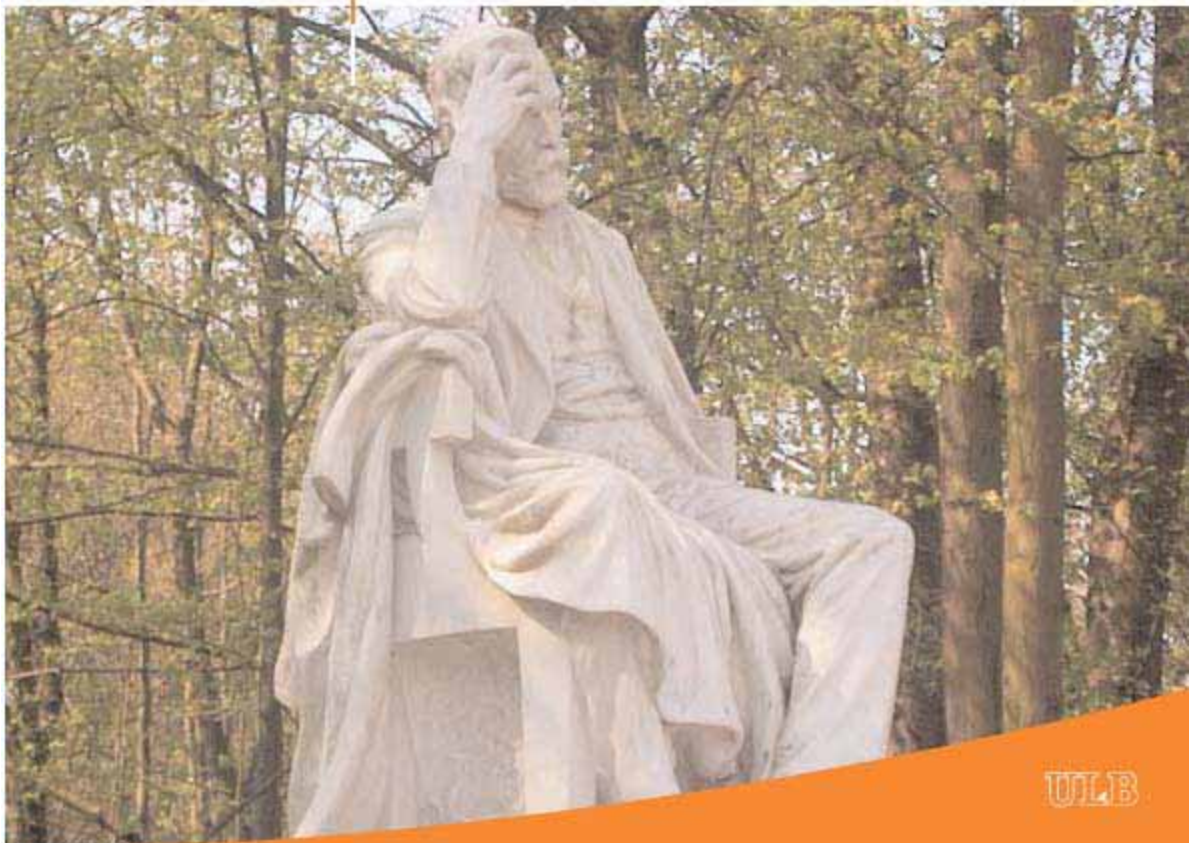


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The uneven development of microfinance:
A Latin-American perspective

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The uneven development of microfinance: A Latin-American perspective

Abstract: This paper presents a first set of variables that explain the differences in the uneven development of the microfinance sector in Latin America. A cross-country regression is applied by using a unique dataset on the outreach of microfinance institutions in the year 2001. Results indicate that microfinance is more present in countries that have received a higher proportion of international support. Microfinance institutions reach more clients in high-inflation areas. Moreover, human capital and population density play a positive role in the growth of these institutions. The results indicate that the regulatory environment does not seem to play a significant role. On the other hand, the proxy for financial liberalization does¹.

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1. Introduction

“Microfinance” designates the part of the financial sector that provides small-size financial services to the poorest sections of the population. They typically involve cooperatives and credit unions, self-help groups and village banking, state developmental and postal banks.

The history of microfinance in Europe goes back to the 17th century. In India, microfinance emerged two or three millenniums ago. Every developed country and some developing countries have experience with microfinance (Seibel, 2003 and 2005; Hollis and Sweetman, 2001 and 2004; Guinnane, 2004). However, only recently a new kind of organization has risen: the Microfinance Institutions (MFIs) as such. What started in the 1970’s in Bangladesh as an innovative way to bring financial products to excluded poor has since then been reproduced and reinvented in many countries. Currently, a couple of thousand of microfinance projects are implemented. Despite their specificities, they all share a common goal: to reach the financially excluded poor (Morduch, 1999a; Dichter, 1999).

