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Country risk management of microfinance investment vehicles

Master Thesis in Banking and Finance

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Full Text Version

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Executive summary

Microfinance investment vehicles (MIVs) emerged recently to grow at an impressive pace. MIVs receive their revenues from emerging markets and developing economies, whose development standards are not comparable with industrialized countries. A recurring concern amongst microfinance practitioners is that political interference occurs in an "interest rate ceilings" form. This study aims at investigating the impact of country-specific factors on MFI portfolio quality underlying particular MIVs. Concentration risk of MIVs is researched. Moreover, the effect of an interest rate ceiling policy adversely impact portfolio quality is addressed. The scope of study is solely limited on country-specific aspects. While the purpose of the research is not to assess a domestic "banking crisis", the study will enlighten country risk factors impacting microfinance from an investor's viewpoint, specifically considering a MIV portfolio investing in Latin America.

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List of abbreviations

AUM	Assets Under Management
CDO	Collateralized Debt Obligation
CGAP	Consultative Group to Assist the Poor
CLO	Collateralized Loan Obligation
EAP	East Asia and the Pacific Region
ECA	Europe and Central Asia Region
EIB	European Investment Bank
EU	European Union
FINCA	Foundation for International Community Assistance
GDP	Gross Domestic Product
GNI	Gross National Income
GP	Global Partnerships
HHI	Herfindahl-Hirschman Index
IDB	Inter-American Development Bank
IFI	International Financial Institution
IPO	Initial Public Offering
KfW	KfW Entwicklungsbank (former name: Kreditanstalt für Wiederaufbau)
MEF	Microfinance Enhancement Facility
LAC	Latin America and the Caribbean Region
MII	Microfinance Investment Intermediary
MIV	Microfinance Investment Vehicle
MIX	Microfinance Information eXchange
MFI	Microfinance institution
MFIF	Microfinance Investment Fund
MENA	Middle East and North Africa Region
NBFI	Non-Bank Financial Institution
NGO	Non-Governmental Organization
OLS	Ordinary Least Squares
PaR30	Portfolio at Risk greater than 30 days
SA	South Asia Region
SRI	Social Responsible Investment
SSA	Sub-Saharan Africa Region

1. Introduction: Why does country risk matter for microfinance?

In recent years, countries in Latin America (e.g. Bolivia) and worldwide (e.g. Indonesia) have been subject to domestic microfinance crises that have seriously affected local microfinance institutions (MFIs); fortunately, these crises remained to some extent within country borders, thus preventing a spread in the regional and global microfinance sector. Past crises occurred when microfinance was considered more as a "movement" than an "investment opportunity"; when foreign capital in microfinance originated predominantly and almost exclusively from donors and development financial institutions.

Microfinance investment vehicles (MIVs) emerged only recently to grow at an impressive pace in terms of capitalization, and to draw the attention of the microfinance community. A main issue to consider is that MIVs receive their revenues from emerging markets and developing economies, whose development standards are not comparable with industrialized countries. Therefore, foreign investments in developing countries are *"subject to a varying degree of restrictions and controls"* (EMF, 2008, p.16). Currently, cross-border investments in microfinance from MIVs are largely concentrated (in terms of volume) among 200 MIVs in a few nations, making country risk a critical factor of MIVs' soundness and financial performance.

Furthermore, the broadening of the microfinance industry is leading to its greater integration within the *mainstream* financial sector of developing and transitional countries. According to Reuters (2009), this growing integration brings a "political risk" into microfinance; populist policies adversely impacting the sector. A recurring concern amongst microfinance practitioners is that political interference occurs in an "interest rate ceilings" form.

"That would make even the most nonprofit organization in most countries very hard to operate if [interest rate] *ceilings were imposed without some reality of what the costs are for those institutions to deliver services in many more areas."* Bob Annibale, global director of Citi Microfinance in Reuters (2009).

At present, about 40 developing and transitional countries enforce the "interest rate ceilings" policy (CGAP, 2004[a]). Nicaragua is amongst them. To date, the Nicaraguan government of President Daniel Ortega labels microfinance as "usury" and continues to place ceilings on interest rates of loans contracted by Nicaraguan micro-borrowers (MicroRate, 2009[a], p.27). Additionally, an organized protest movement called *"Movimento de no pago"* ("No Payment Movement") emerged in 2008, poised to prevent the settlement (or payback) of outstanding MFI loans. The movement was initially disapproved, although later Ortega's administration encompassed it and promoted it *"as an example of the government's efforts to defend economic populism."* Pachico (2009, p.1).

As a result of the movement, the largest microfinance network in Nicaragua (ASOMIF) agreed to refinance micro-borrowers debt at lower interest rates (MicroRate, 2009[a]). Currently, no MFI bankruptcy has been associated to the "No Pago" movement; however, several MIV managers (e.g. responsAbility, BlueOrchard) reported in October and November 2009 negative performance due to additional provisions made against MIV loans to Nicaraguan MFIs.

This study aims to provide a comprehensive country risk framework in regards to microfinance.

2. Microfinance: perspectives for a socially-motivated investor

This chapter is designed to highlight essential notions of microfinance and provide an overview on microfinance institutions.

2.1 Notions of microfinance

"The poor stay poor, not because they are lazy but because they have no access to capital."

Milton Friedman, 1976 Nobel Prize in Economic Sciences

One of the critical aspects that impacts adversely growth in the developing world is that a major part of its population is excluded from financial services (Yusuf, 2009). The vulnerability these people face could be reduced when means that assist to smooth consumption and overcome crises are provided. Like all individuals they need a full range of financial services, rarely accessible through the *mainstream* financial sector. [1]

2.1.1 Microfinance: a concept to alleviate poverty

Microfinance means financial services for low-income people, mainly to start up and grow businesses. There are many definitions of microfinance, and the different concepts reveal show a discrepancy. According to the Consultative Group to Assist the Poor (CGAP)[2], *"microfinance offers poor people access to basic financial services such as loans, savings, money transfer services and microinsurance. People living in poverty, like everyone else, need a diverse range of financial services to run their businesses, build assets, smooth consumption, and manage risks."*[3] In order to frame the scope of microfinance, CGAP (2004) developed a list of key principles for *"effective, accessible and equitable microfinance services"*. *The Key Principles for Microfinance* (cf. Appendix I) were endorsed by G8 leaders in 2004.

Based on Stuart Rutherford research, CGAP (2006, p.22) distinguishes three functions describing the expediency of microfinance. First, microfinance provides low-income people with the ability to deal with life-cycle events, e.g., marriage, death and education. Second, microfinance reduces vulnerability by increasing the aptitude to deal with emergencies, e.g., personal crises and natural disasters. Third, microfinance provides opportunities to invest in *"an existing or new business, or to buy land or other productive assets"* (Rutherford, 2000, p.8).

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[1] Refer for instance to Honohan (2004) and Bell & al. (2002).

[2] CGAP is an independent policy and research center dedicated to advancing financial access for the world's poor. Housed at the World Bank, Washington, D.C., it is supported by over 33 development agencies and private foundations who share a common mission to alleviate poverty.

[3] Website of CGAP, section: "Frequently Asked Questions - What Is Microfinance?", http://www.cgap.org (Accessed on March 15, 2010).

Microfinance in Latin America is slightly narrower, though strongly linked to the third aforementioned function. Berger & al. (2006, p.4) define microfinance in Latin America as *"financial services primarily for microenterprises: their owner/operators and their workers. [...] Microenterprise has a broad definition; it includes independent economic activities ranging from individual vendors selling oranges on the street to small workshops with employees—and anything in between."*

The general objective, as stated by all representatives involved in microfinance, is to focus on those excluded from the formal financial sector. The very essence of microfinance is to give the individual the tools to develop him- or herself.

> *Give a man a fish and you feed him for a day. Teach him how to fish and you feed him for a lifetime.*
>
> Lao-Tzu, Philosopher of ancient China

Targeted microfinance clients are identified by certain characteristics: gender, ethnicity, caste, religion, geographic location (e.g., rural or urban) and poverty level (Ledgerwood, 1998). In referring to microfinance clients by poverty level, Cohen & Sebstad (2000) separate them in four groups. Most current microfinance clients seem to fall around or just below the poverty line.

- *Vulnerable non-poor* clients are in households above the poverty line but are susceptible to slip into poverty.
- *Moderate poor* clients are in the top 50 percentile of households below the poverty line.
- *Extreme poor* clients are in households in the bottom 10 to 50 percentile of households below the poverty line.
- *Destitute* clients are in households in the bottom 10 percent of households below the poverty line.

Figure 2.1: Defining Microfinance Clients
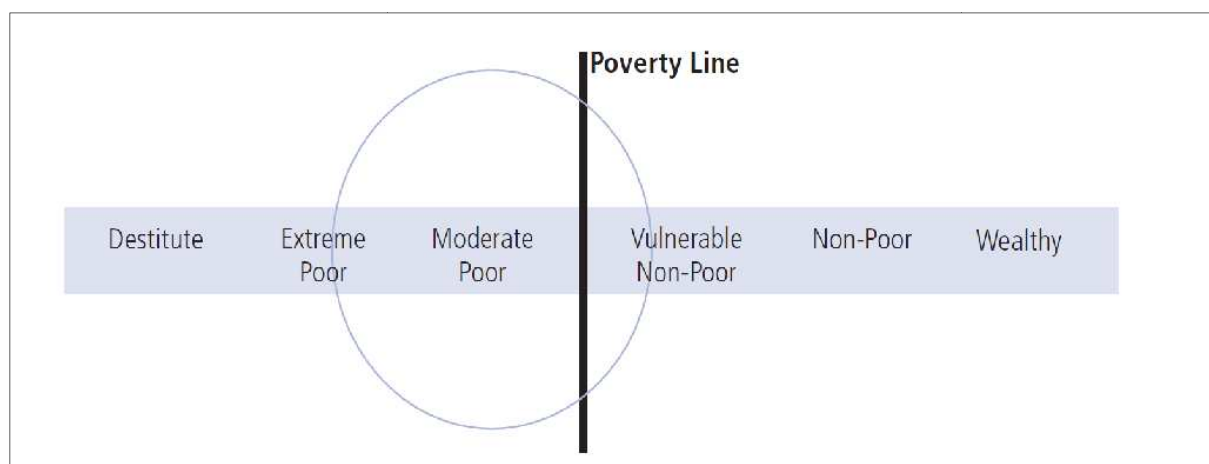
Source: CGAP (2006) based on Cohen & Sebstad researches

Cohen & Sebstad (2000) find out that microfinance clients come from extreme poor, moderate poor, and vulnerable non-poor households. People coming from destitute households seem not accessible by microfinance. Amongst few exceptions, the largest number of microfinance clients appears to fall in the moderate poor category (Figure 2.1).

Latin American microfinance is no exception; it focuses on entrepreneurs with insufficient access to financial services and the unbanked and under-banked in general, including clients both below and above the poverty line. Latin American microfinance aims to provide services to a broad range of clients (Berger & al. 2006), rather than focusing on the poverty groups.

Therefore, microfinance does not coincide with charity. Microfinance might be a sustainable approach to alleviate poverty as opposed to a one-off donation. Reformulating Friedman's quote, people in developing and transition economies do not lack entrepreneurship, they lack access to capital; thus economic growth might be limited without capital formation (Honohan, 2004). At first sight, this might contradict with traditional development work; however the whole idea is based on helping low-income people to gain independency from financial aid.

Another traditional objective of microfinance is to assist female populations (e.g., Grameen Bank). Women are often discriminated in developing countries, and as a result they have limited access to capital. Commercial banks from the formal sector tend to favor men; consequently women seek solutions through the informal sector (Armendáriz & Morduch, 2005, chap. 7). The issues surrounding microfinance and gender equity are often sources of discord among academics and practitioners.

On the one hand, empirical results seem to confirm that microfinance contributes to increasing women's empowerment (e.g., Pitt & al. 2003). On the other hand, Nowak (2005) notices, in Bangladesh, that this empowerment might exclude men from the labor market.

Generally, women tend to be more conservative with their investment strategies (Armendáriz & Morduch, 2005, p.183), they are better at repaying their loans and more willing to cooperate with their loan groups[1]. However women often act merely as intermediaries for their family, meaning that men spend the contracted loan, while women are burdened with the inherent risk. Thus, *"women are kept out of waged work and* [are] *pushed into the informal economy"* (Cons and Paprocki, 2008).

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[1] Website of Grameen Bank, section: "About us – At a glance", http://www.grameen-info.org, (Accessed on March 15, 2010).

2.1.2 Microcredit: a tool to alleviate poverty

Microcredit is an important component of microfinance. Latin America exemplifies well this issue where high microcredit penetration rates stand; Peru, Paraguay and Chile have penetration rates between 25% and 35%.[1] The Foundation for International Community Assistance (FINCA)[2] defines microcredit as *"the provision of working capital to fuel the productivity of the world's poor majority"*. It is considered to be *"a small amount of capital, typically $50 to $300"*[3], but can be more consequent depending on the country. Microcredit is usually characterized as a transaction where no collateral is usually provided by the borrower to the counterparty, while the settlement period is typically a short one, e.g., 6-12 months with weekly payments (Forum for the Future, 2007).

Conversely, microcredit is hard to be defined rigorously with regards to the size of the loan, e.g., $300, $500 or $1,000. Berger & al. (2006, p.4) discard a strict microcredit threshold definition because of different levels of development, incomes, and prices existing across countries.

Moreover, microcredit loan portfolios are generally characterized by a low average loan balance, defined by the MIX as less than 250% of GNI per capita[4]. Table 2.1 provides figures in regards to average loan sizes by region as of December 2009.

Table 2.1: Average loan balance per borrower by region

	SSA	EAP	ECA	LAC	MENA	SA	All Regions
Avg. Loan Balance per Borrower (in $)[5]	626	684	4008	1341	746	912	1588
Avg. Loan Balance per Borrower (in % of GNI per Capita)[6]	138	48	155	47	44	115	97

Source: based on MIX (2010ᵃ)

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[1] Website of Microcredit Summit Campaign, section: "Blog – Small is beautiful for Latin American (March 5, 2009)", http://www.microcreditsummit.org (Accessed on March 15, 2010).

[2] FINCA International is a non-profit microfinance organization, headquartered in Washington, D.C Along with Grameen Bank and Acción International, FINCA is a leading microfinance organization.

[3] Website of FINCA International, section: "Frequently Asked Questions", http://www.finca.org (Accessed on March 15, 2010).

[4] Website of the MIX, section: "About- Microfinance", http://www.themix.org (Accessed on March 15, 2010).

[5] Is equivalent to "Adjusted Gross Loan Portfolio/Adjusted Number of Active Borrowers" (source: website of MIX, http://www.themix.org, accessed on March 15, 2010).

[6] Is equivalent to "Adjusted Average Loan Balance per Borrower/GNI per Capita", where GNI per Capita is the "Total income generated by a country's residents, irrespective of location/ Total number of residents" (source: website of MIX, http://www.themix.org, accessed on March 15, 2010).

Sheltered jobs and steady sources of income elude poverty. To get by, one can create and run his/her own microenterprise. The latter may be small, but the cumulative impact is colossal. Depending on the country, micro-enterprises employ 30 to 80% of the working population (United Nations, 1997). Even if recent studies (e.g., Roodman & Morduch, 2009) raise doubts about the poverty impact of microcredit (and generally microfinance), its objective remains to "enable people to work their way out of poverty".[1]

As a *weapon for fighting poverty* in the developing world, microcredit is as vital as education, health care, human rights and stable government (Smith & Thurman, 2007). To emphasize its importance in fighting poverty, the United Nations declared 2005 the *International Year of Microcredit*[2]. This associates with the *Millennium Development Goals*, where one of the purposes by 2015 is to decrease by 50% the proportion of people living currently in extreme poverty.

