressions the coefficients of our alternative financial access measures reported a positive sign and a high level of significance. This evidence suggests that access to finance is a growth factor in terms of output level in the case of Bolivia. The results remained robust for different measures of financial access (Access, Access-area, Access-pop, Access-adult).

Additionally, as we can see in Table 8B disaggregating financial access in formal and semiformal institutions, there is evidence that highlights the importance of the financial services supplied by both type of financial institutions in the country. In addition, regarding the estimated coefficients of our indicators of access to financial services offered by MFIs, it seems that microfinance is pro-growth. However, we should be cautious about these results given some possible shortcomings of our indicators and the econometric analysis) and the necessity for further empirical research.

To complement our analysis there are also some interesting findings regarding the growth control variables. In this sense, as it is predicted by classical and endogenous growth theories, we found that a high fertility rate (as an indicator of population growth) has a negative impact on economic growth.
Additionally, consistent with international cross-country studies (i.e. Barro, 1997), our estimations at the municipality level show that ethnological fractionalization is a reason explaining low levels of output while higher levels of education and higher life expectancy play a positive role in output levels.

In the specific case of the geographical conditions per municipality and their influence on output levels, the evidence is also very interesting. One of our main findings is that the level of output in a municipality is positively correlated with its degree of urbanization. In this sense, urban centers tend to have a better endowment of basic services and higher outreach in terms of health and education than rural environments. Additionally, the urban activities usually related to the industrial and service sectors involve a level of productivity that is generally higher than activities carried out in the rural areas. This situation is even more dramatic if we consider that in the case of Bolivia, the rural economic activities imply agriculture or subsistence practices. Our data analysis also shows significant differences between urbanized municipalities. In this way, the presence of big urban centers in a municipality means higher output levels than in the case of municipalities with small urban centers.

Other geographical indicators such as elevation, temperature, precipitation, and type of ecological region were also included in the estimated regressions of growth level. However, in most of the regressions they could not be included at once, since given the geographical location of Bolivia they appeared to be closely correlated. Consistent with the results of Morales et al. (2000), our findings suggest that more elevation will influence negatively on output levels. The lowlands present higher levels of per capita GDP than the valleys and the highlands in Bolivia.

*Estimations of economic growth in terms of output change*

The importance of geographic characteristics was also highlighted when we regressed the output variation instead of its level. As we can see in Table 9, higher elevations have a negative effect on growth rates. Valleys and lowlands exhibit higher growth rates than highlands. Municipalities with urban centers grow at a superior rate than rural ones. In general, our results regarding geographical aspects at the municipality level are in line with recent international studies (Dell et al. 2008 and 2009) showing that geographical conditions are important in influencing not only the level of output but also output change.

With regard to the role of access to finance in terms of output variation, our results show that financial access exerts a positive effect on it. The estimators of our alternative financial access proxies were positive and statistically significant. Disaggregating the supply of financial services in formal and semiformal institutions, our findings imply that both types of financial institutions have a positive influence on growth rates in the country. Furthermore, regarding our indicators of access to financial services offered by MFIs, our results suggest that microfinance spurs not only output levels but also growth rates.

Regarding the growth regressions in terms of output change, we could also refer to the non-geographical control variables. Since economic convergence would follow a spatial pattern that cannot be captured by OLS estimation, we did not consider the initial level of output (income) as part of our estimated regressions. Additionally, the initial output level indicator appeared to be correlated with most of the control variables. With regard to our human capital proxies, our results were consistent with the theory, indicating the crucial role of education as a growth factor. Other control variables such as fertility rate and ethnological fractionalization appear to be negatively correlated with growth rate, while a higher life expectancy seems to exert a positive effect on growth rates.
Table 8A. Financial access and output level estimations