Although the literature explains the emergence of the microfinance industry as an answer to an unmet demand², MFIs are not equally spread around the globe. Some regions and countries have developed big microfinance markets, while others have failed. Why this has happened has not been attained by the literature. Hardy *et al.* (2002) compare two neighboring Central African countries: Cameroon and Gabon. Even though these countries have similarities (common currency, comparable per capita income, etc.) the microfinance industry is more expanded in Cameroon than in Gabon. Equally, in Latin America the progress has been highly unequal. Market coverage figures range from 55.7% for Bolivia to 0.36% in Brazil (Marulando and Otero, 2005). Although the first Latin American microfinance experiment took place in Brazil³, the microfinance market there is much smaller than in Bolivia.

² Robinson (2001), Littlefield & Rosenberg (2004).

³ In 1973 Acciòn started its first program in Brazil (Rhyne, 2001).

This paper aims at going deeper into this uneven development of MFIs by focusing on Latin American institutions. Concentrating on one geographical region gives us the opportunity to eliminate a couple of factors that have proven to play a role in the development of institutions. Latin America gathers a large group of countries fairly similar in many respects but with a very different success in terms of microfinance. Therefore, it represents one of the most interesting and challenging regions to identify factors of the uneven development of the microfinance sector. The results provide a first set of variables to take into account when comparing the sectors on a global level. Furthermore, they can help policy makers to gain a deeper insight in the specificities of regions in which microfinance institutions tend to develop.

The paper uses a unique dataset on the outreach of microfinance institutions in the year 2001. The worldwide survey from CGAP (2004) is expanded with data from the Mix Market and different rating agencies. The paper identifies econometrically factors that influence the level of MFI's implantation in different regions. Results indicate that microfinance is more present in countries that receive a higher proportion of international support. Moreover, microfinance institutions in high-inflation areas reach more clients. Human capital and population density play an encouraging role in the growth of microfinance institutions whereas the regulatory environment does not seem to have a significant effect. Finally, the more foreign assets a country possess, the bigger the microfinance market.

Section 2 draws a global picture of the emergence of the microfinance sector. Section 3 addresses the peculiarities of the Latin American region. The fourth Section reviews the literature on the unequal development of the microfinance sector and formulates new hypotheses. The data and methodology are presented in Section 5. Results are analyzed in Section 6. Finally, conclusions are drawn in Section 7.

2. The development of the microfinance sector

Microfinance institutions may be classified on the base of their initiator. First, in some countries the **state** is involved in providing credit and other financial services to the

poor segments of the population. This happens mostly through state-owned banks. In a recent past, these state-owned banks have increasingly become independent and commercially operating. A couple of them have managed to become some of the most successful microfinance institutions in their country. The Bank Rakyat Indonesia is a widely stated example (Robinson, 2001). Second, in some cases the **commercial banking sector** (market) has started to provide small-scale financial services to the poor. This part of the sector is estimated to increase in the near future, as it has become clear that serving the poor can be a profitable business⁴. Nevertheless, the bulk of microfinance institutions in developing countries started as **NGOs**. These NGOs are traditionally externally implemented. Their main goal is to offer small-scale financial services to the poorer sections of the population. Since the end of the 1980s, the sector has been characterized by an institutional transformation. Slowly but increasingly, institutions that started as non-profit poverty focused organizations are transformed into commercial institutions as they intend to become independent from donor subsidies. Some of them turned into **non-bank financial institutions** and became a part of the formal financial sector. Others turned into **commercial banks**, like BancoSol in Bolivia.

The literature addressing the emergence of the microfinance sector puts its development in a historical context. Providing financial services to the poor has been an objective of many state development agencies. The interest in financial sector development is explained by the literature, which links financial development, economic growth and poverty alleviation⁵. During the 1960s, many governments introduced subsidized credit schemes to reach the poor, especially the rural part of their population. By the end of the 1970s a lot of these state subsidized credit schemes were failing. At around the same time, the Ohio State University launched a devastating critique on these subsidized-credit programs. They argued that these kinds of programs were inefficient. Moreover they obstructed the development of free and normal financial markets (Von Pischke, 1991). Consequently, the main policy recommendations were privatization of state banking and liberalization of the domestic financial markets. These policies were part of the commonly known

⁴ See for example the Economist (2005), The Hidden Wealth of the Poor: A survey of Microfinance, *The Economist*, vol. 377, no. 8451, 12 p.

⁵ See Thorsten Beck *et al.* (2000) for theoretical background and Holden and Prokopenko (2001) for a literature overview.