Microcredit is crucial in order to grasp a better understanding of the transition process to sustainability for the microfinance area since this, in the long-run, might be an excellent approach for any *"practitioner of development and for those eager to change the way financial institutions, international agencies and private actors service poor populations throughout the world"* (UNCDF, 2005). The essence and driving force of microfinance is to create an environment for development and independency for low-income people and, in a wider perspective, for nations.

2.2 Microfinance institutions: the micro level

Schumpeter (1911) argued that advanced services provided by financial intermediaries - like mobilization of savings, allocation of capital, management of risk, transaction facilities and firm monitoring- are indispensable for economic growth and development. Hence appropriate financial intermediaries might play a central role in the developing world by providing financial services that *"stimulate economic growth by increasing the rate of capital accumulation and by improving the efficiency with which economies use that capital"* (King & Levine 1993, p.735).

2.2.1 Definition and overview

A microfinance institution (MFI) is an organization that provides financial services to poor and low-income clients who are not served by mainstream financial service providers (Mers-

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[1] Refer for instance to CGAP (2010[a]) for a deeper discussion.

[2] Website of International Year of Microcredit, http://www.yearofmicrocredit.org (Accessed on March 15, 2010).

land & Strøm, 2009). MFIs play a significant role in facilitating *financial inclusion*[1], as they are well positioned in reaching out to low-income people. MFIs are important contributors to financial and socioeconomic development. Many of these institutions evolve in a specific area with acceptance amongst the local population, have a greater awareness of the issues in regards to the local context and *"have flexibility in operations providing a level of comfort to their clientele"*[2]. Besides this, performing assets of MFIs are mainly microfinance financial services. Thus financial institutions providing mainly consumer loans, even if solely to low-income people, are not considered MFIs (ResponsAbility, 2006).

In order to define the microfinance industry reliable and comprehensive data is essential; however these data are difficult to establish, particularly regarding market penetration. According to Daley-Harris (2009) 3'552 MFIs worldwide reported reaching approximately 155 million microfinance clients as of December 31, 2007, with 83.4% of them being women. Another source of information is the Microfinance Information eXchange (MIX)[3] organization, which merged three databases[4] in order to provide comprehensive figures on market coverage. Combining the three sources, 2'420 MFIs reported reaching 99.4 million microfinance clients in 117 countries. Most MFIs in this sample are concentrated in South Asia and Sub-Saharan Africa, while most borrowers are concentrated in South Asia, East Asia and the Pacific region (MIX, 2008).

*Figure 2.2: Regional distribution of microfinance clients*   *Figure 2.3: Regional distribution of MFIs*
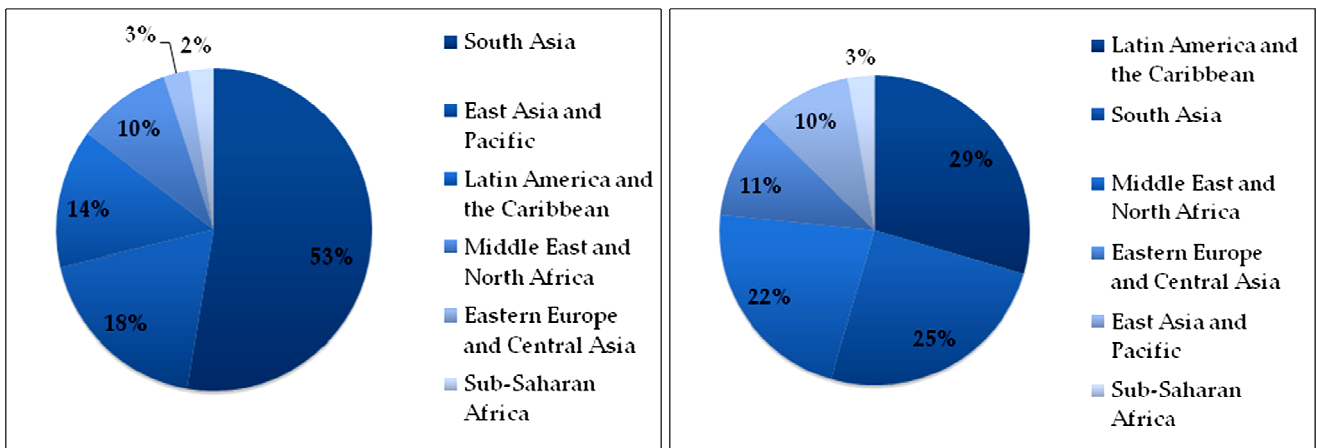
Source: own research, based on MIX (2008)

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[1] *"Financial inclusion may be defined as the process of ensuring access to financial services and timely and adequate credit where needed by vulnerable groups such as weaker sections and low income groups at an affordable cost."*(Rangarajan Committee, 2008)

[2] Website of National Bank for Agriculture and Rural Development, http://www.nabard.org (Accessed on March 15, 2010).

[3] The MIX is a non-profit organization that aims to promote information exchange in the microfinance industry.

[4] MIX Market and the MicroBanking Bulletin, the Microcredit Summit Campaign, and the Inter-American Development Bank.

As the MIX (2008) disclaimer advises, these numbers should not be considered exact representations of the global figures. The statistics correspond to a sample of MFIs that self-reported their figures to the MIX. MFIs that voluntarily provide their information tend to be more efficient and well-managed than the majority of MFIs; subsequently the aforementioned numbers are not perfectly accurate. This discrepancy might be explained by a significant number of informal operators characterizing the field of microfinance.

2.2.2 Microfinance institutions in the landscape of financial service providers

The organizational structure and management in combination with the degree of oversight of supervision by the government determines the institutional formality of MFIs (CGAP, 2006).

Figure 2.4: The spectrum of financial services providers
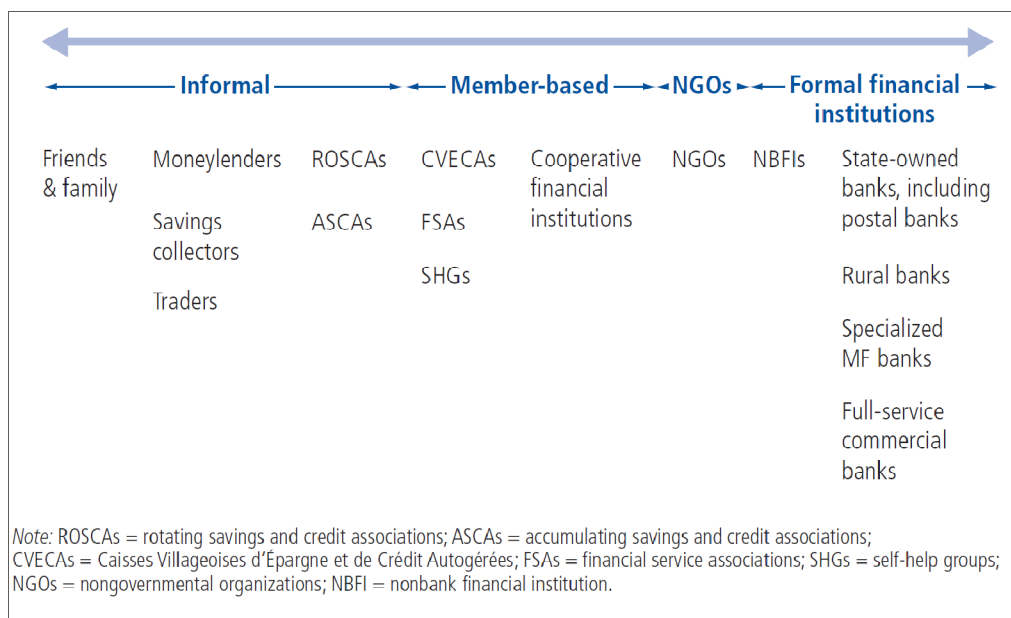
Source: CGAP (2006, p.36)

Low-income people largely obtain financial services through *informal arrangements*. Arrangements may well be made amongst friends and family, or with saving collectors, shop keepers, and moneylenders. Often despised for exploiting low-income people, moneylenders in fact "*offer a valued financial service in many communities*" (CGAP 2006, p.37).

Cooperative financial institutions are *member-based* organizations, owned and controlled by their members. Financial cooperatives are usually not regulated by a governmental banking supervisory organism, but they may be supervised by a national or regional cooperative council. Financial cooperatives are generally non-profit institutions.

Non-governmental organizations (NGOs) have been the true pioneers of microfinance. According to CGAP (2006), at least 9000 NGOs are providing financial services. NGOs may face constraints in the range of financial services that they are authorized to provide; e.g., NGOs may not be allowed to offer deposits-taking services. Most of Latin American MFI pioneers began as NGOs, working in urban markets. They have focused on microcredit as their primary service offering, and only recently began to develop their product range (Berger & al. 2006, p.41).

The existence of microfinance is owed to the lack of ability or inclination of *formal financial institutions* to serve the unbanked and under-banked people. On the other hand, these institutions have the means to make the financial system truly inclusive. CGAP (2006, p.49) considers state-owned banks as *"immense sleeping giants [that] could play a big role in scaling up financial services for the poor"*.

Amongst private commercial banks four types of institutions can be distinguished:

- *Rural banks* have emerged in specific countries. They target clients in non-urban areas generally involved in agricultural activities.
- *Non-bank financial institutions* (NBFIs) include both for-profit and non-profit organizations. A separate license for NBFIs may exist in return for being allowed to assume additional roles, including, for some, taking deposits (Cull, Demirguç-Kunt & Morduch, 2008). NBFIs encompass mortgage lenders, consumer credit companies, insurance companies, and certain types of specialized MFIs.
- S*pecialized microfinance banks* entail transformed NGOs, NBFIs, and banks that from their establishment were entirely dedicated to microfinance.
- *Commercial banks* are fully licensed financial institutions regulated by a state banking supervisory agency (CGAP, 2006). Commercial bank MFIs are likely to be for-profit and rely to a larger extent on commercial funds (both debt and equity funding) and deposits. This category consists of microfinance banks, with microfinance as their main activity, as well as a number of commercial banks, who established specialized microfinance departments within their operations in order to focus on poorer target groups.

2.2.3 Specific features and lending methodologies of microfinance institutions

The contrasts between MFIs and the mainstream financial institutions are important to be mentioned at this stage. Honohan (2005, chap. 3) provides three main characteristics that differentiate microfinance from mainstream financial institutions: *scale, subsidy and style* of operation.

Scale can be perceived as *a transitional phenomenon* and the sustainability of an MFI is partly a function of scale. Rather than having a large number of MFIs, achieving scale of individual institutions, *"seems to be the key to ensuring that the sector has reached a large proportion of the population"* (Honohan 2005, p.12). Moreover, one has to emphasize the importance of achieving scale when region-wide economic shocks occur. The latter can plunge households into poverty. Hence small-scale, informal and geographically confined financial arrangements are *"unable to dissipate the risk through pooling"* and (geographical) diversification (Honohan, 2005, p.13).

Style of operation differs between microfinance and the mainstream. It is important to realize the diversity within microfinance itself. The lending methodology is a major characteristic of an MFI. Cull, Demirgüç-Kunt & Morduch (2007, 2009) distinguish between three lending methodologies for providing microcredit; the individual methodology and two group-lending-based arrangements.

The individual lending method applies to MFIs that use standard bilateral contracts between a lender and a single borrower. Solidarity group lending applies to institutions that use contracts between a lender and a solidarity group of borrowers. Loans are made to individuals, but the group is confronted with a *joint liability* for repaying the loan. The village bank methodology applies to institutions that offer large groups the opportunity to engage in participatory lending by forming a single branch. Being part of the *major innovation* of the microfinance *movement*, the practice of group lending (Figure 2.5) in particular has received great emphasis from academics seeking to comprehend how microfinance deals with information, enforcement and administrative costs (Honohan 2005, p.15).

Figure 2.5: Process of group-lending-based contracts
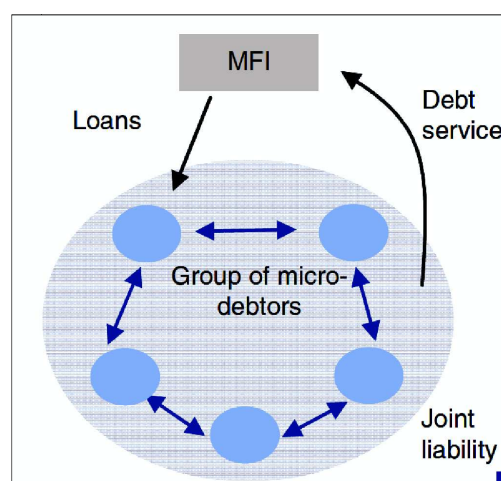
Source: Dieckmann (2007)

For instance, Armendáriz & Morduch (2005, chap. 4) mention that group-lending-based contracts provide, in principle, efficient outcomes through the promotion of social capital, even without collateral. Moreover, group lending mitigates problems created by adverse selection (Morduch, 1999), and *"ensures low default rates and replaces standard collateral"* (Dieckmann, 2007, p.4).

Other features that differentiate MFIs from mainstream institutions in regards to the style of operation include: the progressive increase in the amount borrowed from an individual or group members as each successive loan is repaid, the use of *non-traditional* collaterals (e.g., T.V.) and the high frequency of required repayment installments (Honohan, 2005, p.16).

Subsidy: A large portion of MFIs may benefit from subsidies, whether in the form of technical support, a donation of capital, which is not expected to be compensated, or a flow of funds provided at below market rates. Overall, MFIs remain heavily granted and subsidy-dependent (Honohan, 2005). The subsidy feature through donation is further analyzed in the following section considering the source of funding of MFIs.

2.3 Microfinance funding environment

Currently, microfinance is not considered anymore as an isolated marginal sector that needs to be served only by niche market MFIs. Microfinance is becoming an integrated segment of the broader financial system. The example of the Mexican MFI Compartamos depicts well this evolution when, in April 2007, it sold 30% of its shares in an initial public offering (IPO)[1], oversubscribed 13 times and netted approximately US$467 million for the original investors (Daley-Harris, 2009). The success of the Compartamos IPO will *no doubt* facilitate future funding of MFIs, and improve microfinance image, particularly in regards to cross-border investors (CGAP, 2007[a]).

2.3.1 Sources of funding for microfinance institutions: an overview

The availability of capital is a key factor for the growth of an MFI (Krauss & al., 2007, p.3) and it cannot be met by donor funds or philanthropists alone. In order to supply microfinance borrowers with its services, an MFI needs capital on the liability side of its balance sheet. The funding process follows the same principle like a *mainstream* financial institution. In addition to deposits, an MFI may be financed with debt capital, and to some extent with equity. The equilibrium between debt and equity financing is key to the development and

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[1] IPO means the first sale of stock by a private company to the public. *"IPOs are often issued by smaller, younger companies seeking the capital to expand, but can also be done by large privately owned companies looking to become publicly traded."* http://www.investopedia.com (Accessed on March 15, 2010).

growth of an MFI (Maisch & al. 2006). Appendix II provides the pros and cons of each capital structure. Microfinance has an estimated demand for capital of US$ 270 billion (Forum for the Future, 2007), where $45 billion might be provided in equity and US$ 225 billion in debt, assuming a 5:1 leverage ratio as the current global benchmark[1].

From the perspective of a microfinance investor, equity investment might be more likely in an MFI with a high growth potential over the medium-term and with a high gross margin to sustain its cash flow. MFIs that do not match the aforementioned criteria may still be potential equity investment candidates, although *"with an investment structured to have lower risk"*. (Maisch & al. 2006, p.80).

Latin American MFIs have to a large extent a diversified source of funding. Based on a sample of 42 MFIs from the Latin America and Caribbean regions, as of June 2008, MicroRate (2009[a], p.30) finds that domestic source -including deposits, local commercial loans and other domestic debt capital sources- make up for 59% of funding of MFIs. Equity, stemming from both domestic and international sources, accounts for another 30%. International source of funding through debt accounts for the remaining part (11%).