<table>
<thead>
<tr>
<th>Variable</th>
<th>Regr. 1</th>
<th>Regr. 2</th>
<th>Regr. 3</th>
<th>Regr. 4</th>
<th>Regr. 5</th>
<th>Regr. 6</th>
<th>Regr. 7</th>
<th>Regr. 8</th>
<th>Regr. 9</th>
<th>Regr. 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>5.861** (0.00)</td>
<td>5.912** (0.00)</td>
<td>5.713** (0.00)</td>
<td>5.745** (0.00)</td>
<td>5.531** (0.00)</td>
<td>5.603** (0.00)</td>
<td>5.946** (0.00)</td>
<td>5.699** (0.00)</td>
<td>4.782** (0.00)</td>
<td>4.782** (0.00)</td>
</tr>
<tr>
<td>Access</td>
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<td>0.002** (0.00)</td>
<td>0.003** (0.01)</td>
<td>0.002** (0.02)</td>
<td>0.002** (0.02)</td>
<td>0.002** (0.02)</td>
<td>0.002** (0.02)</td>
<td>0.001* (0.01)</td>
<td>0.001** (0.00)</td>
<td>0.028* (0.04)</td>
</tr>
<tr>
<td>Access-area</td>
<td></td>
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<tr>
<td>Access-pop.</td>
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<td></td>
<td></td>
<td>0.013+ (0.05)</td>
</tr>
<tr>
<td>Access-adult</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ferrate</td>
<td>-0.081** (0.00)</td>
<td>-0.078** (0.00)</td>
<td>-0.081** (0.00)</td>
<td>-0.074** (0.00)</td>
<td>-0.075** (0.00)</td>
<td>-0.076** (0.00)</td>
<td>-0.078** (0.00)</td>
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Note: Robust cross-sectional estimations. The dependent variable is the natural logarithm of real per capita GDP. Probabilities of t-statistics are reported between brackets below every estimated regression coefficient. **, *, and + denote significance at a 1%, 5%, and 10% level, respectively.

Access = Number of financial institution branches
Access-area = Number of financial institution branches per 1,000 square km
Access-pop = Number of financial institution branches per 10,000 people
Access-adult = Number of financial institution branches per 10,000 adults
Ferrate = Fertility rate
Education = Average education index (The average of literacy, years of school, and education enrollment sub-indexes)
Life expectancy = Index that standardized years of life expectancy between 0 and 1
Etno = Percentage of the total population that is part of an indigenous ethnic group
Urban = Dummy variable (1 = if the municipality has an urban center and 0 = if the municipality is totally rural)
Urban rate = Urbanization percentage
Big urban = Dummy variable (1 = if the municipality has a big or medium urban center and 0 = if it is totally rural)
Small urban = Dummy variable (1 = if the municipality has a small urban center and 0 = if it is totally rural)
Ln (elevation) = Natural logarithm of the minimum elevation in meters above the level of the sea
Lowlands = Dummy variable for ecological region (1 = Lowland, 0 = Highland)
Temperature = Average temperature
Precipitation = Average precipitation

Source: Author’s own preparation on basis of original estimations
Table 8B. Financial access and output level estimations using disaggregated financial access indicators

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Control variables

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R-squared        | .77         | .77         | .74         | .76         | .77         | .74         | .77         | .77         | .74         |

F                | 119.53      | 125.70      | 108.02      | 119.00      | 123.21      | 103.7       | 117.92      | 116.38      | 104.44      |

Prob > F         | (.00)       | (.00)       | (.00)       | (.00)       | (.00)       | (.00)       | (.00)       | (.00)       | (.00)       |

Number observations | 314 | 314 | 314 | 314 | 314 | 314 | 314 | 314 | 314 |

Note: Robust cross-sectional estimations. The dependent variable is the natural logarithm of real per capita GDP. Probabilities of t-statistics are reported between brackets below every estimated regression coefficient. **, *, and + denote significance at a 1%, 5%, and 10% level, respectively.