Structural Adjustment Programs (SAPs). Neo-liberal theory predicts that free markets lead to optimal allocation of financial resources, acting as an intermediary between aggregate savings and aggregate demand (Bastiaenssen, 2005). But banking is a risky and complex business and financial exclusion exists in all countries. Robinson (2001) estimates that there are around 1.8 billion of un-banked poor people. Stiglitz and Weiss (1981) first demonstrated that transaction costs and imperfect information lead to credit rationing by banking institutions, this way excluding potential clients. These costs are particularly high in developing countries due to poorly developed legal systems and informational networks (Barham *et al.*, 1996). Consequently, a vast majority of people in developing countries do not have access to financial services.

Dichter (1999) argues that, due to the increasing critics on the SAPs, the international donor community searched for a new paradigm, one that was socially caring but convenient with the mainstream neo-liberal development theory and the promise of poverty reduction. According to Weber (2001) the combination of neo-liberal policies, poverty alleviation and social discipline led to the promotion of microfinance by the Bretton Woods institutions. She places the promotion of micro-credit programs on the global political agenda and argues that it is aimed to facilitate the implementation of financial sector liberalization at a global level. Also Bastiaenssen (2005) situates the emergence of the microfinance in the neo-liberal revolution from the 1980s.

It is in this historical context that the Grameen Bank⁶ experience became important. Started in 1976 the bank worked with enterprising poor. The project's initial success led to the promotion of the model in many developing countries. The fact that it was embedded in the social framework of local communities allowed it to reduce transaction and informational costs. This way, people who were formally excluded gained access to financial means. This means could help them support their business activities and protect them against social risks. As the bank grew, it became clear that microfinance clients were reliable and that repayment rates were high. In this respect, microfinance seemed to hold a promise: it helped the poor and it even

⁶ The Grameen Bank is generally seen as one of the first successful microfinance projects in the developing world (Armendariz de Aghion and Morduch, 2005).

could become a profitable business (Morduch, 1999a). Since the 1980s the number of these programs has increased tremendously. Armendariz de Aghion and Morduch (2005) estimate that there exist nowadays a couple of thousand of programs.

3. Microfinance in Latin America

To assess the divergent development pattern of the microfinance industry, the paper concentrates on the Latin American region. Focusing on one region allows leaving aside some well-known factors of the uneven development of institutions. Acemoglu *et al.* (2001) have shown that the colonial background plays an important role in the development of institutions. The Latin American region has a common colonial background (Spanish and Portuguese) and a long history of political independence in comparison to other developing regions. Todaro and Smith (2005) argue that this, despite the demographic and geographic diversity, has led to similar economic, political, social and cultural institutions. As a consequence, the region faces many similar problems. Among others, indigenous people have lagged behind other groups on almost every measure of economic and social progress whether it be in Brazil, Peru, Bolivia, or Mexico. These people have thus experienced little benefits from the overall economic growth. This seems to be especially true for indigenous women.

Even though the Latin American microfinance market is characterized by a true array of different sorts of institutions in methodology, size and performance, the region has also some common characteristics regarding microfinance. Namely, the Latin American microfinance sector reaches proportionally fewer clients than in Africa and Asia. Moreover, the average loan portfolio of Latin American MFIs is the biggest one for the regions where microfinance has developed. Miller (2003) argues that this is due to the higher average GNP per capita in Latin America than, for example, in Africa and Asia. Furthermore, Latin American microfinance leverages more equity, has more assets and attracts more commercial funds. Also, Lapenu and Zeller (2001) and Ramirez (2004) show that the Latin American MFIs are more commercially oriented than the African and Asian markets.

This Latin American microfinance common growth process could partly be explained by the influence of the same international donor community. In this respect, Acciòn and USAID are certainly the main players in the field. The organizations played a big role in the emergence of the transformation movement, where NGOs gradually change into commercially operating institutions. Nevertheless, although Latin American microfinance has some common characteristics, the movement has not equally spread throughout the region.

Since the Latin American microfinance market is one of the oldest, most developed and most diverse microfinance market in the world (Miller, 2003), the region is the most interesting one for identifying factors of uneven development in the microfinance sector. The objective of this paper is to identify these factors.

4. Literature overview and hypotheses

The development of institutions can be stimulated by external and by internal factors. Internal factors are part of the institution's policy. Good governance and management play an important role in the success and the further development of an organization. This seems to be equally true for non-profit financial organizations. Governance problems are seen as one of the main reasons hindering the success of cooperatives and credit unions. With the maturation of the microfinance sector, governance and management issues are increasingly gaining attention⁷. Though the subject is interesting and relevant, this paper focuses solely on external factors playing a role in the development of the industry. We thus leave organizational issues behind.