Globally, Cull & al. (2008) find that microfinance banks (the more formalized institutions) rely predominantly on commercial funding and deposits. NGOs (app. 40% of the sample) rely mainly on donations and non-commercial borrowing. Credit unions (member-based financial institution) rely predominantly on deposits provided by their own members.

Table 2.2: Shares of total funding by institutional type (2005-2007)

	Donations	Non-commercial borrowing	Equity	Commercial borrowing	Deposits
Bank	2%	1%	13%	13%	71%
Credit Union	11%	3%	16%	6%	64%
NBFI	23%	11%	18%	28%	21%
NGO	39%	16%	8%	26%	10%
Total	26%	11%	13%	23%	27%

Source: own representation based on Cull & al. (2008)

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[1] Leverage Ratio = Debt/Equity = (Assets – Equity)/Equity = (60.565 – 9.936)/9.936 ≈ 5 (MIX, 2010[a]).

2.3.2 Degree of commercialization and issues

The funding situation of an MFI is associated with its degree of commercialization. Commercialization refers to the transition from a state of heavily donor-dependency of subsidized operations into one in which MFIs are financially self-sufficient and sustainable, and are part of the formal financial system (Ledgerwood & al. 2006). A classification of MFIs (Figure 2.5) according to their degree of commercialization depicts the growing disparity that reigns amongst MFIs. Meehan (2004, p.7) states, *"a growing divide is emerging between larger more commercially oriented specialized MFIs, many of whom are, or intend to become, regulated financial intermediaries, and smaller, NGO-managed MFIs".*

Figure 2.5: Types of MFIs according to their degree of commercialization
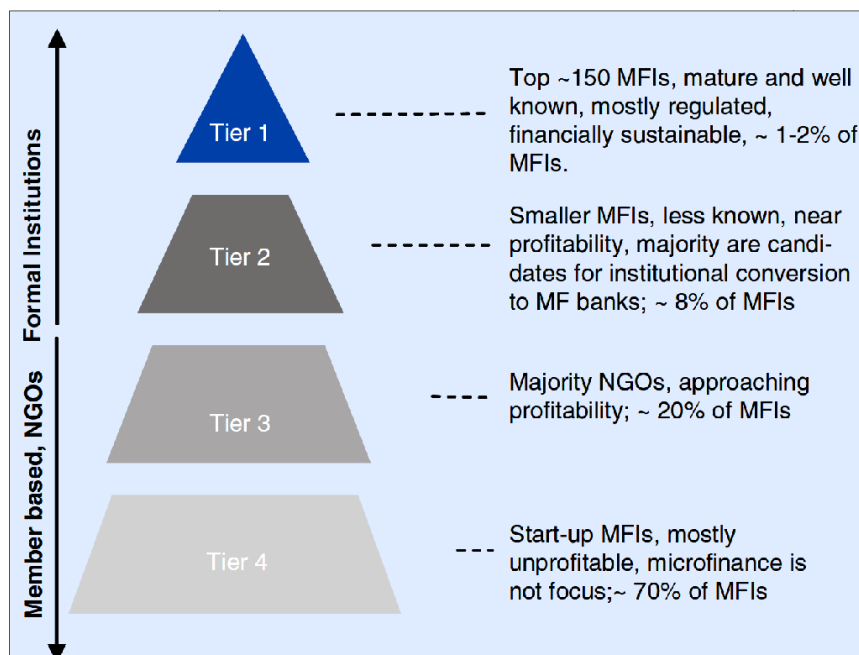
Source: Dieckmann (2007) based on Meehan (2004)

Tier 1 MFIs are developing into formal financial institutions, and are increasingly attracting the attention of private and institutional investors. Typically, tier 1 MFIs are profitable, have a more experienced management team, and are regulated institutions. Tier 1 MFIs capital structure is composed of deposits, debt and equity (BlueOrchard, 2009). On the contrary, tier 2 MFIs are smaller and less mature MFIs. According to Dieckmann (2007), these institutions are predominantly NGOs that are in the process of transforming into regulated MFIs. Tier 2 MFIs may receive funding from public or institutional investors, but less than Tier 1 MFIs. Moreover, their capital structure is less complex than tier 1 MFIs and mainly composed of debt (BlueOrchard, 2009). Tier 3 MFIs are predominantly NGOs as well. These institutions are close to becoming profitable MFIs, but are characterized by a lack of sufficient funding. Lastly, tier 4 MFIs are start-ups or informal financial institutions for whom microfinance is not their *primary focus* (Dieckmann, 2007).

Consequently, MFIs have an incentive to upgrade their institutional and regulatory status (e.g., from tier 2 to tier 1) in order to access more capital. This need for commercialization of MFIs, other than the increase in their *depth of outreach[1]*, is prompted by an endeavor for growth. Looking from a socially-motivated international investor viewpoint, some remarks have to be mentioned at this point.

An issue that can arise from this search of financial expansion through commercialization is a phenomenon called *mission drift*, which describes the process whereby an MFI departs from its social mission, and increasingly focuses on its financial performance. Mission drift occurs as an MFI might find more profitable to reach out to wealthier clients while crowding out poorer clients.

The *risk* of mission drift is more likely when an MFI *"transforms into a formal institution or when shareholders are changing"* (Lapenu & Pierret, 2005, p. 67). As such, the commercialization of an MFI is expected to harm its social performance, consequently deteriorating the dual return that foreign institutional investors expect to achieve from the financial and social performance of the MFI invested in (Mersland & Strøm, 2009). From a policy viewpoint, Armendáriz & Szafarz (2009) emphasize that *"donors and socially responsible investors can be easily mislead by MFIs which are serving unbanked wealthier populations"*.

In addition, MFI growth can be sustainable and reflect financial strength, but uncontrolled growth can be hazardous for an MFI. It can lead to increasing delinquencies and, in the medium-term, problems that can even result in an MFI bankruptcy (Lapenu & Pierret, 2005). This issue of uncontrolled growth is reflected in recent delinquency crises in Nicaragua, Morocco, Bosnia and Herzegovina, and Pakistan (CGAP, 2010[b]).

Past crises (e.g., East Asian and Bolivian one) in developing and transition economies have generally supported the argument of counter-cyclicality in microfinance (e.g., Krauss & Walter, 2008). However, it is expected that microfinance might be more affected by economic downturns than in the past (Fitch Ratings, 2008).

First, a challenge is particularly faced by tier 1 and 2 MFIs. As an MFI transforms and commercializes, and as microfinance borrowers are becoming integrated into the mainstream financial system, a risk that can occur is that *"the resulting convergence between microfinance and mainstream banking effectively strips microfinance of the very characteristics that help to insulate it to some extent from wider economic trends."* (Fitch Ratings, 2008, p.17).

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[1] As already mentioned in the first section of this chapter, MFIs have generally been developed to reach a population excluded from the mainstream financial system. Outreach refers to the ability of an MFI to reach large number of clients. The depth of outreach of an MFI can be measured *"to evaluate its focus on the economically and socially excluded population"* (Zeller & al. 2003, p.5).

Second, MicroRate (2008[a], p.14-15) notes that the definition of "microcredit" has evolved throughout the years to actually include a broader range of forms of lending to low-income people, not considered by microfinance in the past; e.g., consumption loans and small-business loans. MFIs that provide low-income people with microcredit in order to *create wealth* might not be affected by an economic recession. On the other hand, MFIs that lend for other needs (particularly consumption) and provide small businesses with "microcredit" might be more exposed to an economic downturn.[1]

To conclude, *"MFIs that have strayed over the boundary that divides microcredit from consumer, or small lending will be more vulnerable than those MFIs that remain focused on core microfinance services."* (MicroRate, 2008[a], p.XI).

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[1] MicroRate (2008[a], p.XI) argues: since small businesses, contrasting with micro-enterprises, often carry sizable fixed assets, the former might be *"highly vulnerable when the economy contracts."*

3. International funding of microfinance

This chapter provides a framework of international key players funding microfinance. Furthermore, it aims to depict how flows of cross-border funding reach MFIs, by distinguishing primary investors (section 3.1) from intermediary investors (section 3.2). Therefore, the present chapter is structured so as to position microfinance investment vehicles in a clarified microfinance investment landscape.

3.1 Primary cross-border funders

3.1.1 Classification of primary funders

The landscape of primary cross-border funders[1] in microfinance is categorized in two groups: donors and investors. Table 3.1 provides a comprehensive classification.

Table 3.1: Landscape of primary cross-border funders

Donors	Investors[2]
Bilateral Agencies	**International Financial Institutions (IFIs)**
Aid agencies and ministries of governments in developed countries [e.g., Swedish International Development Agency (Sida), United States Agency for International Development (USAID)]	The private sector arms of government-owned bilateral and multilateral development agencies [e.g., KfW (Germany), IFC, European Investment Bank (EIB)]
Multilateral Development Banks & UN Agencies	**Individual Investors**
Agencies owned by multiple governments of the industrialized and developing world [e.g., World Bank, regional development banks], and UN agencies [e.g., the United Nations Capital Development Fund (UNCDF), International Fund for Agricultural Development (IFAD)]	Socially-motivated individual, "*retail*" investors and high net worth individuals that act as venture philanthropists. Individual investors provide their capital through organizations like Oikocredit, a Dutch cooperative society, investment funds, and peer-to-peer platforms.
Foundations	**Institutional Investors**
Non-profit corporations or charitable trusts typically funded by a private individual, a family or a corporation, with a principal purpose of making grants to unrelated organizations [e.g., Bill and Melinda Gates Foundation, Ford Foundation]	International retail banks, investment banks, pension funds, and private equity funds that channel capital into microfinance, often with an expectation of return that is below market [e.g., Deutsche Bank, TIAA-CREF]
International NGOs	
Non-governmental organizations that can be either specialized in microfinance [e.g., ACCION, FINCA] or work in multiple sectors, including microfinance [e.g., CARE, Concern Worldwide]	

Source: adapted from cgap.org and CGAP (2009ᵃ)

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[1] Littlefield & al. (2007): *"Primary funders"* stand for those with both ownership and decision-making over funds, and other intermediary structures. The latter is tackled in section 3.2.

[2] In this thesis, the term "investors" is used for both lenders and equity investors.

3.1.2 Global overview and actual issues of international funding

Developing and transition economies receive international funding for microfinance. Traditionally, MFIs have been funded mainly from international financial institutions (IFIs), NGOs, charities, foundations and other donors. Donors may get involved in MFIs through a wide range of functions; policy support, technical assistance, grants, loans[1], quasi-equity[2], equity investments in MFIs that can sell shares, and guarantees. For donors, direct funding of MFIs might be the *most effective* channel (CGAP, 2006, p.95). However, many donors, particularly multilateral development banks, work only with governments, typically providing them with soft loans. The latter might be suitable for funding traditional aid activities (e.g., building roads, hospitals, and schools), but less appropriate for supporting MFIs development (CGAP, 2006). On the one hand, Dunford (2003) argues that healthy development of microfinance might not be reached through a flow of institutional investments, but through a network of retail delivery channels financed predominantly by IFIs and donors. On the other hand, there is a widespread recognition that on the long-term neither IFIs nor donors (e.g., NGOs) are successful in delivering sustainable services to significant numbers of MFIs (Honohan, 2005).

A shift in direct cross-border funding is occurring; institutional and (for-profit) individual investors are progressively filling this role of sustainable investor (Berger & al. 2006). Besides, microfinance is increasingly recognized as an (emerging) asset class among global private investors. Microfinance investments offer a *double-line* return – a financial and a social one. In addition, investing in microfinance may provide portfolio diversification value for international investors (Krauss & Walter, 2008). Currently, foreign sources account for 15% of microfinance funding, while domestic sources of funding, including deposits, account for 85% (CGAP, 2009[b]); in LAC region, foreign sources of funding might account for slightly more, i.e., approximately 20% (MicroRate, 2009[a]). As of December 2008, microfinance funders (i.e., donors and investors) disbursed US\$ 3 billion and increased their commitments to microfinance by 24%, reaching approximately US\$ 14.8 billion committed[3], whereas 84% of the later amount is intended for funding the *micro level* (i.e., MFIs), directly or indirectly through intermediaries (CGAP, 2009[a], p.5). The remaining funding is provided to support financial market infrastructures (*meso level*) and policy, regulatory and supervisory organisms (*macro level*). Commitment at the policy level requires less capital than financing large and emergent MFIs, thus the funding repartition is coherent[4].

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[1] e.g. loans which are offered at subsidized or commercial interest rates (CGAP, 2006).

[2] e.g. low-interest loans that can be converted into equity (CGAP, 2006)

[3] Annual committed figures don't translate neatly to disbursed amounts to microfinance, e.g. between 20% and 70% committed to microfinance get actually disbursed by donors (Littlefield & al. 2007).

[4] Website of CGAP, section: "Global Estimates - Microfinance Donors & Investors", http://www.cgap.org (Accessed on March 15, 2010).

Globally, for the first time, investors account for more than half of the total commitment, while donors complete the rest of the aforementioned amount committed (Figure 3.1). Despite the financial crisis, funding projections for 2009, reported by a majority of funders, have not been affected (CGAP, 2009[a])[1].

Figure 3.1: Committed amount by type of funder and by region
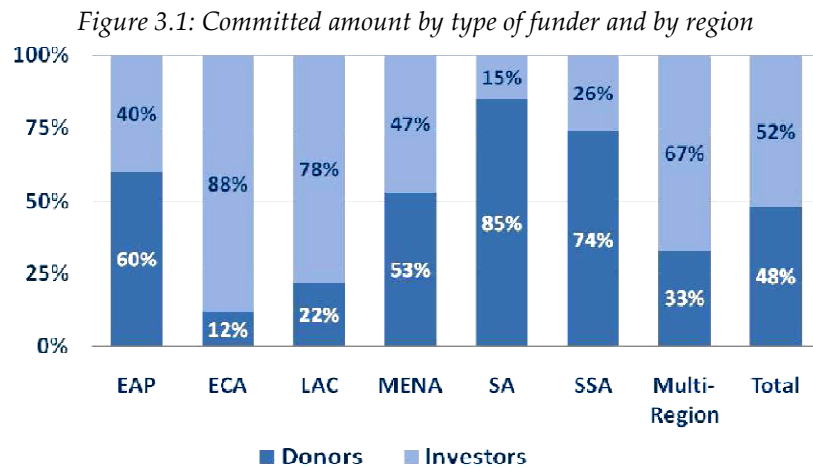
South Asia and Sub-Saharan Africa depend mainly on donors. Conversely Eastern Europe and Latin America rely predominantly on investors rather than donors. In addition, cross-border funding is heavily concentrated in certain countries, e.g., in LAC region, 50% of the total funding (i.e., investors and donors) flows only to 5 out of 23 countries, namely Peru, Mexico, Ecuador, Bolivia and Nicaragua (CGAP, 2009[a]).

Figure 3.2 provides a regional breakdown of the total amount committed and respective annual growth rates by region.