Formal = Number of formal financial institution branches
Formal-area = Number of formal financial institution branches per 1,000 square km
Formal-adult = Number of formal financial institution branches per 10,000 adults
Semiformal = Number of semiformal financial institution branches
Semiformal-area = Number of semiformal financial institution branches per 1,000 square km
Semiformal-adult = Number of semiformal financial institution branches per 10,000 adults
Microfinance = Number of microfinance institution branches
Microfinance-area = Number of microfinance institution branches per 1,000 square km
Microfinance-adult = Number of microfinance institution branches per 10,000 adults
Ferrate = Fertility rate
Education = Average education index (The average of literacy, years of school, and education enrollment sub-indexes)
Life expectancy = Index that standardized years of life expectancy between 0 and 1
Etno = Percentage of the total population that is part of an indigenous ethnic group
Big urban = Dummy variable (1 = If the municipality has a big or medium urban center and 0 = if it is totally rural)
Small urban = Dummy variable (1 = If the municipality has a small urban center and 0 = if it is totally rural)
Lowlands = Dummy variable for ecological region (1 = Lowland, 0 = Highland)

Source: Author’s own preparation on basis of original estimations
Table 9. Financial access and output change estimations

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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.0009+ (0.07)</td>
<td></td>
</tr>
<tr>
<td>Control Variables</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Ln (ferrate)</td>
<td>-0.013** (0.00)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ln (Education)</td>
<td>0.024** (0.00)</td>
<td>0.023* (0.02)</td>
<td>0.034** (0.00)</td>
<td>0.033** (0.00)</td>
<td>0.037** (0.00)</td>
<td>0.024** (0.00)</td>
<td>0.022** (0.00)</td>
<td>0.024** (0.00)</td>
<td>0.038** (0.00)</td>
<td>0.024** (0.00)</td>
<td>0.038** (0.00)</td>
</tr>
<tr>
<td>Ln (Life expectancy)</td>
<td>0.025** (0.00)</td>
<td>0.02** (0.00)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Ln (Etno)</td>
<td>-0.001* (0.05)</td>
<td>-0.002** (0.00)</td>
<td>-0.002** (0.00)</td>
<td>-0.001* (0.05)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Urban</td>
<td>0.007** (0.00)</td>
<td>0.007** (0.00)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.007** (0.00)</td>
</tr>
<tr>
<td>Big urban</td>
<td>0.009** (0.00)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small urban</td>
<td>0.006** (0.00)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ln (elevation)</td>
<td>-0.0007 (0.10)</td>
<td>-0.003** (0.00)</td>
<td>-0.0009+ (0.07)</td>
<td>-0.001* (0.04)</td>
<td>-0.0007 (0.10)</td>
<td>-0.003** (0.00)</td>
<td>-0.0007** (0.00)</td>
<td>-0.0008 (0.10)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Valley</td>
<td>0.004** (0.00)</td>
<td>0.004 (0.00)</td>
<td>0.004** (0.00)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lowlands</td>
<td>0.002** (0.00)</td>
<td>0.006** (0.00)</td>
<td>0.006** (0.00)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R-squared</td>
<td>.54</td>
<td>.52</td>
<td>.48</td>
<td>.48</td>
<td>.48</td>
<td>.53</td>
<td>.52</td>
<td>.54</td>
<td>.48</td>
<td>.54</td>
<td>.48</td>
</tr>
<tr>
<td>F</td>
<td>78.80 (0.00)</td>
<td>87.65 (0.00)</td>
<td>74.21 (0.00)</td>
<td>59.94 (0.00)</td>
<td>73.76 (0.00)</td>
<td>78.71 (0.00)</td>
<td>86.00 (0.00)</td>
<td>79.29 (0.00)</td>
<td>74.40 (0.00)</td>
<td>79.76 (0.00)</td>
<td>74.76 (0.00)</td>
</tr>
<tr>
<td>Prob &gt; F</td>
<td>.004</td>
<td>.004</td>
<td>.004</td>
<td>.004</td>
<td>.004</td>
<td>.004</td>
<td>.004</td>
<td>.004</td>
<td>.004</td>
<td>.004</td>
<td>.004</td>
</tr>
<tr>
<td>Number observations</td>
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<td>314</td>
<td>314</td>
<td>314</td>
<td>314</td>
<td>314</td>
<td>314</td>
<td>314</td>
<td>314</td>
<td>314</td>
<td>314</td>
</tr>
</tbody>
</table>

** Note: Robust cross-sectional estimations. The dependent variable is the variation of income between 2005 and 2001. Probabilities of t-statistics are reported between brackets below every estimated regression coefficient. ***, *, and + denote significance at a 1%, 5%, and 10% level, respectively.