Richter (2004) defines a first framework for looking at the microfinance sector as the emergence of a new industry. She uses the Social Systems Approach developed by Van de Ven and Garud (1989). They extend the definition of an industry used by Porter (1980)⁸ to put the emergence and development in a larger context. The suggestions made by the Social System Approach are used to identify different sets of external factors that could play a role in the growth of the Latin American

⁷ Labie (2001), Hudon (2005) and Hartarska (2005).

⁸ "An industry is the group of firms producing products or services that are close substitutes for each other" Porter (1980).

microfinance sector. Drawing on the literature on individual country studies, categories are constructed and hypotheses made. Firstly, country-specific macro-economic factors are studied. Secondly, the geographic and institutional framework is explored. Thirdly, the country is put in its international context. Finally, the historical background of the 1980s leading to economic reforms is taken into account.

A. Macro-economic environment

The effect of macro-economic instability on the financial sector is a widely studied one. The subject has received increased attention since the 1990s, when a lot of developing countries were hit by severe economic crises. A study conducted by Golgfajn and Rigobon (2000) shows that macro-economic stability, determined by stable inflation and real interest rates, plays a major role in financial sector development.

According to Rhyne (2001), the process towards a more stable economy, and especially lower inflation rates, attracts more potential microfinance providers. Vander Weele and Markovich (2001) provide evidence of the devastating effects of inflation and especially hyperinflation on the performance of microfinance institutions. One could thus argue that inflation is one of the hindering factors in the development of the sector. It erodes the capital basis and diminishes the value of the currency. For the borrowers, high inflation means high interest rates and increasing repayment problems.

Countries experiencing macroeconomic stability may not encounter these problems. On the other hand, they may not be used to the high interest rates that microfinance institutions generally set. Westley (2005), for example, suggests that borrowers in the Caribbean countries are not used to the high interest rates charged by MFIs due to the long history of macroeconomic stability. Consequently, the demand for micro-financial services is low. Latin American countries have indeed a long history of economic instability. Furthermore, the specific characteristics of microfinance could mean that the sector responds on another manner. Patten et al. (2001) for example have shown that microfinance institutions can play a countercyclical role in times of crisis. During the Indonesian crisis, the microfinance sector performed much better

than the traditional financial sector. Also Marconi and Mosley (2005) show that certain types of microfinance institutions played as a shock absorber during the Bolivian macro-economic crisis of 1999-2001⁹.

So, the effect of macro-economic stability seems mixed. On one hand, one could argue that higher inflation educates people rendering them more familiar with higher interest rates. On the other hand, high inflation could hinder the development, by discouraging potential microfinance providers and creating repayment problems. Taking into account the historical setting, we assume that microfinance will be more present in economic instable areas.

Hypothesis 1: Microfinance tends to exist in economic instable economies.

The level of income is another macro-economic factor that is found in the literature on microfinance. Westley (2005) states that regions with higher levels of income have less developed microfinance sectors. Two reasons are given. Firstly, micro-entrepreneurs with higher incomes have more opportunities to self-finance through savings. Secondly, they may benefit more easily from informal finance through family and friends. In addition, they could also benefit more easily from formal finance. Similarly, Schreiner and Colombet (2001) argue that one of the reasons why microfinance in Argentina has not developed is due to the higher wages people earn. A useful proxy is the GNI per capita.

Hypothesis 2: The microfinance is more present in economies with lower GNI per capita.

B. Infrastructure and geographical framework

Transaction and information costs are factors influencing financial development. In some case they lead to market failures (Stiglitz and Weiss, 1981). Good interconnectivity between regions, the availability of electricity, communications and sanitation networks diminish these costs. Also a high population density plays an

⁹ Though, they highlight the fact that the countercyclical role depended much on the kind of institution.

important role in lowering these costs. According to Sriram and Kumar (2005), this can lead to two contradictory arguments. One is the fact that formal financial institutions may be more developed in those regions with higher population density and good regional interconnectivity. Thus the need for specific microfinance institutions may not be necessary. The second is that, if the development of the two sectors is complementary, these factors could eventually also stimulate the development of the microfinance sector. Latin American evidence has shown that urban microfinance institutions are more common than rural ones (Rhyne, 2001, Gonzalez-Vega, 2002) and that their development is not mutual exclusive.

Schreiner and Colombet (2001) argue that the absence of good infrastructure plays a hindering role for the development of microfinance. Moreover Yaron and McDonald (1997) see the absence of good infrastructure and sparse populated areas as one of the main reasons why financial sectors in rural areas are so underdeveloped. Hulme and Moore (2006) also support the hypothesis that microfinance tends to develop much faster in dense populated areas. Consequently, the hypothesis that microfinance tends to exist in high-density populated countries is tested.

Hypothesis 3: Microfinance is more developed in dense populated areas.