Figure 3.2: Committed amount (US$ million) by region

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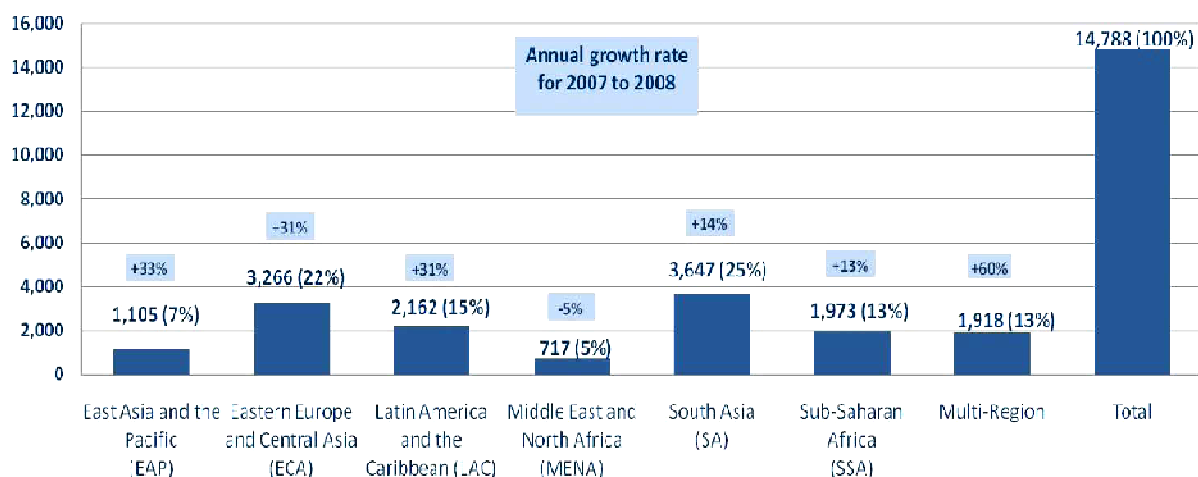
[1] This second annual CGAP funder survey includes responses from 61 donors and investors that represent an estimated 80% of the funding to microfinance (CGAP, 2009[a]).

Regions worldwide have seen their respective committed amounts increasing, except from MENA region (-5%, CGAP 2009[a]); this might be primarily attributed to a relative small international funding amount in this region that grew excessively between 2005 and 2007, coupled with an excessive concentration of funding sources in 2007, i.e., the top-five funders in 2007 represent almost 70% of total funding (53.5% in 2008) in MENA (CGAP, 2008[a]).

Specifically, the major funder in 2007 in MENA, the European Investment Bank (EIB)[1] might have partially withdrawn in 2008 its commitment to Moroccan microfinance (cf. EIB, 2008), in order to focus on larger-scale projects and support modernization programs within the same country; e.g., construction of motorway[2].

At present, it might be premature to attribute causality between the reduced growth of funding in MENA region[3] and recent delinquencies in Moroccan MFIs that lead to a regional microfinance crisis (e.g., CGAP, 2010[b]). However, the IFIs proactiviness towards such phenomena is questionable[4].

Paradoxically, until recently, IFIs have largely preempted institutional and individual investors from entering the rapidly growing Moroccan MFI market, by offering terms which institutional and individual (*private*) investors cannot match (Abrams & von Stauffenberg, 2007, p.14, cf. MFI Al Amana).

In the last several years, the rapid growth of institutional and individual investments to MFIs has led to a *role reversal*[5] between IFIs and private investors. Namely, IFIs are concentrating their loans in the top-tier MFIs (cf. Figure 2.5), leaving private investors to look for opportunities among smaller, riskier MFIs. Consequently, IFIs are *crowding* private investors out of the top-tier MFIs (Abrams & von Stauffenberg, 2007, p.3). On the other hand, for a matter of relativism, one should stress that IFIs "*have played a vital and powerful role in the recent acceleration of microfinance, for which everyone in the* [microfinance] *community is grateful.*" (Microfinance Gateway, 2007, p.5). Therefore, the general consensus might be the following:

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[1] "EIB is the European Union's (EU) long-term lending institution established in 1958 under the Treaty of Rome and owned by EU member states, who subscribe to its capital EUR 164 billion. EIB supports projects within its member states, and finances investments in future member states of the EU and EU partner countries (e.g. Morocco). The EIB operates on a non-profit maximizing basis and lends at close to the cost of borrowing" (adapted from source: website of EIB, section: "About", http://www.eib.org (Accessed on March 15, 2010).

[2] Website of EIB, section: "Projects", http://www.eib.org (Accessed on March 15, 2010).

[3] Moroccan MFIs are preponderant in MENA region, where Morocco and Egypt receive 77% of funding committed to MENA (CGAP, 2009[a]).

[4] According to CGAP (2009[c]), the causes of the Moroccan microfinance crisis might be unsustainable growth.

[5] cf. Abrams & von Stauffenberg (2007). The paper focuses *stricto sensu* on direct lending to MFIs; e.g. equity, guarantees or investments through microfinance investment intermediaries are not addressed.

a) IFIs should invest in lower-tier MFIs, which private investors are *unwilling or unable* to consider (IAMFI, 2009, p.45).

b) IFIs should exit an MFI investment once the latter achieves its sustainability, and private investors are ready to invest in it (IAMFI, 2009), and *seed the next generation of MFIs* (Abrams & von Stauffenberg, 2007, p.17).

c) IFIs should enhance *catalytic* investments that attract institutional and individual investors, especially in an *economic downturn* (IAMFI, 2009, p.45), by making their funding more *transparent* (Abrams & von Stauffenberg, 2007).

In 2008, IFIs, particularly KfW and the International Finance Corporation (IFC), still dominate the scene, owning over half of the total outstanding portfolio[1] (CGAP, 2009[b]). In contrast to most of the other microfinance funders, IFIs tend to provide considerable financing directly to retail MFIs; two-third of their funding is provided by IFIs (CGAP, 2009[a]).

IFI portfolios are set to keep climbing, but institutional investors have shown growing interest in microfinance investments, especially from 2006 onwards.

Figure 3.3 presents the historical growth and actual breakdown of funding by type of investor.

Figure 3.3: Microfinance investment growth by investor type
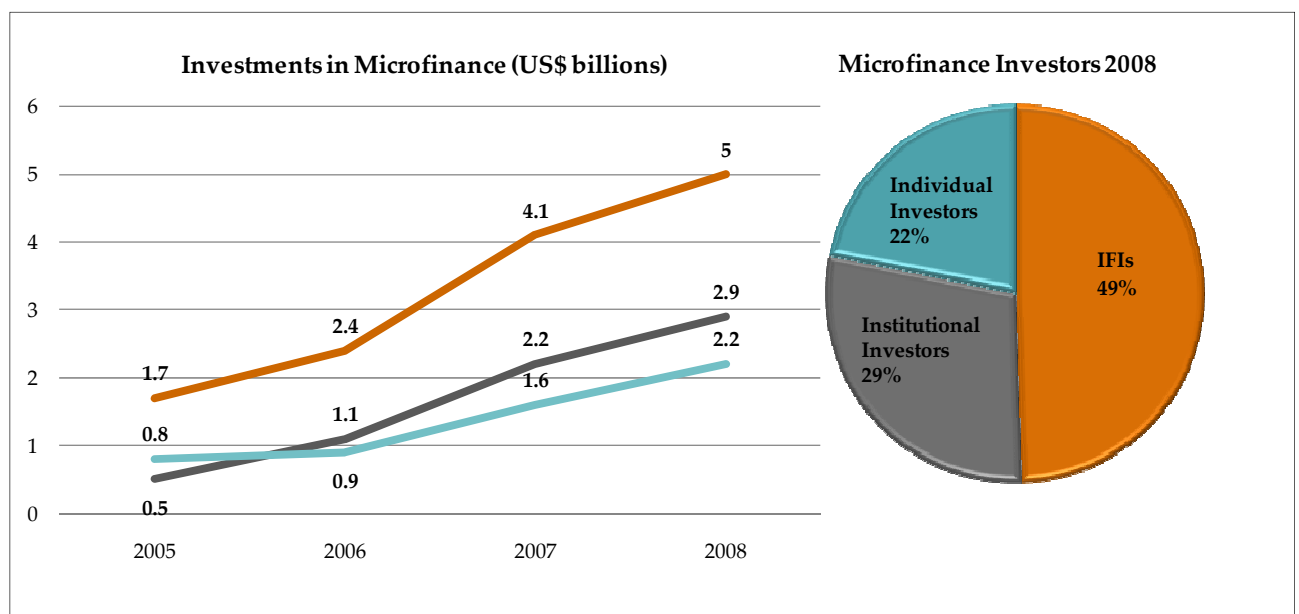
Source: own research, adapted from CGAP (2009[b]) and cgap.org

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[1] Outstanding Portfolio = Funds disbursed minus repayments (CGAP, 2009[a]).

Aggregate institutional investor portfolio has grown from 17% of total microfinance investment in 2005 to 29% in 2008. Institutional investment is mainly composed by 13 commercial banks (aggregate assets of US$ 797 mil.), 6 pension funds (aggregate assets of US$ 681 mil.) and 5 private equity firms focusing on investments in India (CGAP, 2009[b]). Deutsche Bank, Citigroup, HSBC, ING, and ABN Amro, for instance, invest in microfinance through direct loans and other funding channels. Besides *pure* funding, international banks play a significant role in training MFIs to *mainstream* financing techniques (CGAP, 2008[b]).

Furthermore, individual investors have made considerable investments in MFIs and microfinance networks. Nowadays, an individual investor can directly channel money to microfinance entrepreneurs through the internet lending platform Kiva[1] that facilitated US$120 million worth of microcredits to approximately 320,000 entrepreneurs as of March 2010[2]. Nevertheless, individual investors predominantly invest in microfinance through investment funds and other investment intermediaries, rather than supporting MFIs directly (Littlefield, 2007). The microfinance investment intermediation aspect is further analyzed in the following section.

3.2 Microfinance investment intermediaries

Presently, the microfinance area lacks an exhaustive classification of certain key elements composing microfinance, e.g., investment intermediaries and financial instruments. This might be attributed to the relative immaturity, constant evolution and complexity of microfinance, and probably to an actual lack of consensus among CGAP, leading asset managers, academics and other industry experts. Recent classifications by CGAP present a comprehensible picture; however certain issues remain e.g., overlap between investor and donor groups. This section intends to clarify microfinance investment intermediaries and sets up the groundwork for chapter 4. [3]

3.2.1 Definition of microfinance investment intermediaries

MIIs are "*investment entities that have microfinance as one of their core investment objectives and mandates*" (CGAP, 2007[b], p.5). They refer to a broad spectrum of players: MIVs (public and private placement funds), holding companies, as well as other types of MIIs that provide

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[1] Kiva's business model has been called into question recently. According to Strom (2009), the peer-to-peer connection Kiva is offering to reach directly micro-entrepreneurs worldwide might be an *illusion*.

[2] Website of Kiva, section: "About - Facts", http://www.kiva.org (Accessed on March 15, 2010).

[3] The present thesis adopts definitions and classifications in concordance with MicroRate (e.g. MicroRate, 2009[b]). Besides, data from CGAP surveys (i.e. CGAP, 2009[d] and anterior) are incorporating MIIs that are not in fact MIVs (e.g. ProCredit Holding AG). Therefore, sub-section 3.2.1 is adapted from CGAP MIV framework, and sub-section 3.2.2 and chapter 4 follow MicroRate MIV framework.

directly or indirectly debt, mezzanine, equity, or guarantees to MFIs or to other MIIs. However it must be noted that MIIs are not considered to be charities. Although they have different return expectations and risk tolerance, MIIs are *all* aiming at recovering their capital with a profit (CGAP, 2007[b]).

MII stands for a generic denomination of a central element of the thesis, i.e., microfinance investment vehicle (MIV, cf. sub-section 3.2.2 and chapter 4). However, the definition of the latter is slightly narrower than the former.

According to CGAP (2009[d]), as of December 2008, 103 MIIs reported have estimated combined assets under management (AUM) of US$ 6.6 billion, which represents more than half of total foreign investments in microfinance. Figure 3.4 provides a simplified illustration of international investment flows; it is based on section 3.1 investor classification and primary investments data.

Figure 3.4: International investor landscape at end 2008
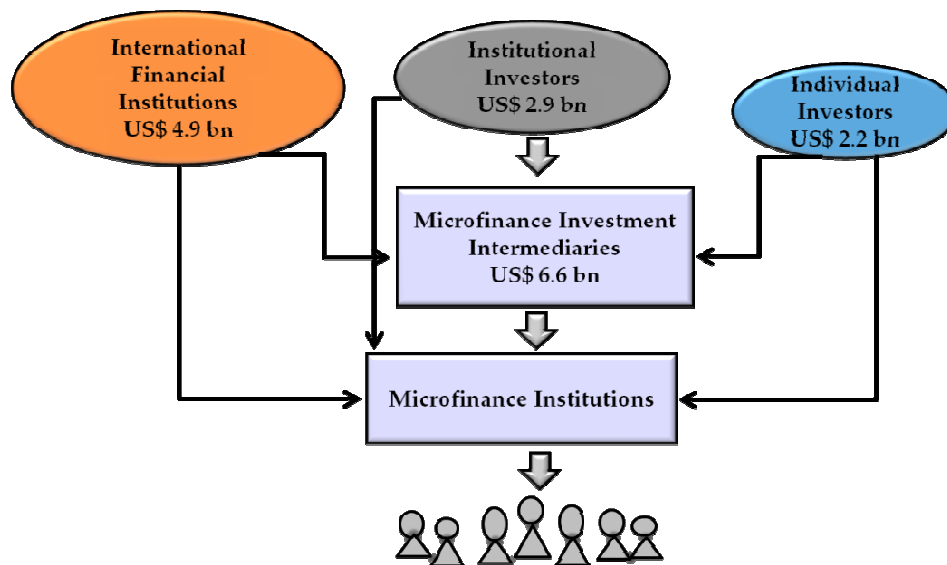
Source: own research, adapted from CGAP (2009[b])

3.2.2 Types of microfinance investment intermediaries

1) A microfinance investment vehicle (MIVs) is an **independent investment entity** that can adopt various legal forms (MicroRate, 2009[b]). Thus it must be independent of the MFIs being funded. It must **focus on microfinance** as a "*core investment objective and mandate*", i.e., more than 50% of its non-cash total assets are invested in microfinance (CGAP, 2009[d], p.4). It can either be self-managed, or managed by an investment management firm or by trustees and receive money from (or open to) **multiple investors** [1] "*through the issuance of shares, units,*

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[1] Cf. MicroRate (2009[b], p.1)

bonds, notes or other financial instruments."[1] A financial vehicle *"supported **only** by donors does not qualify as a MIV."* (MicroRate, 2009[c], p.17). Chapter 4 contributes to extend trends and key issues in relation to MIVs.

2) Holding companies[2] provide financing (chiefly with equity) and technical assistance to MFIs and other non-specialized microfinance service providers that the holding company owns, manages or controls. They usually hold a majority stake in their investees and are generally accessible by private invitation only. ProCredit Holding, a German holding company that invests in lower-tier MFIs is a major participant in the microfinance area. The holding has currently more than US$ 1 billion assets under management, making it the largest actual MII (CGAP, 2009[b]). MFIs underlying holding companies, such as ProCredit banks worldwide, are not independent entities in regards with the holding, thus the latter cannot be considered as a *stricto sensu* MIV. A holding company structure doesn't *prevent the need to ask shareholders for approval when exiting investments. Many MIV shareholders have a number of holdings throughout the sector*, [thus] *creating conflicts of interest.* (Unitus Capital, 2009, p.6).

3) Other types of MIIs may include but are not limited to:

a) Microfinance investment funds not open to multiple investors; e.g., Omidyar-Tufts Microfinance Fund, launched in November 2005 through a partnership between the Omidyar family and Tufts University. The former donated to the latter US$100 million to launch and manage the fund. Tufts receives half of the returns, as the other half is reinvested in the fund to allow further microfinance investments[3].

b) Investment entities not specialized in microfinance, but with a significant microfinance investment portfolio, e.g., Calvert Foundation, established in 1995 in Bethesda, Maryland and reported US$ 207 million in total assets in its 2008 annual report, where approximately 20% is committed to microfinance investments[4].

c) Peer-to-Peer microlenders, e.g., Kiva (cf. sub-section 3.1.2).