Access-area = Number of financial institution branches per 1,000 square km
Access-adult = Number of financial institution branches per 10,000 adults
Formal-area = Number of formal financial institution branches per 1,000 square km
Formal-adult = Number of formal financial institution branches per 10,000 adults
Semiformal-area = Number of semiformal financial institution branches per 1,000 square km
Semiformal-adult = Number of semiformal financial institution branches per 10,000 adults
Microfinance-area = Number of microfinance institution branches per 1,000 square km
Microfinance-adult = Number of microfinance institution branches per 10,000 adults
Ln (Ferrate) = Natural Logarithm of Fertility rate
Ln (Education) = Natural logarithm of average education index
Ln (Life expectancy) = Natural logarithm of an index that standardized years life expectancy between 0 and 1
Ln (Etno) = Natural logarithm of the percentage of the total population that is part of an indigenous ethnic group
Urban = Dummy variable (1 = If the municipality has a urban center and 0 = if the municipality is totally rural)
Big urban = Dummy variable (1 = If the municipality has a big or medium urban center and 0 = if it is totally rural)
Small urban = Dummy variable (1 = If the municipality has a small urban center and 0 = if it is totally rural)
Ln (elevation) = Natural logarithm of the minimum elevation in meters above the level of the sea
Valley = Dummy variable for ecological region (1 = Valley, 0= Highland)
Lowlands = Dummy variable for ecological region (1 = Lowland, 0= Highland)

Source: Author’s own preparation on basis of original estimations
6.2 Access to finance and poverty

Our econometric results regarding the relationship between financial access and poverty are summarized in Tables 10A and B. As in the case of growth, in addition to measuring the effect of access to financial services offered by all type of financial institutions, we have also established some evidence about the effect of financial services supplied by formal, semiformal, and microfinance institutions on poverty.

As we have seen in Sections 3 and 4, after the crisis of 1985 and the new scenario of financial liberalization, new financial institutions emerged in the Bolivian financial system in the form of non-bank institutions (formal and semiformal), and some of them particularly as MFIs. The emergence and consolidation of these new financial institutions has meant a broader outreach of the financial system in terms of number of branches, number of customers, and size of the loan portfolio. The interesting point is that most such institutions reached “low-income” people who were not reached before 1989 by the financial institutions. Therefore, we could expect that these non-traditional financial institutions have exercised an important role in diminishing poverty in Bolivia.

Two different available indicators of poverty were used. They are the percentage of poor population calculated by the unsatisfied basic needs method and the percentage of poor population calculated by the high poverty line method. Also, as in the economic growth regressions we have also included in all the poverty estimations a set of control variables. This helps to prevent misspecification of the model, since poverty is related not only to access to finance, but also to other variables such as education, fertility rate, urbanization, and altitude. However, not all control variables are included at once in order to avoid multicollinearity problems and give higher robustness to our estimations. For all the estimated regressions, the value of the estimators and their respective t-statistic probabilities are reported in Tables 10A and B, along with the value and probability of F and the R-squares.

The role of access to finance

Regarding the effect of financial access on poverty, our results revealed robust evidence about access to finance as a poverty reduction factor. Also, as we can see in Table 10 B, there is evidence, reflected in the statistically significant coefficients of formal and semiformal financial access indicators, that both formal and semiformal financial institutions matter for poverty alleviation. Therefore, in terms of economic policies to reduce poverty, it is necessary to improve access to the financial services supplied by both types of financial institutions.