The role of human capital in the development of financial sector development is widely recognized. Paulson (2002) studies the effect of higher rates of human capital on financial innovation and development in Thailand. She finds that regions with higher levels of education have more developed financial systems. Also Guiso *et al.* (2005) found positive effects of social capital on the development of the financial sector. On basis of these results we argue that human capital enhances the development of microfinance institutions. Namely, higher education levels and literacy rates can stimulate financial innovation.

Hypothesis 4: The microfinance sector has a higher penetration ratio in countries that have higher literacy rates.

C. The international environment

The international donor community has historically played an important role in subsidizing the emergence and further development of microfinance programs. As most institutions started as non-governmental organizations, external financial intervention was needed (Imboden, 2005). Microfinance should thus be more present where the international donor community encourages it. Ideally, the support comes from both domestic and international political actors. For example the fact that the New Economic Program reform of Bolivia was accompanied by the creation of an Emergency Social Fund, which contained a microfinance program, is seen as one of the reasons microfinance took off. The World Bank played an enhancing role by promoting it financially (Rhyne, 2001, Weber, 2004).

To approach the external intervention and international support, the amount of subsidies is a good indicator. During the last decade, the role of subsidies in microfinance has become a more controversial one. Yet, it is widely known that still a lot of microfinance institutions depend on subsidies (Morduch, 1999b). Although microfinance institutions are encouraged to become independent from donor subsidies, the role of start-up subsidies or 'smart-subsidies' is still seen as necessary and therefore favored (Armendariz de Aghion and Morduch, 2005, CGAP, 2004). The amount of donor support should thus be positively related to the development of the sector. So, this hypothesis will be tested.

Hypothesis 5: Microfinance is more developed in regions that receive more international support.

D. Economic reforms

Since the 1980s Latin American countries have been subject to a set of economic reform programs. These economic reforms were part of the Structural Adjustment Programs. They consisted of a gradual liberalization of the domestic economy. Financial sector reforms were an important component of this process. We use this historical setting to construct our last class of hypotheses.

The international donor community commonly sees the Bolivian microfinance experience as one of the most successful and developed microfinance markets¹⁰. Bolivian microfinance institutions have increasingly transformed from NGOs into commercial entities. Rhyne (2001) puts the emergence of the microfinance industry in the broader story of Bolivian neo-liberal transformation. Part of the economic reform program was the closure of the four state developmental banks. As a result many poor households were left without any access to financial resources. A vacuum was created, leaving an open market for MFIs. As state development banks are the main providers of subsidized credit schemes, the closure or privatization of these banks reduces the existence of these credit schemes. This can be seen as an important stimulator in the development of the microfinance sector. In addition, the financial sector was gradually liberalized. In the literature on the traditional banking sector, the liberalization of the financial sector is seen as an important stimulator for financial sector development¹¹. This argument is used to construct hypothesis 6.

A second part of financial liberalization programs consisted of the liberalization of interest rates. Usury laws and interest rate ceilings are generally seen as one of the reasons why the formal financial sector has left the poor behind. Serving poor clients is a costly and risky business due to the specific characteristics and the living environment of these clients. Consequently it is argued that the existence of usury laws hinders the development of microfinance institutions (Nichter *et al.*, 2002 and Schonberger, 2001). Helms and Reille (2004) define three kinds of interest rate ceilings: interest rate controls, usury laws and de facto controls. The impact of the interest rate ceiling depends on two factors: the level of the interest rate ceiling and the effective enforcement of it.

Some countries though exempt microfinance institutions of the interest ceiling. Others have created a special legal status for them. We define this as a specific regulatory environment¹². Gomez *et al.* (2000) and Jansson and Wenner (1997), highlight that the creation of a special regulatory framework for the development of

¹⁰ See for example Christen (2001), Robinson (2001), Rhyne (2001), Marulanda and Otero (2005).

¹¹ Lee Jong-Kun (2002).

¹² Nevertheless, a lot of factors should be taken into account to define whether or not a country has a *favorable* regulatory framework for MFIs. For reasons of simplicity, though, no distinction is made by and the classification done by others is followed (see Section 5).

microfinance is an important factor. For example, the construction of Fondos Financieros Privados in Bolivia, more commonly known as Non-Bank Financial Institutions, has played an important role in the development there. Hypothesis 7 examines this argument.

Hypothesis 6: The microfinance sector is more developed in countries that have a more liberalized financial banking sector. The level of foreign assets per capita is used as proxy, as the level of foreign assets is highly correlated with financial liberalization and privatization¹³.

Hypothesis 7: The development of the microfinance sector is determined by the kind of regulation for these institutions. On the one hand, we expect a positive sign for a specific regulatory environment. On the other hand, we expect a negative sign for the existence of usury laws.