Even if MIVs are relatively recent financial instruments, their framework is constantly evolving. The next chapter is grounded on the definition of MIV of the present section.

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[1] Website of CGAP, section: "Global Estimates - Microfinance Donors & Investors", http://www.cgap.org (Accessed on March 15, 2010).

[2] Adapted from CGAP (2009[d])

[3] Website of Tufts University, section: "Microfinance Fund", http://www.tufts.edu/microfinancefund (Accessed on March 15, 2010).

[4] Website of Calvert Foundation, http://www.calvertfoundation.org (Accessed on March 15, 2010).

4. Microfinance investment vehicles: a dual investment opportunity

This chapter depicts microfinance investment vehicles, their industry and actual trends.

4.1 Classifications: in constant evolution

Microfinance has grown from a *community* to an *industry* (Steidl, 2007, p. 111). Characterizing this transition, between 2004 and 2009, cross-border investment in MFIs has almost decupled to reach approximately US $10 billion as of December 2009. This section examines the flow of half of the aforementioned foreign capital through MIVs, which have evolved into a major innovation for microfinance in the last decade. The first MIV guided by both financial and social performance (*double bottom lines*) and not initiated by donors or IFIs is Dexia Micro-Credit Fund, launched in 1998 (CGAP, 2008[b]).

MIVs definition, which is tackled in section 3.2, encompasses numerous types of business models *"in terms of origin, investor base, philosophy, instruments, and targeted return rates"* (CGAP, 2008[b], p.5), depending on a combination of investors' profiles and objectives. Indeed, as examined in section 3.1, participants investing in microfinance are very diverse.

According to the actual diversity of investors, MIVs may be classified in three different categories depending on their investment purpose[1]:

1) Commercial MIVs target primarily *mainstream* financial investors, both individual and institutional. The objective of these MIVs is to provide social and financial returns through investments in loans attributed to financially sustainable MFIs (i.e., top-tier). However, their primary objective is a financial one, while social performance is a secondary one; e.g., Dexia Micro-Credit Fund targets an annual return of "6-month Libor plus 1-2%."[2] There might be more conservative investments as well, since financing MFIs through loans is a lower risk exposure than equity financing. An interesting feature of these MIVs is that they strengthen the requirements of transparency and clarity of information submitted by MFIs to MIVs. Indeed, commercial MIVs *"base their investment decisions on more formal criteria and strive to raise the degree of transparency of their investments by requiring ratings or comprehensive financial reports of MFIs."* (Dieckmann, 2007, p.12).

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[1] Adapted from Goodman (2006), Steidl (2007) and Dieckmann (2007).

[2] Website of BlueOrchard, section: "Product & Services - Dexia Micro-Credit Fund (DMCF)", http://www.blueorchard.com (Accessed on March 15, 2010).

2) Quasi-commercial MIVs target mainly IFIs, donors and SRIs[1], and are less transparent; e.g., responsAbility Microfinance Leaders Fund is only *open to selected qualified investors*[2]. Quasi-commercial MIVs aim to reach double bottom lines; hence they target financial returns, but maintain a *clear development mission* (Steidl, 2007, p.116). As a result, they might be *satisfied* with *below market-based returns* (e.g., LIBOR) (Dieckmann, 2007, p.12). Moreover, the distinction between commercial and quasi-commercial MIVs is not an indication of performance; some quasi-commercial MIVs have outperformed commercial ones, and the other way around (Goodman, 2006, p.27). However, quasi-commercial MIVs can be a riskier investment than commercial MIVs, as the former holds in general more equity stakes than the latter, i.e., higher risk exposure than loans.

3) Microfinance development vehicles are non-profit entities or cooperatives, that essentially aim at social returns rather than financial ones, but maintain *real inflation-adjusted* fund value *if possible* (Goodman, 2006, p.28), e.g., Oikocredit. Their primary objective is to make capital available to MFIs to finance their growth. Microfinance development vehicles provide more favorable financing terms than the market, as well as subsidized technical assistance to MFIs *approaching financial sustainability* (Dieckmann, 2007, p.12); however they normally do not provide them with grants or donations. Microfinance development vehicles are the least regulated and transparent, but are complementary to the two previous categories, i.e., by focusing on lower-tier MFIs, microfinance development vehicles would ground opportunities for further lower-tier MFI funding by commercial and quasi-commercial MIVs (Goodman, 2006).

Popularly denominated as microfinance investment funds (MFIFs), until approx. 2006, MIVs present a striking diversity in organizational structure and size. Only a minority are "*funds*" in a narrower legal sense (MicroRate, 2006). The industry is relatively young and has not settled on an established categorization in regards to MIVs' organizational and legal features. According to MicroRate (2009c), MIVs can exhaustively be categorized by their legal structure, i.e., registered versus unregistered investment funds. Table 4.1 presents the latest peer group classification by MicroRate[3].

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[1] Cf. sub-section 4.1.2

[2] Website of responsAbility, section: "Investment Products - responsAbility Microfinance Leaders Fund", http://www.responsability.com (Accessed on March 15, 2010).

[3] MicroRate, Inc is a specialized rating agency for microfinance along with M-CRIL, Microfinanza and PlaNet Rating. MicroRate provides specialized evaluation reports and independent ratings on MFIs and MIVs. MicroRate produces due diligence reports and microfinance-related papers as well. Website: http://microrate.com

Table 4.1: MIV peer group classification by legal structure

1) Registered Investment Funds are open to retail investors and are regulated by local market authorities. They publish their net asset value on a regular basis.

MicroRate (2009c) lists 6 registered investment funds, among which:

- Dexia Micro-Credit Fund
- responsAbility Global Microfinance Fund

2) Unregistered Investment Funds

2.1) Collateralized Obligations offer investors two or more classes of investment (tranches), each reflecting different levels of risk and return based on the cash flows of the underlying portfolio. Usually structured as *stricto sensu* Collateralized Debt Obligations (CDOs), or Collateralized Loan Obligations (CLOs).

MicroRate (2009c) lists 14 collateralized obligations, among which:

- BlueOrchard Microfinance Securities-1 (BOMS1)
- Global Partnerships Microfinance Funds

2.2) Private Investment Funds are open to qualified, accredited investors seeking a return. As private companies, they are typically not subject to regulation by local market authorities and are not open to retail investors.

MicroRate (2009c) lists 38 private investment funds, among which:

- Unitus Equity Fund
- The Dignity Fund LP

2.3) Not-for-Profit Investment Funds are non-profit organizations, including NGOs and cooperatives, which reinvest most or all returns. These private organizations are typically exempt from regulation by local market authorities.

MicroRate (2009c) lists 10 not-for-profit investment funds, among which:

- Oikocredit
- ACCION Gateway Fund

Source: own research, adapted from MicroRate (2009c, p.14-19) and CGAP (2009d, p.32)

Investments from surveyed MIVs (68[1] out of 74 identified) are totaling more than US$ 5 billion as of December 31, 2008, while almost US$ 4 billion is dedicated to microfinance with 2'826 positions in MFIs for an average investment size of US$1.4 million. Private investment funds are the largest group in number of MIVs (cf. Table 4.1) and total microfinance assets (US$ 1.382 billion, 35% of total), followed by collateralized obligations (US$ 1.003 billion, 26%), registered investment funds (US$ 781 million, 20%) and not-for-profit investment funds (US $751 million, 19%). (MicroRate, 2009[c]).

4.2 Actual trends and implications for microfinance

Despite a growth deceleration, mainly attributed to the financial crisis economic downturn, microfinance investments demonstrate a continued expansion and potential (LuxFLAG, 2009). Indeed, MicroRate (2009[b], p.3) identifies 10 new MIVs launched (or to be launched) in 2008 and a potential increase of their investments by at least US$ 0.7 to 1.3 billion during 2009; e.g., responsAbility Global Microfinance Fund, the fourth largest MIV, reports an increase in assets of US$ 123 million from January through December 2009. Moreover, CGAP (2009[e], p.8) forecasted for 2009 a market growth in terms of total MIV assets of 29%. This could be principally driven by an increasing interest of individual and institutional investors, particularly socially responsible investors (SRIs)[2], both in Europe and in the U.S. (CGAP, 2008[b]).

However, the actual economic downturn is reflected by *significantly* lower MIV growth rate (MicroRate, 2009[b], p.1). Compared to an average MIV asset growth of 80% from 2005 to 2007 (cf. Figure 4.1), MicroRate (2009[b]) reports a growth of merely 31% from 2007 to 2008, i.e., from US$3.8 billion by the end of 2007 to US$5.04 billion by the end of 2008. Accounting for 80%, total outstanding microfinance assets followed the same trend, which might be explained by a *cautious behavior* by both MIV and MFI managers.

Indeed, in response to tightening liquidity measures due to the credit crisis following the collapse of Leman Brothers, the aforementioned managers responded by reducing the size of investments, shortening the tenor of loans and eventually postponing investment opportunities. Besides, the actual growth slowdown is viewed *as a natural cycle in any rising industry*, and is used by many microfinance participants *as an opportunity to consolidate and improve portfolio quality and internal systems* […] and *is beneficial for maturing the industry in the long run*

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[1] MicroRate surveys take into account Calvert Foundation, which is not considered in the present thesis as a MIV. However, in order to keep consistency in the analysis, and considering minor repercussions on the figures (i.e. Calvert microfinance portfolio doesn't exceed US$ 45 million in 2008), original data is kept without further adjustments.

[2] A socially responsible investor takes into account social, ethical and environmental criteria alongside conventional financial criteria in the investment decision making (adapted from Social Investment Forum, 2003).

(MicroRate, 2009[b], p.2). In fact, excessive growth rates from previous years are seen as financially unsustainable.

Figure 4.1 presents MIV's total outstanding portfolio, microfinance portfolio and number of MIVs surveyed from 2004 to 2008.

Figure 4.1: MIV asset growth 2005-2008
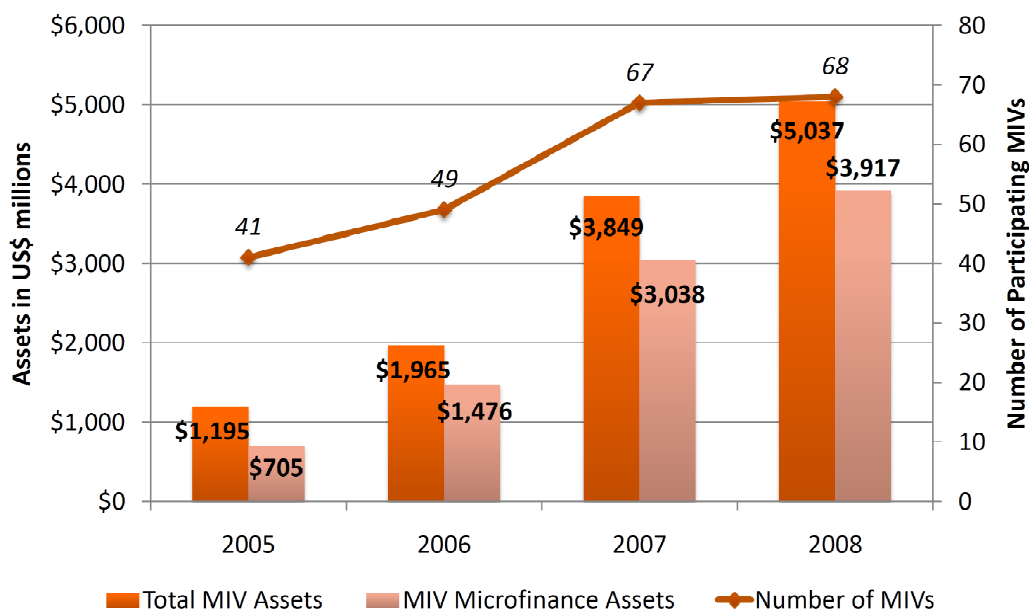
Source: MicroRate (2009[c])

A typical characteristic of the industry is that assets are heavily concentrated amongst MIVs; top 10 MIVs in 2008 account for 63% of the total microfinance assets. That remains consistent with previous years, i.e., 65% in 2006 and 61% in 2007 (cf. Appendix III). Overall, the larger part of portfolios of MIVs is held in hard currencies; 70% according to MicroRate (2009[a]) and CGAP (2009[b]).

Furthermore, 82% of MIV's microfinance assets are structured as debt instrument[1] as of December, 2008. Funding with debt is a conservative approach that prevails predominately more in LAC where MicroRate (2009[a]) notices that debt accounts for 91% of the participant MIV's outstanding portfolio. Globally, comparing with past years, debt remains fixed as a proportion of microfinance portfolio, whereas equity[2] decreased from 16% in 2007 to 13% in

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[1] Debt funding: "The investor makes a loan to the MFI, and occasionally is legally subordinated to the claims of other lenders/depositors, in which case it may function as quasi-equity for regulatory purposes." (CGAP, 2005, p.4).

[2] Equity funding: "The investor buys stock in the MFI, becomes a voting shareholder, and often controls a seat on the board of directors." (CGAP, 2005, p.4).

2008. Overall, total MIV equity grew by 22% during 2008, but microfinance equity assets only grew by 4%. Specifically, 10 MIVs saw a decline in microfinance equity assets by 33% in 2008 (MicroRate, 2009[c], p.6).

More commercial MIVs tend to invest in debt, while equity investments are perceived relatively more risky and exits from equity can prove to be difficult. Even if debt investments from MIVs are becoming more competitive and the debt market may sooner or later saturate, the equity market should become more transparent in order to offer *real exit alternatives* (MicroRate, 2006, p.4), i.e., development of a secondary market in order to enhance liquidity of equity shares.

According to Littlefield & al. (2007), the lack of exit alternatives for investors creates pressure and leads to a market concentration; more specifically, most exits of equity investment occur when existing shareholders or specialized microfinance investors take over the implicated equity position.

On the other hand, exit alternatives have started to emerge in some markets. CGAP (2008[b]) argues that Compartamos IPO[1] is one of the first real exit opportunities that microfinance has recorded, beyond sales to the aforementioned investors. Larger and more mature markets like India and Mexico might allow an eventual public offer attracting equity-based MIVs. Moreover, IFIs could make a significant contribution in building the equity capital of emerging MFIs by shifting funding, directly and indirectly, through MIVs and other MIIs (Reille, 2007).

In addition to debt and equity, the remaining proportion is split between guarantees[2] for local investments, which are quasi-insignificant and on the decline (<1%), and *"other microfinance assets"* (5%). MIVs are intentionally maintaining a significant proportion of *"other microfinance assets"*, *"as a protection against any early redemption in addition to pending disbursements, […]* and *as MIVs expect a further deterioration in their portfolio quality and are making adequate loan loss provisions."* (MicroRate, 2009[b], p.2). Paradoxically, some MIV managers depict slower growth for microfinance as a break that *"allows MFIs to strengthen their organization"* (MicroRate, 2009[b], p. 36).

The actual situation contrasts with past economic downturns when microfinance showed an *immunity* when facing macroeconomic and country risk crises, e.g. Bolivian, Peruvian and Dominican cases in Calderón (2006). Indeed, microfinance is to a large extent more linked to mainstream financial markets than it was during past financial crises. Considering higher commercialization and exposure to currency volatility[3], Latin American microfinance has

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[1] Cf. section 2.3.

[2] Guarantee: an ex-pioneer microfinance instrument where "the investor guarantees MFI borrowings from local banks or capital markets." (CGAP, 2005, p.4).

[3] e.g., 85% of IFIs loans to MFIs are financed in hard currency (CGAP, 2009[a]).

been particularly hit by the crisis (Dokulilova & al. 2009, p.18). Moreover, based on a sample of eight Latin American countries[1] for 2007 and 2008, an empirical study (MIX, 2010a) finds that the correlation, between the portfolio growth of MFIs and the economic growth is *becoming more procyclical than counter-cyclical* (MIX, 2010a, p.3).