Additionally, considering the role of MFIs in poverty reduction, our results have met our expectations. The highly statistically significant coefficients for our access to microfinance services indicators (Microfinance and Microfinance-area in Table 10 B) suggest that microfinance in Bolivia is not only pro-growth but also pro-poor. Nevertheless, as noted by Honohan (2004b), microfinance services do not necessarily reach the lowest income groups. Often MFIs have as clientele the near poor or even micro and small firms that are not necessarily owned by the truly poor.

In this last respect, the effect of microfinance on poverty reduction could have some limitations, and more if we consider that MFIs (except NGOs) in Bolivia seem to serve “urban poor” better than “rural poor.” The case of semiformal MFIs, mainly NGOs, is different if we consider that they have more presence in rural areas. However, it is evident that further studies are necessary in order to determine the possible limitations of microfinance in poverty alleviation in Bolivia.
### Table 10A. Financial access and poverty estimations

<table>
<thead>
<tr>
<th>Explanatory Variables</th>
<th>Ln (poverty1)</th>
<th>Ln (poverty2)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Regr. 1</td>
<td>Regr. 2</td>
</tr>
<tr>
<td>Constant</td>
<td>3.465**</td>
<td>0.724**</td>
</tr>
<tr>
<td>Access</td>
<td>0.006**</td>
<td>0.006**</td>
</tr>
<tr>
<td>Access adult</td>
<td>-0.006**</td>
<td>-0.006**</td>
</tr>
<tr>
<td>Access area</td>
<td>-0.007+</td>
<td>-0.007+</td>
</tr>
<tr>
<td>Control Variables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ln (ferrate)</td>
<td>0.445**</td>
<td>0.450**</td>
</tr>
<tr>
<td>Ln (Education)</td>
<td>-0.113+</td>
<td>-0.232**</td>
</tr>
<tr>
<td>Ln (etno)</td>
<td>0.023+</td>
<td>0.07</td>
</tr>
<tr>
<td>Ln (elevation)</td>
<td>0.00</td>
<td>0.178**</td>
</tr>
<tr>
<td>Big Urban</td>
<td>-0.459**</td>
<td>-0.457**</td>
</tr>
<tr>
<td>Small Urban</td>
<td>-0.144**</td>
<td>-0.126**</td>
</tr>
<tr>
<td>Ln (elevation)</td>
<td>0.215**</td>
<td></td>
</tr>
<tr>
<td>Valley</td>
<td>-0.152**</td>
<td>-0.139**</td>
</tr>
<tr>
<td>Lowlands</td>
<td>-0.141**</td>
<td>-0.146**</td>
</tr>
<tr>
<td>Temperature</td>
<td>-0.009**</td>
<td></td>
</tr>
<tr>
<td>Precipitation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ln (GDP per capita)</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>R-squared</td>
<td>.60</td>
<td>.63</td>
</tr>
<tr>
<td>F</td>
<td>38.48</td>
<td>42.74</td>
</tr>
<tr>
<td>Prob &gt; F</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>Number obs.</td>
<td>314</td>
<td>314</td>
</tr>
</tbody>
</table>

Note: Robust cross-sectional estimations. From regression 1 to 8 the dependent variable is the percentage of poor population calculated by the unsatisfied basic needs method, and from regression 9 to 12 the dependent variable is the percentage of poor population calculated by the high poverty line method. In regressions 4 and 7 the variables fertility rate and education are included in absolute terms and not in their natural logarithm form. Probabilities of t-statistics are reported between brackets below every estimated regression coefficient. **, *, and + denote significance at a 1%, 5%, and 10% level, respectively.