A third part of the economic reform programs of the 1980s was the closure and privatization of state enterprises. Marconi & Mosley (2005) argue that the closure of state enterprises in Bolivia pushed people towards the informal economy. The absence of the creation of alternative formal employment opportunities augmented unemployment figures. To foresee in their needs, people started up micro-enterprises. Consequently, the demand for microfinance services augmented. Also Mezerra (2002) identifies the informal sector as the main potential microfinance demanders. Schneider (2002) assembles data on the size of the informal economy all over the world. On average Latin American countries have an informal sector of 41% of GDP, varying from 67.1% in Bolivia to 19.8% in Chile¹⁴. Unfortunately, not all countries provide data on the size of the informal sector. Consequently, it is difficult to test the role that informal markets play in the growth of microfinance institutions.

A couple of authors make the link between the transition to a more service-based economy, the growth of the informal sector and the existence of a microfinance market. It is argued that economies that shift away from primary production (industry and mining) to a more service based economy tend to develop a higher demand for

¹³ Lee Jong-Kun (2002).

¹⁴ Data of 1999/2000, as percentage of GDP (Schneider, 2002).

micro-financial service as this is the major market for microfinance providers (Marconi and Mosley, 2005). This hypothesis will be tested.

Hypothesis 9: Microfinance is more developed in less industrialized economies.

5. Data and empirical model

In 2004, the Consultative Group to Assist the Poor (CGAP) published a worldwide survey on financial institutions serving the poorer sections of the population. They identified over more than 3000 institutions. CGAP (2004) divided them by region and institutional type. For this paper, the Latin American and Caribbean region (LAC) is used. Most of the data is available for the year 2001. Therefore, a cross-country analysis is performed for this year. The CGAP- database assembled data on the institutions by consulting different listing agencies. The CGAP- database is utilized to estimate the number of microfinance institutions and the number of clients served by these institutions in the year 2001. When possible the database was extended with data from other agencies. These come from the MixMarket and three microfinance rating agencies listed by the Rating Fund: MicroRate, PlaNet Rating and Microfinanza. In this way, more than 70 of the largest institutions were added to the database. This allows obtaining a clearer overview of the state of development of the microfinance sector in 2001. In total, 281 institutions were taken into account. Of these 281 institutions, 186 were at that time operating under an NGO-status. Twenty-six institutions were registered as commercial banks, 20 as Non-Bank Financial Institution (NBFi) and 25 as Cooperative or Credit Union.

In 2001, these institutions served 6.471.887 clients. This figure is large compared to the number provided by the Micro-credit Summit (2002). The summit reports on about two hundred Latin American and Caribbean institutions. The number of total clients reached by these was 1.973.352. The authors pinpoint that this low number is due to not having a regional Summit-coordinator there to assemble data.

Two shortcomings of this database must be kept in mind. Firstly, not all institutions reported the exact number of their clients, even though almost all provided the number of outstanding loans or active borrowers during that year. When the number

of clients was available, this number was used, when it was missing it was proxied by the number of loans outstanding. Analyzing the data on the different institutions that reported on both data, shows that these numbers do not vary much. The number of loans is generally bigger than the number of clients. This could lead to a slight overestimation of the number of clients being served. Secondly, we did not find data for all the institutions of the year 2001. This way the estimation could lead to an underestimation of the market. Nevertheless, the addition of microfinance institutions listed by the Mix Market and the Rating Fund assures that the main operators are gathered¹⁵.

The number of clients divided by the population gives a relative measure to compare the extent of the sector. The percentage is used as our dependent variable. On average, microfinance institutions serve 6% of the population. In the Latin American region we find that Ecuador reports the most clients (more than 10% of its population) for the year 2001. Bolivia comes a little behind the average with 4% of its population served¹⁶.

The empirical model used to test the hypotheses is of the form:

$$OUT_i = f(ME_i, INF_i, INT_i, ER_i) + \varepsilon_i \quad (1)$$

where OUT_i is the percentage of the population served by microfinance institutions in country i in the year 2001 and ε_i the conventional residual. ME_i are the macro-economic variables, INF_i are the infrastructure and geographical framework variables INT_i the international support variable and ER_i the economic reform variables.

The macro-economic variable contains inflation and GNI per capita. The total level of aid per capita the country receives is used as a proxy to assess the level of international support. The infrastructure and geographical framework encloses population density and literacy rates. Finally, the economic reform variable includes the foreign assets per capita to approach the level of liberalization; a dummy that turns one if the country has a usury laws and turns zero if not; another dummy that

¹⁵ The big institutions cover more than 60% of the market (Hudon, 2005 & Honokan, 2004).