MIV managers notice deterioration in Latin American MFIs portfolio quality, although not to severe extents (MicroRate, 2009a). Exceptions are Argentina[2], Bolivia and particularly Nicaragua, where PaR30[3] has doubled during 2008 in several MFIs and liquidity has critically plunged; cf. MicroRate (2009a) and CGAP (2010b). In the case of Nicaragua, a key factor driving microfinance risk management and leading to provision reserves, apart from the recent global financial crisis, is the volatile political and economic situation (e.g., responsAbility, 2009). MIVs' managers expect that current conditions will lead to an important *consolidation* among MFIs in Nicaragua, *"where arguably too many MFIs are vying for too few clients."* (MicroRate, 2009a, p.36).

In this context IFIs might play a significant role in facilitating funding, particularly to lower-tiers to MFIs that are more vulnerable. In December 2008, the IDB launched through the Multilateral Investment Fund (MIF)[4] an initiative to supply up to US$ 20 million in liquidity for MFIs in LAC. Also, in February 2009, KfW and the IFC initiated a global Microfinance Enhancement Facility (MEF)[5] designed to supply liquidity of up to US$ 500 million in a short-to-medium term period, to 200 MFIs facing funding deficit due to the financial crisis. MEF planned to lend through leading MIVs[6] in order to reach MFIs and not to crowd private funding out (cf. sub-section 3.1.2). In reality, according to MicroRate (2009a):

- Several MFIs in LAC report that IFIs revoked negotiations.
- IFIs tend to invest predominantly in low risk positions and not play an active role in countries with a high level of demand of capital, e.g., Argentina, Bolivia and Ecuador.
- Lower-tier MFIs (more vulnerable and less developed) state that IFI liquidity supply simply does not reach them.

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[1] i.e., Bolivia, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, and Peru.

[2] Argentine MIV exposure is insignificant, i.e., US$3.1 million as of September 2008 (MicroRate, 2009a).

[3] i.e., Portfolio at Risk greater than 30 days = (Outstanding Balance on Arrears over 30 days + Total Gross Outstanding Refinanced (restructured) Portfolio) / Total Outstanding Gross Portfolio. "Most widely accepted measure of portfolio quality [...] PaR shows the portion of the portfolio that is *contaminated* by arrears and therefore at risk of not being repaid" (MicroRate & IDB, 2003, p.6).

[4] The MIF is an autonomous fund administered by the IDB. It was established in 2004 as a lender-of-last-resort for the Latin American microfinance industry (source: website of IDB: http://www.iadb.org).

[5] MEF is funded of US$ 150 million from IFC and US$ 130 million from KfW.

[6] i.e., BlueOrchard, responsAbility and Cyrano Management.

To conclude, there is a need for IFIs to proactively manage flows of emergency funding in countries where demand for microcredit critically outpace current funding (MicroRate, 2009ᵃ, p.37). Focusing predominantly *"on creating and supporting commercially viable MFIs,* i.e., tier 1 MFIs, (IFC, 2009, p.2), is not necessarily the right response by IFIs to the microfinance community enduring the global recession. As a request for introspection, a bottom-up approach might be a more adequate solution during a financial downturn period.

5. Country risk: implications for microfinance

This chapter defines country risk and delimits the scope of study. Geographical asset allocations and country exposures of microfinance investment vehicles are tackled in order to emphasize their country concentration. A manager of microfinance investment vehicles - Global Partnerships- is introduced and subsequently analyzed. Last section considers interest rate ceilings from a theoretical and practical viewpoint.

5.1 Country risk as a broad concept

Considerable misinterpretation surrounds the concept of country risk (Nagy, 1979). "Country risk", "sovereign risk" or "political risk" are often regarded as substitute terminologies; in fact, these concepts are not similar. In a first step, "country risk" should be framed not to create confusion.

When a MIV, a MII, or any cross-border investor start to expand their respective investment positions worldwide, they have to deal with new environments, which are composed of different risks and uncertainties. Various definitions and several terminologies exist to tackle the risk related to a foreign investment. Subsequently, definitions of country risk are presented and interpreted within a MIV framework:

"Country risk may […] *be defined as exposure to a loss in cross-border lending, caused by events in a particular country, events which are, at least to some extent, under the control of the government but definitely not under the control of a private enterprise or individual."*(Nagy, 1979, p.13).

First, country risk, as defined here, only concerns cross-border MFI loans; thus, the risk of MFI loans funded in domestic currency is excluded. Country risk exposure should not be determined by where MIVs are incorporated and traded, but from where they do business. MIVs are typically incorporated in Western Europe and North America; 86% of MIV AUM is domiciled in Western Europe and 8% in North America (CGAP, 2009e, p.2).

Second, all MIVs and other cross-border investors that are lending in a country - whether through the government, a microfinance network, or directly to an MFI - are exposed to country risk. Hence, country risk is a broader concept than "sovereign risk", *"which is concerned with the state's capacity to fulfill its obligations. It monitors the public finance sector as well as some of the more qualitative aspects such as the fight against corruption or the degree of the administration's independence vis-à-vis business and political groups."* (Bouchet & al. 2003, p.89).

Third, *materialization* of country risk is strictly related to events, at least to some extent, under the control of the local government. Thus, an MFI that defaults on its debt caused by a microfinance delinquency crisis is *country risk* if the default *is "the result of mismanagement of the economy by the government."* Conversely, it is *commercial risk if it is the result of the mismanagement"* of the MFI. (Nagy, 1979, p.13).

A border case is natural disasters. The recent earthquake in Haiti demonstrates the need to be conscious of potential natural calamities that can adversely impact an MFI; in this case a whole nation. CGAP reported two weeks after the earthquake in regards to a Port-au-Prince-based MFI: *"Sogesol to date has not found 50% of its clients, and estimates that 40% of its portfolio will be lost."*[1] Imaging a fictitious case where a MIV might have had invested in Sogesol, the question is; should the MIV have had made allowance for a potential earthquake in its assessment of country risk?

According to Bouchet & al. (2004, p.16), the answer is positive; *"natural risks refer to the natural phenomena (seismicity, weather) that may negatively impact the business conditions. […] in order to belong to the country risk category, the features of the events to be included must be different from those at home."* On the other hand, this study follows Nagy (1979, p.13) in order to mitigate the answer; if natural disasters are *"unforeseeable, they cannot be considered as country risk. But if past experience shows that they have a tendency to reoccur periodically* – e.g., typhoons – *then the government can make certain preparations for such a contingency in order to minimize their harmful effects."* In short, country risk refers solely to inefficiencies in regards with local institutions.

5.2 Geographical allocation and concentration risk

In order to recognize and evaluate any potential risks for MIVs, *concentration* can be considered as a main structural factor that increases the (joint) default probabilities (Gatzert et al. 2007). Thus, monitoring MIVs' cross-border exposure is a key component of risk analysis, especially when the context is related to developing economies. The purpose is not only to closely monitor the confidence or nervousness of MIVs in a particular country, but also to assess the likelihood and extent of spreadable effects within a region.

5.2.1 Global overview

When it comes to regional allocation, MIVs investments are heavily concentrated in the LAC and ECA regions. Both markets combined represent 78% of the investments in microfinance (MicroRate, 2009[c], p.7). Latest CGAP and MicroRate surveys are relatively consistent with regards to the geographical allocation of MIVs' investments. Subsequently, one can assume that relative country exposures would be equivalent for both surveyed samples. Looking at the market concentration of exposures, approx. 60% of the total of MIV investments is found in five countries (CGAP, 2009[d]). Astonishingly, MIVs focus, on average, 40% of their investments in solely five MFIs (CGAP, 2008[b], p.12).

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[1] "The Haiti Earthquake: How microfinance is helping" (Website of CGAP, section: "Media Center – Features", http://www.cgap.org (Accessed on March 15, 2010)

Figures 5.1 and 5.2 provide geographical allocation in terms of MIV **microfinance assets** and MIV **total assets**, from MicroRate (2009ᶜ) and CGAP (2009ᵉ) survey results respectively.

Figure 5.1: Geographic concentration in 2008 (MicroRate) *Figure 5.2: Geographic concentration in 2008 (CGAP)*
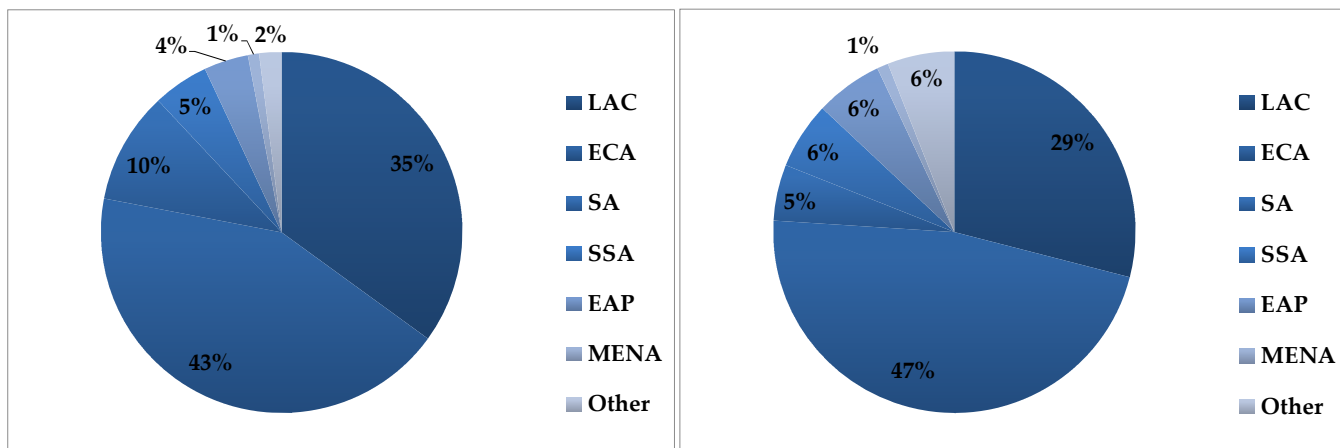
Source: own illustration, based on MicroRate (2009ᶜ) and CGAP (2009ᵉ)

LAC has the highest number of MIVs investing in the region with 53 MIVs, which is followed by ECA with investment from 43 different MIVs; SSA SA and EAP have respectively 33, 32 and 23. Lastly, MENA has only 11 MIVs investing in the region (MicroRate, 2009ᶜ, p.9).

During 2008, the SSA market share decreased from 7% to 5%. SA observed a growth in microfinance assets of 67% from US$ 223 million in 2007 to US$ 373 million in 2008, mainly attributed to new and increased investments by Oikocredit, BlueOrchard, responsAbility and Triodos MIVs. EAP witnessed a growth of 30% from US$ 107 million in 2007 to US$ 139 million in 2008 (MicroRate, 2009ᶜ). MENA only has 1% of global microfinance investment, but is the fastest growing region with a 552% increase in investment, principally attributed to Oikocredit and Triodos Microfinance Fund (MicroRate, 2009ᶜ, p.8). Reflecting the instability of flows of foreign capital particularly in Northern Africa (tackled in section 3.1.2), from 2006 to 2007, MENA lost almost half of its microfinance assets. The major contributor to this sudden outflow is a concern over *"local regulatory requirements regarding information disclosure"* (MicroRate, 2008, p.26).

ECA is outpacing LAC in terms of regional growth and market share. In regards to microfinance investments, LAC observed a slower MIV microfinance portfolio growth in comparison to previous years, from US$ 1.21 billion in 2007 to US$ 1.28 billion 2008. During the same period ECA saw its microfinance investments growing from US$ 1.13 billion to US$ 1.58 billion. According to MicroRate (2009ᵇ, p.2,) the deceleration of growth in LAC is *"partly due to MIVs' internal investment limits being reached in several Latin American countries."*

Indeed, there are too many MIVs and primary investors prospecting too few MFIs. This behavior leads to a *bunching effect*, i.e., risk concentration towards few large MFIs (CGAP,

2008[b], p.12). Reille (2007) observes that only 400-450 MFIs are considered to be *investable* as of mid-2007, where, relying to MicroRate's findings, the majority of them is situated in the LAC and ECA regions.

5.2.2 Country exposure in Latin America and the Caribbean

Depicting the regional concentration of cross-border funding, microfinance development vehicles, being the most socially focused MIVs, have traditionally allocated more than half of their capital to LAC (CGAP, 2008[b]). Lately, this phenomenon of regional concentration has changed to reveal a slightly global inverse trend[1]; however MIVs' asset allocations in LAC remain concentrated in some specific Latin American countries.

Table 5.1 illustrates the outstanding MIV assets by country and the share of each country; it is based on a survey of 23 major MIVs investing in the LAC region as of September 2008. Appendix IV lists the surveyed participants.

Table 5.1: Outstanding MIV assets in 2008

Country	MIV Assets (US$ million)	% of Total
Peru	$205.5	21.76%
Nicaragua	$166.3	17.61%
Ecuador	$144.6	15.31%
Mexico	$137.4	14.55%
Bolivia	$124.4	13.17%
Colombia	$86.3	9.14%
El Salvador	$40.6	4.30%
Honduras	$13.9	1.47%
Paraguay	$9.8	1.04%
Brazil	$6.9	0.73%
Guatemala	$3.7	0.39%
Argentina	$3.1	0.33%
Panama	$1.0	0.11%
Dominican Republic	$0.6	0.06%
Haiti	$0.2	0.02%
Venezuela	$0.1	0.01%
Total	$944.3	100.00%

Source: adapted from MicroRate (2009[a])

None of the surveyed MIVs invests in Chile, Costa Rica, Uruguay or in the English-speaking Caribbean; at least as of September 2008 (MicroRate, 2009[a], p.33).

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[1] e.g., 40% of socially focused MIVs' investments are allocated in LAC as of December 2008 (CGAP, 2009[d], p.23).

Peruvian MFIs hold more funds from MIVs than any other country in LAC. Not surprisingly since Peru has the largest microfinance sector in the region, excellent economic growth rates, and stable socio-political situation. According to MicroRate (2009a), the high degree of competition among Peruvian MFIs has enhanced product innovations, pushed MFIs in new geographic regions (from urban to rural), and strengthened organizational structures and risk management. Overall, portfolio quality of Peruvian MFIs follows a favorable trend, e.g., PaR30 from 3.6% in 2007 to 3.2% in 2008, contrasting with LAC (from 3% in 2007 to 4% in 2008) (MIX, 2010c, p.8). The mature regulatory framework for MFIs plays a preponderant role in Peruvian microfinance success and confidence; MFIs follow from July 2009 Basel II norms[1] in order to regulate capital requirements, particularly to cover credit risk and adopt contingency measures that include consequent provisions due to the global crisis. However, several MIVs and IFIs report *"reaching their lending limits for the country."* (MicroRate, 2009a, p.29). Thus, not approved deposit-taking MFIs may face difficulties for raising capital in the near future.

Nicaragua and Ecuador are both ranked ahead of Bolivia, Mexico and Colombia. The high concentration of MIV investments in these two countries is unexpected and bearing concerns because of their low country creditworthiness, due to political and economic instability. The increasing inflation is a persistent concern that leaves no leeway for MFIs to earn positive returns in real terms. Moreover, Nicaraguan and Ecuadorian microfinance sectors face a risk of multiple borrowings by over-indebted clients, due to a high density of MFIs, microfinance market saturation and unhealthy competition among them (MicroRate , 2009a).

Regarding overall MIVs' country concentration, it has to be pointed out that seven countries hold 96% of the total of MIVs' investment in LAC; namely Peru, Nicaragua, Ecuador, Mexico, Bolivia and Colombia.