- Ln (poverty1) = Natural logarithm of percentage of poor population calculated by the unsatisfied basic needs method (2001)
- Ln (poverty2) = Natural logarithm of percentage of poor population calculated by the high poverty line method (2001)
- Access = Number of financial institution branches
- Access-area = Number of financial institution branches per 1,000 square km
- Access-adult = Number of financial institution branches per 10,000 adults
- Ln (Ferrate) = Natural logarithm of fertility rate
- Ln (Education) = Natural logarithm of an average composite education index (The average of literacy, years of school, and education enrollment sub-variables)
- Ln (etno) = Natural logarithm of percentage of the total population that is part of an indigenous ethnic group
- Urban = Dummy variable (1 = If the municipality has a urban center and 0 = if the municipality is totally rural)
- Big urban = Dummy variable (1 = If the municipality has a big or medium urban center and 0 = if it is totally rural)
- Small urban = Dummy variable (1 = If the municipality has a small urban center and 0 = if it is totally rural)
- Ln (elevation) = Natural logarithm of the minimum elevation in meters above the level of the sea
- Valley = Dummy variable for ecological region (1 = Valley, 0 = Highland)
- Lowlands = Dummy variable for ecological region (1 = Lowland, 0 = Highland)
- Temperature = Average temperature
- Precipitation = Average precipitation
- Ln (GDP per capita) = Natural logarithm of per capita GDP

Source: Author’s own preparation on basis of original estimations
### Table 10B. Financial access and poverty estimations using disaggregated financial access indicators

<table>
<thead>
<tr>
<th>Explanatory Variables</th>
<th>Ln (poverty1)</th>
<th>Ln (poverty2)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Regr. 1</td>
<td>Regr. 2</td>
</tr>
<tr>
<td>Formal</td>
<td>-0.007**</td>
<td>-0.007**</td>
</tr>
<tr>
<td>Formal area</td>
<td>-0.004</td>
<td></td>
</tr>
<tr>
<td>Semiformal</td>
<td>-0.024*</td>
<td></td>
</tr>
<tr>
<td>Semiformal area</td>
<td>-0.006+</td>
<td></td>
</tr>
<tr>
<td>Microfinance</td>
<td>-0.018**</td>
<td></td>
</tr>
<tr>
<td>Microfinance area</td>
<td>-0.005*</td>
<td></td>
</tr>
<tr>
<td>Control Variables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ln (ferrate)</td>
<td>0.454**</td>
<td>0.478**</td>
</tr>
<tr>
<td>Ln (Education)</td>
<td>-0.236**</td>
<td>-0.108+</td>
</tr>
<tr>
<td>Valley</td>
<td>-0.153**</td>
<td>-0.150**</td>
</tr>
<tr>
<td>Lowlands</td>
<td>-0.138**</td>
<td>-0.154**</td>
</tr>
<tr>
<td>Urban</td>
<td>-0.180**</td>
<td>-0.200**</td>
</tr>
<tr>
<td>Big Urban</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small Urban</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ln (elevation)</td>
<td>0.027**</td>
<td>0.029*</td>
</tr>
<tr>
<td>Ln (etno)</td>
<td>0.021</td>
<td>0.019</td>
</tr>
<tr>
<td></td>
<td>(.02)</td>
<td>(.02)</td>
</tr>
<tr>
<td>R-squared</td>
<td>.63</td>
<td>.58</td>
</tr>
<tr>
<td>F</td>
<td>39.92</td>
<td>32.85</td>
</tr>
<tr>
<td>Prob &gt; F</td>
<td>(.00)</td>
<td>(.00)</td>
</tr>
<tr>
<td>Number obs.</td>
<td>314</td>
<td>314</td>
</tr>
</tbody>
</table>

Note: Robust cross-sectional estimations. From regression 1 to 6 the dependent variable is the percentage of poor population calculated by the unsatisfied basic needs method, and from regression 7 to 12 the dependent variable is the percentage of poor population calculated by the high poverty line method. Probabilities of t-statistics are reported between brackets below every estimated regression coefficient. **, *, and + denote significance at a 1%, 5%, and 10% level, respectively.