¹⁶ Microrate (2002) gives some possible explanations for this trend.

turns one if the country has some kind of special regulation for MFIs and zero if not; and finally industry value added to assess the level of industrialization.

Most of the data comes from the World Development Indicators. The UNDP-Human Development Index is used to assess the level of human capital. Helms and Reille 's database (2004) is used to construct a dummy for the existence of usury laws and the presence of special regulation for MFIs. The Microfinance Regulation and Supervision centre¹⁷ dataset on special regulation completes the database.

The functional specification becomes then:

$$OUT_i = \alpha_i + \beta_1 \times INFL_i + \beta_2 \times GNI_i + \beta_3 \times AID_i + \beta_4 \times HCL_i + \beta_5 \times DENS_i + \beta_6 \times FORAS_i + \beta_7 \times REG_i + \beta_8 \times CEIL_i + \beta_9 \times INDVA_i + \varepsilon_i \quad (2)$$

where, *INFL*, is the average inflation rate over the last five years; *GNI*, the gross national income per capita; *DENS* is the population density of a country; *HCL*, the literacy rate of the population; *AID* is international aid per capita; *FORAS* is foreign assets per capita; *REG* a dummy that turns one if the country has a favorable regulation regarding microfinance institutions, and turns zero if not; *CEIL* a dummy that turns one if the country has interest ceilings and zero if not; and finally *INDVA*, the industry value-added.

Following the World Bank classification data from 32 countries are used. Due to data limitations the Cayman Islands and Bermuda had to be eliminated from our database. Table 1 gives a summarizing table of the hypotheses, the variable that we will test in equation (2) and the expected sign of the coefficient. Table 2 provides the descriptive statistics of the variables.

¹⁷ http://microfinancegateway.com/resource_centers/reg_sup (consulted on July,2006).

Table1: Summarizing table of hypotheses

	Hypothesis that will be tested	Variable	Expected sign
1.	Microfinance tends to exist in high inflation areas.	Inflation rate	Positive
2.	Microfinance is more present in countries with lower GNI per capita .	GNI per capita	Negative
3.	The microfinance sector is more developed in dense populated areas .	Population density	Positive
4.	Microfinance is more present in countries that have a higher literacy rates .	Literacy rate	Positive
5.	Microfinance is more developed in countries that receive more International donor subsidies .	Aid per capita	Positive
6.	The microfinance sector is more developed in countries that have a more liberalized financial banking sector. ¹⁸	Foreign assets per capita	Positive
7.	Microfinance is more present in countries that have special regulatory frameworks for these institutions .	Dummy	Positive
8.	Microfinance is more developed in less industrialized economies.	Industry value added	Negative

Table 2: Descriptive statistics of the variables.

Variable	Obs	Mean	Std. Dev.	Min	Max
Outreach	32	0.06089	0.07643	0	.24586
Inflation(%)	31	10.64839	12.90374	0.4	54.1
GNI per capita	30	3607.333	2988.689	470	15060
Population Density	32	122.7813	140.6193	3	621
Adult literacy (%)	31	88.82258	10.7247	50.8	99.7
Aid/capita	32	56.90625	77.45232	-4	335
Foreign assets/capita	32	6785.84	35353.5	-505.07	200482.4
Interest rate ceiling	32	0.34375	0.482559	0	1
Special Regulation MF	32	0.3125	0.470929	0	1
Industry VA (%)	30	27.93333	7.352848	16	46

¹⁸ As not enough data on government owned banking assets is available, the level of foreign assets in the banking system is used as a proxy. The World Bank shows that with the withdrawal and the privatization of the banking system the amount of foreign investors has increased tremendously. Therefore we will test the hypothesis whether microfinance is more developed in countries that have more foreign assets.

6. The Results

The analysis relies on a multiple regression (Ordinary Least Squares). Table 3 shows the results from this cross-country regression. We find an adjusted- R^2 of more than 55%. Only 28 observations are included. Four small countries are left out: Antigua and Barbuda, the Bahamas, Barbados and the Netherlands Antilles.

Results indicate that the first variable plays a notable role. The factors defining the macro-economic environment have both positive signs. Our **first** hypothesis is thus confirmed. Microfinance is more developed in economic instable areas. The coefficient of inflation is significant at the 5% level. This result is consistent with Hartarska (2005). She found that microfinance institutions in higher inflationary areas reach more borrowers. This fact could confirm the point made by Westley (2005) who says that people living in an economic stable environment are not used to pay high interest rates. On the other hand, it sheds light on the special role that microfinance institutions possibly play in economic instable countries, confirmed by Patten et al. (2001). Moreover, in high-inflation areas the formal banking sector is mostly even more reluctant to lend to the poorer sections of the population, this way leaving a bigger market for potential microfinance providers.