For a more precise evaluation of concentration of country exposure, an indicator is developed using the conceptual framework of the Herfindahl-Hirschman Index (HHI)[2]. The LAC concentration index is defined as follows:

$$Index_{LAC} = \sum_{i=1}^{N} S_i^2 \ ,$$
(5.1)

Where S_i denotes share of outstanding MIVs' assets of country i, i.e., country exposure in %, last column of Table 5.1.

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[1] i.e., the international standards for banking system regulation (cf. website of the Bank for International Settlements (BIS), http://www.bis.org (Accessed on March 15, 2010).

[2] HHI is a widely accepted measure of industry concentration, cf. Hirschman (1964).

Where N is number of countries having a microfinance sector in LAC; the MIX lists exhaustively 19 countries for region.

Equation 5.1 ranges from 1/N to 1; the higher is the index value, the higher is the concentration.

For instance, if MIVs were funding exclusively one country, equation 5.1 would be equal to one. Besides, it should be emphasized that the index measures concentration, and thus cannot be extrapolated as a proxy for competition (Podpiera & Cihák, 2005), because competition variables are strictly exogenous to such an index (Schwaiger & Liebeg, 2009, referring Wooldridge, 2002). The present issue at hand is first, to compare the index with an existing scale, and second, to use the index as a benchmark for MIV Latin American investment concentration in sub-section 5.2.3.

For a matter of further comparability, the normalized concentration index is considered, and computed as follows:

$$Index^*_{LAC} = \frac{Index_{LAC} - \frac{1}{N}}{1 - \frac{1}{N}} \, , \qquad (5.2)$$

Equation 5.2 ranges from 0 to 1; i.e., *perfect granularity* to *total concentration* (Schwaiger & Liebeg, 2009).

A comparative scale for normalized values, commonly used in the microfinance industry, is as follows:

- <0.01 is considered a highly diversified portfolio in regards to country exposure.
- 0.01 – 0.1 is diversified.
- 0.1 – 0.15 is moderately concentrated.
- 0.15 – 0.2 is concentrated.
- >0.2 is highly concentrated.

Equation 5.2, i.e., the normalized LAC Concentration Index, resulting from last column in Table 5.1 input, gives: $Index^*_{LAC} = 0.1038$ (i.e., 10.38%), indicative of a **moderate concentrated sample.**

The outcome from the calculation of equation 4.2 enables to answer to which extent MIV investments are concentrated amongst countries in LAC. Also, by utilizing the same MIV sample from Table 5.1, a further analysis is conducted.

Table 5.2 provides a breakdown by country of MIV and MFI measures, by combining two data sources, as of September and December 2008 respectively.

Table 5.2: MIV country exposure analysis

Country	A. MIV Assets	B. % of Total A.	C. MFI Assets	D. Nb. of MFIs	E. % of Total C.	F. Market Penetration	G. Invest-ment Ratio
Peru	$205.5	21.76%	$4,800.0	64	26.08%	4.28%	-16.56%
Nicaragua	$166.3	17.61%	$676.6	30	3.68%	24.58%	379.04%
Ecuador	$144.6	15.31%	$1,500.0	52	8.15%	9.64%	87.88%
Mexico	$137.4	14.55%	$2,900.0	48	15.76%	4.74%	-7.66%
Bolivia	$124.4	13.17%	$2,000.0	26	10.87%	6.22%	21.23%
Colombia	$86.3	9.14%	$4,000.0	21	21.73%	2.16%	-57.95%
El Salvador	$40.6	4.30%	$467.2	18	2.54%	8.69%	69.37%
Honduras	$13.9	1.47%	$214.3	17	1.16%	6.49%	26.42%
Paraguay	$9.8	1.04%	$448.8	7	2.44%	2.18%	-57.44%
Brazil	$6.9	0.73%	$677.5	37	3.68%	1.02%	-80.15%
Guatemala	$3.7	0.39%	$184.7	19	1.00%	2.00%	-60.96%
Argentina	$3.1	0.33%	$23.1	13	0.13%	13.42%	161.56%
Panama	$1.0	0.11%	$19.7	3	0.11%	5.08%	-1.07%
Dominican	$0.6	0.06%	$233.5	7	1.27%	0.26%	-94.99%
Haiti	$0.2	0.02%	$85.0	8	0.46%	0.24%	-95.41%
Venezuela	$0.1	0.01%	$174.1	2	0.95%	0.06%	-98.88%
Total	$944.3	100%	$18,404.5	372	100%	5.13%	0.00%

Source: own research, MicroRate (2009a) and themix.org

Columns A. and B. are identical to Table 5.1 and are incorporated in Table 5.2 for a matter of clarity.

Column C. represents aggregated MFI assets by country, i.e., proxy for market size. Data is gathered from the MIX Market[1] and is self-reported by MFIs. In general, datasets from the MIX don't' include all MFIs of the microfinance universe. However, a large fraction is served, thus it allows to perform a comparative study amongst countries.

Column D. is the number of MFIs that the sample comprises. It is provided for a matter of consistency; no calculation is based on this data column. Data comes from the MIX as well.

Column E. represents the share of MFI assets of each country, e.g. for Peru= 4800/18,000= 26.08%. Hence, Peruvian MFIs possess more than a quarter of the total assets in LAC coun-

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[1] Website of the MIX Market, section: "Microfinance Institutions – Country – Total Assets", http://www.mixmarket.org (Accessed on March 15, 2010).

tries, which have MIV investments and are represented in the present sample. Moreover, five countries hold 83% of MFI assets, namely Peru, Ecuador, Mexico, Bolivia and Colombia.

Column F. provides a proxy of MIV market penetration; it is calculated by dividing column A. by column C., i.e., MIV aggregated assets in country i divided by MFI aggregated assets in country i. For instance, if in an (illusionary) country all MFIs were funded solely by MIV investments, and not by IFIs, or by deposits etc., the market penetration ratio would equal 100%.

Particularly, two outliers stand out, Nicaragua and Argentina. For the former, the result is again unexpected considering its limited market; MIVs that are funding Nicaraguan MFIs have to face not only the aforementioned political and economic concerns, but also market saturation. According to a study of the Economist Intelligence Unit (2007, p.9) on the microfinance business environment in Latin America, *"Nicaragua is an "overperformer"*, where *"the depth of its microfinance sector does not match its breadth."*

Argentina's result might come as a surprise as well; the Economist Intelligence Unit (2007, p.7) ranks it last among the countries in LAC, and in its study points out a mediocre microfinance regulatory framework and investment climate among the main reasons.

Column G. provides the **"**investment ratio" that is calculated as follows: (*column B – column E*)) / (*column E*). Intuitively, this ratio measures the relative discrepancy between how the MIV LAC market **is shared**, and how the MIV LAC market **should be shared** assuming uniform market participants and no exogenous factors. In this analysis, it's an indicator exclusively for 2008. The "investment ratio" tries to distinguish which countries were falling out of favor of MIVs' managers in 2008, and the other way around, which countries are observing "over-attention" (cf. MicroRate, 2009[a]). As mentioned above, if market participants – i.e., MFIs and MIVs- are uniform and no exogenous interference comes into play, the ratio should be equal to 100% for country i, thus MIV country exposure should perfectly reflect MFI assets distributed (by country).

One critical outlier value observed for Nicaragua is an over-exposure of MIV investments compared to other countries in LAC. This result potentially means that MIVs had not already taken into account Nicaraguan instability in their decision-making for geographical asset allocation in 2008. Conversely, several MIVs reported to be *"eager to reduce their exposure in Nicaragua"* (MicroRate, 2009[a], p.34).

The above analysis tries to capture the differences between countries, e.g., a standalone value is not of a great pertinence. Second, a perplexity may arise if you take into account MFI data and representative proportions, e.g., if 80% of Peruvian MFIs are included, are 80% Nicaraguan MFIs as well?

In this analysis however, the question is different: Is the dataset representative and proportionate with regards to *investable* MFIs that MIVs might prospect? The answer is a plausible "yes". Following Galema & al. (2009), MFIs are self-reporting on a voluntary base in the

MIX, but data entry is closely monitored by the latter. MFIs have to enclose documentation that supports the data, e.g., audited financial statements and annual reports. Therefore, the dataset gathered from the MIX fits assumingly well the purpose of the present analysis.

Further relevant analysis would be possible if a country breakdown by MIV was published – i.e., country exposure of each MIV in the sample. Such a data would allow to perform various empirical studies in order, for instance, to weight the risk and return of an MIV considering country exposures. Besides MicroRate's LAC sample for 2008, no other available data exists for MIVs to reveal trends across the years; the pertinence of such analysis might allow observing dynamics of MIV investment strategies across countries. Considering that MIV managers are in general not rebalancing their microfinance portfolios in an excessive way, the result would be a linear trend for countries where MIV market penetration is high, and outlier values might come from countries where MIVs are starting to pay attention. Relevant questions that may arise can be: why are MIV managers increasing/decreasing their exposure in a country? Can it be attributed to factors inherent in MFIs or to macroeconomic conditions?

The empirical study that follows in chapter 6 aims to answer the above questions by assessing factors that a priori have an impact on the underlying asset quality of MIVs investing in LAC. For this purpose, the next section presents an organization –Global Partnerships- committed to Latin American microfinance that currently manages three MIVs investing collectively in 28 MFIs across seven countries.

5.3 Global Partnerships Microfinance Funds

This section tackles Global Partnerships' MIVs with a focus on their underlying portfolios and country exposures. The present case study has been chosen for several reasons:

1. Global Partnerships is a *philanthropic* organization that possesses an important expertise in Latin American microfinance,
2. its mission is undoubtedly socially-oriented,
3. its investments are solely concentrated in LAC, thus a comparison with LAC benchmark is feasible, and
4. the organization discloses essential information that permits analyses and empirical research.

Moreover, through the investment vehicles it manages, Global Partnerships funds MFIs in countries where political interferences are influencing microfinance and interest rate ceilings subsist. In fact, Global Partnerships invest in seven countries, where two of them enforce interest rate ceilings; namely Nicaragua and Ecuador.

5.3.1 Overview of Global Partnerships' MIVs

Global Partnerships (GP) is a not-for-profit US-based organization founded in 1994 that seeks to *"provide leadership in the fight against global poverty"* (GP, 2009[a], p.8) by funding MFIs through *affordable* loans for maximizing social impact. In short, GP is a socially-motivated institutional investor. Moreover, GP provides MFIs with training to financial and management technologies, e.g., foreign currency hedging techniques (IDB, 2010). GP has over US$ 45 million in asset under management, an operating budget of US$ 3 million and has offices in Seattle, Washington and Managua, Nicaragua.

Through its subsidiary GP Fund Management, a limited liability company based in Delaware, GP manages three MIVs: Global Partnerships Microfinance Fund 2005, Global Partnerships Microfinance Fund 2006 and Global Partnerships Microfinance Fund 2008 (collectively "GP MIVs"). [1]

- **Global Partnerships Microfinance Fund 2005** is a US$ 2.0 million assets MIV composed of US$ 200,000 in *philanthropic capital* as equity leveraged 10 times by US$ 1.8 million in private capital from qualified individual and institutional investors. The MIV is investing in eight MFIs in four Latin American countries.

- **Global Partnerships Microfinance Fund 2006** is an US$ 8.5 million assets MIV composed of US$ 255,000 in *philanthropic capital* as equity leveraged at a ratio of 32 to 1 by US$ 8.245 million in socially motivated debt capital from qualified individual and institutional investors. The MIV closed in March 2007 and its capital was disbursed to 14 MFIs across six countries.

- **Global Partnerships Microfinance Fund 2008** is a US$ 20 million assets MIV composed of US$ 1.5 million in *philanthropic capital* as equity leveraged by $18.5 million in socially motivated investment capital from qualified individual and institutional investors. The fund closed in November 2008 and was aiming to reach 30 MFIs in eight countries.

GP MIVs are targeting MFIs that are *"financially sound, competitively strong and displaying an exceptional level of social impact."* (IDB, 2010, p.1). Thus, according to the categorization by investment purpose (cf. section 4.1), GP MIVs are quasi-commercial ones, i.e., while social aspects are key in regards to their performance, financial returns are considered as well.

By legal structure GP MIVs are categorized as collateralized obligations, more specifically Collateralized Loan Obligations (CLOs); a securitization of a pool of loans that are made to MFIs.

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[1] The description of MIVs that follows is adapted from the website of Global Partnerships, section: "Funding Sources", http://www.globalpartnerships.org (Accessed on March 15, 2010), GP (2009[a]) and GP (2009[b]).

5.3.2 Country exposure and concentration

Besides funding MFIs through GP MIVs, the organization invests in Latin American microfinance through Developing World Markets Microfinance Fund[1]. The composition of the GP MIVs' portfolio is generally limited to loans to MFIs. Table 5.3 provides the entire investment positions of GP aggregated by MFI as of September 2009. Data is gathered from GP's website.

Table 5.3: Outstanding GP's microfinance portfolio

MFI	Country	Outstanding Loan	% of Total	Country exposure
CRECER	Bolivia	$2,850,000	7.71%	
FUBODE	Bolivia	$900,000	2.43%	
Pro Mujer in Bolivia	Bolivia	$2,750,000	7.44%	17.58%
D-MIRO	Ecuador	$1,000,000	2.70%	
Espoir	Ecuador	$800,000	2.16%	
FINCA	Ecuador	$1,000,000	2.70%	
FODEMI	Ecuador	$1,000,000	2.70%	10.28%
ACCOVI	El Salvador	$4,550,000	12.30%	
AMC de RL	El Salvador	$1,500,000	4.06%	
Apoyo Integral	El Salvador	$5,200,000	14.06%	
Enlace	El Salvador	$632,500	1.71%	32.13%
Adelante	Honduras	$150,000	0.41%	
FAMA	Honduras	$300,000	0.81%	
FUNDAHMICRO	Honduras	$250,000	0.68%	1.89%
FRAC	Mexico	$500,000	1.35%	1.35%
ACODEP	Nicaragua	$750,000	2.03%	
Coop 20 de Abril	Nicaragua	$500,000	1.35%	
FDL	Nicaragua	$2,000,000	5.41%	
FUNDENUSE	Nicaragua	$2,000,000	5.41%	
F.J. Nieborowski	Nicaragua	$2,000,000	5.41%	
León 2000	Nicaragua	$300,000	0.81%	
PRODESA	Nicaragua	$1,800,000	4.87%	
Pro Mujer Nicaragua	Nicaragua	$250,000	0.68%	25.96%
Arariwa	Peru	$500,000	1.35%	
Caja Nuestra Gente	Peru	$750,000	2.03%	
CREDIVISION	Peru	$1,250,000	3.38%	
FONDESURCO	Peru	$750,000	2.03%	
PRISM	Peru	$750,000	2.03%	10.82%
TOTAL		$36,982,500	100.00%	

Source: own research, globalpartnerships.org

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[1] Developing World Markets has about US$ 600 million of microfinance AUM, and has made investments in over 100 MFIs worldwide. Website of Developing World Markets, section: "Investment Management - AUM", http://www.dwmarkets.com (Accessed on March 15, 2010).

GP's portfolio consists of approx. US$ 37 million in MFI loans, ranging in size from US$ 150,000 to US$ 5,200,000, to 28 participating MFIs in seven countries in Central and South America. GP's investments are quite concentrated from an individual MFIs context. The organization's five largest microfinance investments account for almost half of the portfolio (i.e., 47%). From a country exposure perspective, 96% of GP's investments are concentrated in solely 5 countries; namely Bolivia, Ecuador, El Salvador, Nicaragua and Peru.