Ln (poverty1) = Natural logarithm of percentage of poor population calculated by the unsatisfied basic needs method (2001)
Ln (poverty2) = Natural logarithm of percentage of poor population calculated by the high poverty line method (2001)

Formal = Number of formal financial institution branches
Semiformal = Number of semiformal financial institution branches
Microfinance = Number of microfinance institution branches

Ln (ferrate) = Natural logarithm of fertility rate
Ln (Education) = Natural logarithm of an average composite education index (The average of literacy, years of school, and education enrollment sub-indexes)
Valley = Dummy variable for ecological region (1 = Valley, 0= Highland)
Lowlands = Dummy variable for ecological region (1 = Lowland, 0= Highland)
Urban = Dummy variable (1= If the municipality has a urban center and 0 = if the municipality is totally rural)
Small urban = Dummy variable (1 = If the municipality has a small urban center and 0 = if it is totally rural)
Ln (elevation) = Natural logarithm of the minimum elevation in meters above the level of the sea
Ln (etno) = Natural logarithm of percentage of the total population that is part of an indigenous ethnic group

Source: Author’s own preparation on basis of original estimations
The role of other factors

In addition to financial access as a factor of poverty reduction, we have also considered other variables that could affect poverty. In this respect, our findings suggest that higher fertility rates and ethnological fractionalization in Bolivia lead to more poverty. On the contrary, a higher education level contributes to poverty alleviation. Additionally, the data analysis shows that poverty is more severe in rural than in urban municipalities. Among urbanized municipalities, poverty is higher in municipalities where there are small urban centers than in municipalities where big urban centers are established.

Considering other geographical variables besides urbanization, our findings are consistent with other previous studies about the effects of geography on poverty, showing that geography matters when explaining poverty. Higher altitude appears to be negatively correlated with our two measures of poverty. Poverty in municipalities characterized as lowlands or valleys seems lower than in those highland municipalities.

Additionally, in order to test the hypothesis that suggests that economic growth is pro-poor, we have also included an indicator of growth in the set of control variables. In this respect, as we can see in Table 10A (Regression 8), the estimated parameter of our growth indicator is negative. Hence, it is evident that the reduction of poverty in Bolivia is not possible without economic growth.

To summarize this section, our empirical analysis has shown the importance of access to finance for economic growth and poverty reduction. Therefore, an important task for policymakers and academics is not only the formulation of policies that lead to a more efficient (deeper) financial system, but also to a more inclusive financial system.

7. Conclusions

With the beginning of the application of New Economic Policy in August of 1985, a program of stabilization and structural reforms in Bolivia was implemented. In terms of the financial system, this economic policy changed the scenario from one of financial repression to one of financial liberalization. The stabilization package already included some financial reforms, mainly in terms of liberalization of interest rates. However, it was not until 1987 (once that stabilization was reached) that structural financial reforms came. These reforms, which mainly related to the regulatory and supervision framework, played an important role in improving the efficiency, solvency, and access of the financial system in the stage of financial liberalization.

After the crisis of 1985 and the new scenario of financial liberalization, new financial institutions emerged in the Bolivian financial system in the form of non-bank institutions (formal and semiformal), and some of them particularly as MFIs. The emergence and consolidation of these new financial institutions gave rise to broader outreach of the financial system in terms of number of branches, number of customers, size of the loan portfolio, and also a broader diversification in terms of financial institutions. The interesting point is that most of these MFIs reached an important “low-income” group that did not have access to financial services before 1989.

Bolivia is a unique and fascinating case of microfinance advancing far within a short time. Also, its rapid growth has been accompanied by the development of the ability and willingness of microfinance institutions to serve the poor on a commercial basis. The commercialization of microfinance has advanced to such a point in Bolivia that this sector is no longer primarily donor-driven. In the microfinance sector we have to distinguish between the formal and the semiformal institutions. The

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61 We are referring to the studies of Morales et al. (2000) and Vargas (2004).
62 The indicator of economic growth is not included in the other estimated regression since it is highly correlated with other control variables (i.e. education, fertility rate).
63 This is derived from the conclusions of our previous chapter about the effect of financial development on growth and inequality in the case of Latin America and the Caribbean.
greater weight of the portfolio and almost all of the deposits of the microfinance sector are in the formal MFIs. The functions of the semiformal MFI entities are usually limited to fund credits; however, they reach at least 50% of all microfinance sector customers. Additionally, these semiformal financial institutions play an important role in access to finance in rural areas and in reaching the poorest agents that participate in the credit market.