The coefficient of GNI per capita is not significant (**Hypothesis 2**). The level of income per capita on an aggregated country level does not seem to play a significant role within the Latin American region. This result could be explained by the fact that microfinance focuses on the poorer parts of a population within a country and not that much on the poorest countries as such.

With regard to factors related to physical environment, the results confirm our **third** hypothesis. Microfinance institutions reach more clients in dense populated countries. The coefficient is slightly positive significant at the 15% level (10.7%). This strengthens the idea that dense populated areas lower the operational costs of serving microfinance clients. Moreover, it explains the fact the microfinance is still relative underdeveloped in rural areas, as they are usually less dense-populated.

Table 3: OLS regression

	Dependent variable MFIs' Members
Explanatory variable	
INFL	.0017324** (.000638)
GNIPC	.000012 (8.45E-06)
DENS	.000225 (.000133)
LIT	.00364** (.00138)
AIDPC	.000731*** (.00014)
FORASPC	3.55E-07* (1.76E-07)
REG	.0137002 (.02078)
CEIL	.050601 (.031222)
INDVA	-.00579*** (.001569)
Adjusted R-squared	0.5543
F-statistic	36.89***

Values of standard error in parentheses

** Significant at the 10% level; ** Significant at the 5% level; *** Significant at the 1% level*

The coefficient of literacy rates is significant at the 5% level. Our **fourth** hypothesis is thus proven. This finding is consistent with the literature on financial development. Literacy rates play hence an important positive role in the development of financial sectors.

The role that the international donors play is highly significant (coefficient at the 1% level). Hypothesis **five** is therefore verified. Countries that receive more international aid have developed considerable bigger microfinance markets. This result highlights the important role of international support in developing microfinance markets.

The results confirm our **sixth** hypothesis. The coefficient of the percentage of foreign assets per capita does play a significant role at the 10% level. This supports the argument that more liberalized or privatized economies have bigger microfinance markets. Two reasons can be thought of. The first one is that liberalization intensifies competition between the formal banking sector. This could stimulate a portfolio shift towards the richer clients, leaving a bigger un-served segment. Second, the withdrawal of government banks could stimulate the downscaling, as unequal competition disappears.

The second set of financial liberalization reforms, though, is not important. Table 3 shows that the **seventh** hypothesis does not hold, either since usury laws or a favorable environment do not play a role. A special regulatory environment does not have a significant effect on the level of microfinance development. The coefficient of usury laws is slightly significant, but the sign is opposite to the expected one. The positive sign of the dummy in equation (2) could point to the fact that governments of developing countries do not enforce usury laws directly, or that they are not high enough to really hinder the development. One of the reasons why special regulation may not play a significant role is that only a few countries have created yet a special status for microfinance institutions. Furthermore, a special regulatory framework is not always effective, as noted by Hartarska (2005). It could thus even hinder the development.

Finally, the results confirm our **last** hypothesis. The coefficient of the industrial sector development is significant at the 1% level. Microfinance tends to be more developed

in regions that are less industrialized. Nevertheless, this result does not automatically indicate that microfinance tends to be more existent in service-based economies, as also the rural sector can play a role.

7. Conclusion and further research possibilities

This paper studies the uneven development of the microfinance sector in Latin America. Insights from the literature on individual countries are used to construct a set of hypotheses that are tested on a cross-sectional basis. The study finds that microfinance tends to serve more clients in economic instable environments. Microfinance institutions seem in this respect to be different from formal financial institutions.

The paper shows that countries that are less industrialized have developed bigger microfinance markets. The specific role that service-based countries play in comparison with agriculture-based countries needs to be investigated further. Dense populated areas have slightly bigger microfinance markets than the others. Finally, human capital, here approached by literacy rates plays a stimulating role. Potential microfinance providers should take these factors into account. Specifically, it indicates that regions with other characteristics need special attention in developing microfinance markets.

Financial sector liberalization does seem to have a positive influence on the presence of microfinance. Increased market failures or, on the contrary, a better market functioning, could be the reason. Regulation does, until now, not seem important. The findings of this paper confirm that the microfinance sector is more present in countries that receive a higher proportion of international aid. It thus highlights the important role the international community plays. The part that domestic governments play in the encouragement of the industry should be further investigated.

Further research is needed. Firstly, the paper concentrates solely on the outreach of microfinance institutions. Using the average loan size as dependent variable could shed a light on the depth of outreach of the microfinance sector in a country.

Secondly, following the microfinance emergence and development process using panel data would be of great value. This way, the variables could be analyzed in their historical perspective. Thirdly, the role that informal markets play should be studied. The literature indicates that it is a main market for microfinance institutions. To obtain a more accurate view of the potential of microfinance markets, this measure could be more precise than total population.

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