The Bolivian experience in terms of the evolution of its financial system from financial repression to financial liberalization suggests that the role of government in building an effective and inclusive financial system should focus on regulation, not on ownership. In this respect, there are both theoretical and empirical arguments showing that the state is neither efficient nor effective when it comes to credit allocation.

Recently, closed credit unions and NGOs have been incorporated into the regulatory and supervisory framework. Cull et al. (2009) refer to some trade-offs derived from this transformation. Specifically, an important trade-off relates to regulation and supervision. There is no doubt that rigorous and regular supervision is critical for deposit-taking institutions, but this is costly since this regulatory supervision pushes institutions to serve better customers (less poor agents) with larger loans in order to maintain profitability. Additionally, supervision appears to be related to a higher concentration of staff in the head office, reducing the number of staff that used to work in the branches. Therefore, could NGOs and other socially minded institutions in Bolivia survive regulation without redefining their commitment to the poorest?

Despite the fact that the Bolivian financial system has advanced since the end of the 1980s in terms of increased access to finance, there are still important limitations. One of these limitations relates to the low supply of financial services in rural areas. In fact, in terms of physical access, more than 60% of financial institution branches are concentrated in urban areas. The presence of financial intermediaries by areas seems correlated with the population concentration in the urban areas, which represent around 63% of the total. In addition, only around 45% of the municipalities in Bolivia have financial institution branches physically present. The rest do not have a supply of financial services, not even those services offered by semiformal institutions such as NGOs. So it is highly probable that in those municipalities the figure of pure informal credit sources (lenders, rotating credit, family, and relatives) would be the only option in terms of supply of financial services.

Financial development has proven to be an important factor promoting growth and social fairness. However, we have to consider that financial development does not necessarily mean that finance is available for all on an equal basis. Therefore, it is important to consider the dimension of access. In this respect, theoretical models relating to the effect of finance on development outcomes focus on the issue of access of finance. However, in empirical terms this dimension has been overlooked, mostly because of serious data gaps. The collection and systematization of data across countries is a task that's only recently started, and as such it still has significant limitations in terms of measuring.

Our econometric analysis highlight the importance of access to finance as a factor spurring growth – both in terms of the output level and output change – and reducing poverty in Bolivia. Therefore, it is possible that policies that ensure a well-functioning and inclusive financial system do not only contribute to economic growth, but also could reduce poverty. Therefore, emphasis on the financial sector seems to be a crucial component of pro-poor development in the case of Bolivia.

Additionally, our contextual and econometric analyses suggest that policies to improve financial access should not only focus on formal financial institutions but also on semiformal intermediaries such as NGOs and closed credit unions. The importance of microfinance as a pro-growth and pro-poor factor is also suggested in the case of Bolivia, although we should be cautious with this respect given some restrictions of our econometric study. Additionally, we have to be aware of the likely limitations of microfinance achieving poverty reduction.
Our study also reveals that a big challenge in terms of access to finance is rural areas, where the supply of financial services is more limited than in urban areas. In this respect, it seems that some of the modifications on the regulatory normative framework could have a positive impact in terms of access (i.e. the criteria of moving branches). However, other measures such as the inclusion under national regulatory supervision of the semiformal institutions (NGOs and closed credit unions) that have a strong presence in the rural areas could have a negative impact on access to finance in general and particularly in rural areas, since this supervision could push institutions to serve better customers (less poor agents) with larger loans in order to maintain sustainability. Therefore, it is necessary to look for new alternatives in order to improve access to finance in rural areas.

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