Applying identical framework as Equation 5.2, i.e., the normalized LAC Concentration Index, the normalized GP concentration index is computed as follows:

$$Index^*_{GP} = \frac{Index_{GP} - \frac{1}{N}}{1 - \frac{1}{N}}, \qquad \text{(5.3)}$$

Where N is equal to 19, being the number of countries having a microfinance sector in LAC (cf. section 5.2). In order to remain consistent, GP's scope of investment cannot shift outside LAC; hence, its investment perspectives are exclusively limited to the Latin American market[1].

Input from the last column in Table 5.3 is applied to equation 5.3, and results:

$Index^*_{GP} = 0.1834$, which is indicative of a **concentrated sample,** not far to be highly concentrated (at 0.2, cf. section 5.2 for benchmark scale).

An interesting comparison can be drawn with the result from the sample of MIVs investing in LAC (cf. equation 5.2, $Index^*_{LAC}$ = 0.1038); GP's investment positions are almost two times more concentrated than the MIV industry benchmark. This highlights high country exposures and concerns. A quarter of the portfolio is allocated to MFIs in Nicaragua, which as mentioned before endures severe political instability. However, GP's regional due diligence is relatively high; it possesses an office on the spot and a long record of expertise with regards to local conditions.

"When expanding geographic scope, it is critical to be on the ground in the new markets, understanding the same realities, and experiencing the same strengths and weaknesses." (Unitus Capital MIV survey, 2009, p.12, about follow-on MIVs). The advantage is that MIVs focusing on a single region might have superior deal flow; the drawback is a limited portfolio diversification. GP's MIVs may typically attract "fund of funds" that don't have necessary local industry expertise and seek to maximize diversification; e.g. GP's MIVs' underlying portfolio would not "overlap" with a MIV investing strictly outside LAC.

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[1] Mission statement: *"GP expands opportunity for people living in poverty by supporting microfinance and other sustainable solutions in Latin America […] the purpose* [of GP] *is to promote the efforts of microfinance in Latin America."* Website of GP, section: "About us – Mission", http://www.globalpartnerships.org (Accessed on March 15, 2010).

5.3.3 Capital structure and MFI debt default

GP is issuing microfinance CLOs whose payments come from a pool of loans made to MFIs. These loans have to be legally distinguished from other obligations of GP. For this purpose, GP has created the independent legal entity GP Fund Management, as a special purpose vehicle (SPV). SPVs are commonly used to securitize loans. GP Fund Management is holding the underlying portfolios of loans and GP works as the asset manager, e.g., selecting the MFIs underlying the portfolio in the CLOs.

In general, a CLO gains exposure thanks or due to the credit of a portfolio of assets (pooling the assets), and divides that credit risk among different notes (tranching the assets). It sells rights to the cash flows and risk associated with the pool of assets. The loss of an investor's principal (e.g., of the loan) is applied in reverse order of seniority. Senior tranches that are less return-rewarded have priority over subordinated tranches, which have priority over the equity. CLO equity holders are non-recourse investors and are the last to be paid (e.g., Deng, Gabriel and Sanders 2008).

Table 5.4 provides the capital structure of Global Partnerships Microfinance Fund 2005, where investors receive quarterly interests with a spread above *treasuries* depending on the seniority of the note.

Table 5.4: Capital structure

Tranche	Size (% of total fund)	Size (US$)	Protection	Spread above base rate (4.5 yr US Treasury)
Senior	80%	$1,600,000	Third Loss	150 b.p.
Subordinated	10%	$200,000	Second Loss	250 b.p.
Equity & Cash (*Philantropic Capital*)	10%	$200,000	First Loss	Initial equity provided by GP in the form of contributed loans to MFIs plus projected build up of Cash Reserve

Source: adapted from GP (2005)

Collateralized obligations are becoming popular in the microfinance industry, as this structure of *offering* senior tranches attracts risk-averse investors and investment institutions that are only allowed to invest in investment-grade products. (e.g., Dieckmann, 2007). In addition, securitization in microfinance by minimizing adverse selection may help to attract investors not familiar with microfinance. According to Gorton and Souleles (2005, p. 14), *"pooling minimizes the potential adverse selection problem associated with the selection of the assets to be sold to the SPV."* Depending on the MFIs selected, tranching divides the risk of loss - due to the default of an MFI - based on seniority; from the equity to the senior tranche, known as

the "waterfall structure." Since tranching is based on preeminence of tranches, *"the risk of loss due to default of the underlying assets is stratified."*

On the other hand, potentials investors have to be aware of a main setback in regards to default correlation among tranches; the MFI cross-default risk. According to a recent MIV survey (Abrams, 2009, p.12), *"MIV loan documentation often specifies that an MFI default to one lender will cause cross-default to all of its other funders"*. One needs to take into account to which extent defaults by different micro-borrowers are likely to gather, as cross-default would impact severely its funding liabilities to MIVs. In fact, *"an MFI that concentrates its operations in a municipality or small region not only has difficulty achieving high levels of efficiency, but also engages in a dangerous concentration of geographic and sector risk."* (Berger & al., 2006, p.114)

Rephrasing Mackenzie's (2008, p.24) dissertation about the credit crisis, *"some defaults might be the result of idiosyncratic problems causing the bankruptcy of a single* [MFI], *but others reflect systemic factors such as poor conditions in the economy as a whole."* If the latter happens, then one default of MFI might be accompanied by others. Default correlation should not be underestimated considering the fact that the Latin American microfinance industry is highly concentrated from a micro-borrower and an MFI feature.

Having pointed out the default correlation issue, an elementary interrogation arises; what is the microfinance debt default rate? Before singing the praises of MIVs, one should be aware of the relative lack of global studies and surveys performed in regards to microfinance default rates, explicitly **MFIs' debt default to MIVs**.

Disclosure, reliability of data, and longer track records limit possibilities of empirical research in microfinance. To date, one MIV survey tackled this concern. Abrams' (2009) survey includes 44 MIVs covering a period from 1994 through mid-2008. Abrams (2009, p.8) finds:

- 2% default rate based on number of instances of default as a percentage of cumulative disbursed MIV loans (60 MIV loans to MFI defaulted out of 3000 sampled).
- 0.2% default rate on a volume basis ($US 8.1 million out of $US 4.1 billion)

The aforementioned results are a *baseline*; the survey focuses strictly on MIV loans, a large number of defaults are not disclosed, and "default" definition varies across surveyed participants (Abrams, 2009).

Numerous causes and factors drive MFI risk of default, being potential threats for investors. Some are endogenous to MFIs, e.g., poor portfolio quality, illiquidity, fraud within MFIs (Abrams, 2009, p.9); and others are exogenous and may impact significantly worthiness of the MIV industry. The economic crisis has transformed perceptions of the microfinance area. Banana Skins survey (CSFI, 2009) lists major risks perceived by different microfinance par-

ticipants, i.e., practitioners, investors, regulators and deposit-takers[1]. Risks considered as minor in 2008 are now perceived as potential threats, e.g., business environment and regulatory framework. Table 5.5 lists biggest threats from the viewpoint of investors.

Table 5.5: Investor's Banana Skins

Biggest risks	Fastest risers
1 Refinancing	1 Credit risk
2 Foreign currency	2 Macro-economic trends
3 Credit risk	3 Political interference
4 Macro-economic trends	4 Liquidity
5 Liquidity	5 Foreign currency
6 Corporate governance	6 Refinancing
7 Management quality	7 Profitability
8 Too little funding	8 Too little funding
9 Inappropriate regulation	9 Competition
10 Political interference	10 Interest rates

Source: CSFI (2009)

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Economic issues are concerns across all respondents. Investors adversely perceive aspects of the global crisis that might reduce the value of their commitments: liquidity and funding management of MFIs, domestic currency volatility, and the impact of credit risk regarding MIVs' *soundness and profitability*. Quality of management and corporate governance in MFIs are key factors and significant drivers in an investor's decision-making. Moreover, on the forefront of investors' concerns is *"the impact of regulation and political interference which may increase due to the economic crisis."* (CSFI, 2009, p.9).

Political interference in microfinance takes many forms; e.g., loan forgiveness, subsidized competition and interest rate ceilings (CSFI, 2009, p.25). The latter is tackled in next section from a theoretical viewpoint. The empirical study following in chapter 6 aims to assess, among other country-specific factors, the impact of interest rate ceilings on MFI portfolio quality underlying GP MIVs.

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[1] Respectively: "people who run or work in MFIs", "people who invest in MFIs", "government officials and those who regulate MFIs", and "respondents from MFIs which take savers' deposits. (CSFI, 2009, p.9-10).

5.3 Interest rate ceilings

Due to its historically social and developmental role, *"microfinance has been prone to political interference in certain countries."* (Fitch Ratings, 2008, p.18). Populism is often the trigger of inadequate policies and government decisions that adversely impact microfinance. According to Fitch (2008), the most damaging political interferences in microfinance are interest rate ceilings, subsidized financing at below market rates, and the support of the government to micro-borrowers not to repay loans.

This section analyzes the goals and impact of government imposed interest rate ceilings on MFIs. While the goal is to prevent usurious rates of interest, it ends up hurting the poor, as microfinance requires high interest rates (in comparison with commercial banks) when considering additional risk factors and costs.

5.3.1 Why are interest rates so high in microfinance?

Interest rate is a controversial topic in microfinance. At first glance, interest rates charged by some MFIs seem to be a usurious burden on the micro-entrepreneur poor. For example, in Asian MFIs, interest rates range from 30% to 70% annually (on a reducing balance basis) in addition to other commissions and fees. Some MFIs also have compulsory savings components which increase the effective interest rates for micro-borrowers that are required to pay during each repayment cycle.

The "interest rates" issue have attracted significant attention from political leaders in Latin America (Nicaragua), in Africa (Ethiopia) (CGAP, 2004[a]), and particularly in Asia (Bangladesh, Cambodia, India, Pakistan, and Sri Lanka) (Fernando, 2006).

Interest rates charged by MFIs cannot be compared to commercial banks, or heavily subsidized not-for-profit programs as their cost structures and funding expenses differ considerably. MFIs seeking sustainability without donor or government dependency must charge interest rates that cover their costs and enable them to be self-sustaining in the future (Fernando 2006).

To determine why interest rates ceilings may not be enforce, it is necessary to understand the factors that can cause high interest rates in microfinance; a key issue considering the empirical study following in chapter 6, because interest rates charged by MFIs are a major component of their portfolio quality:

- **Operational Expense:** Economies of scale is a major issue; microloans are proportionally more expensive to administer than commercial loans. Microloans are very small, provided in areas with a low population density, and involve more client evaluation to counteract the lack of reliable data on a potential micro-borrower's business and credit history. As tackled in chapter 2, typically MFI borrowers provide

no collateral; have no credit history records or financial statements for their micro-enterprise. Due to that, micro-borrowers require more intensive monitoring than commercial lending (Rosenberg, 2006).

- **Cost of Funds:** The level of interest rate an MFI is charging must take into consideration access to additional capital for its loan portfolio. As the microloans lent by MFIs are largely unsecured, they may be charge higher interest rates to cover the default risk of micro-borrowers. (Fernando 2006).

- **Loan Loss Provisions:** MFIs must provision of delinquent loans. Given the lack of collateral in microfinance, provisioning is necessary for MFIs. While operational expense, cost of funds, and loan loss provisions are present in all types of lending (cf. chapter 2), only cost of capital and provisions are proportional to the loan size. (Rosenberg Presentation, 2006).

- **Inflation:** MFIs must also account for inflation in their lending. *"Inflation adds to the cost of microfinance funds by eroding microlenders' equity. Thus, higher inflation rates contribute to higher nominal microcredit interest rates through their effect on the real value of equity."* (Fernando 2006, p.2).

- **Profits:** MFIs that seek to be sustainable outside of subsidies must charge, by definition following chapter 2, enough to have a margin or profit level that allows them to grow their portfolio or attract additional external funding.

While an argument could have been that an MFI inefficiency drives up the interest rates charged, in fact even the most efficient MFIs charge more than commercial banks (Rosenberg, 2006). MFIs that are more efficient might indeed be able to provide microfinance services at lower expenses than compared to inefficient MFIs in the same context. A competitive environment might reduce the interest rates charged.

5.4.2 Interest rate ceilings can damage microfinance and affect the poor

From a microeconomic viewpoint there are several levels where information asymmetry can impede microfinance developmental effectiveness and efficiency. Interest rate ceilings are essentially price controls on microcredit which can in fact harm those they intend to help and lead to overall welfare loss.

Consider the following reflections:

- *"Ceilings on interest rates prevented financial institutions from significantly expanding outreach to poor households. As transaction costs tend to be constant per loan independent of loan size, interest rate ceilings and credit subsidies led to concentrations in the loan portfolio, allocating relatively large loans to a few big farmers, neglecting the small and the poor. Banks shifted transaction costs to borrowers, including legal and illegal charges, making cheap credit expensive to the end user."* (Quinones & Seibel, 2000, p.196).

- *"Because small-scale loans are more expensive than large loans, rate ceilings could encourage microcredit lenders to desert poorer, small-scale loan clients. Rate ceilings would change the nature of MFI lending, creating a shift to more short-term loans. As a rate ceiling would increase policy risk, and if inflation were expected to rise, longer-term loans would carry greater risks. Rate ceilings would create an artificially high demand for microcredit relative to supply and encourage credit officers and others to adopt rationing devices that, in turn, create rent-seeking opportunities.* (Fernando 2006, p.5)

From a socially-motivated investor viewpoint, two central issues emerge; mission drift and portfolio quality deterioration.

Other harmful side effects of interest rate ceilings are not as apparent. Interest rate ceilings can also lead to less transparency between the MFI and the micro-borrowers as it can encourage additional fees and charges that may not be clear to the client in order to provide these services profitably (Rosenberg, 2006). Interest rate ceilings can also negatively affect MFIs' ability to fund their loan portfolio. Price ceilings will reduce and MFI's portfolio yield, narrowing their margin to levels where investment may be deterred. (Fernando, 2006).

CGAP (2004a) shows a significant correlation between interest rate ceilings and low levels of market penetration among poor populations (i.e. living on less than US$2 per day). Poorer households are more likely to be affected by interest rate ceilings as MFIs are prevented from charging enough interest to cover the additional risk and expense of lending to low-income households compared to higher income (Holmes, 2005).

Figure 5.3 shows the level of market penetration in countries with and without interest rate ceilings. It is based on 23 countries with interest rate ceilings and 7 countries without ceilings as of 2004.

Figure 5.3: Market penetration and interest rate ceilings
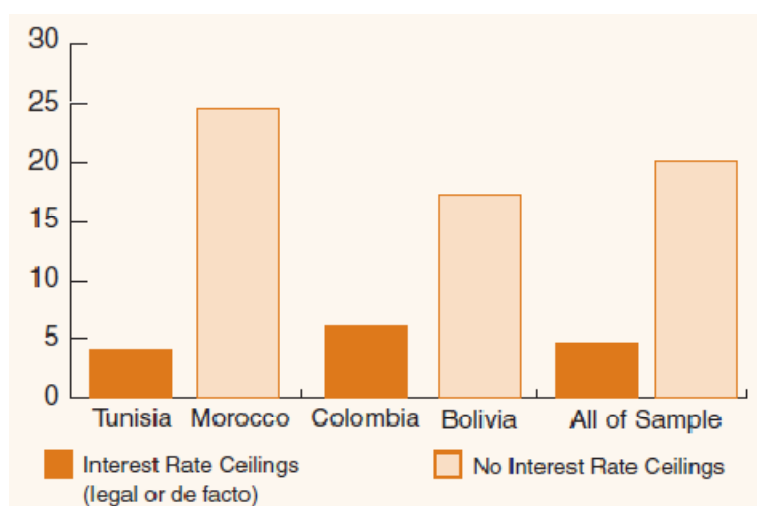
Source: CGAP (2004ᵃ)

Governments must focus on ways to decrease the cost of microcredit without harming MFIs or micro-borrowers. A recurrent proposed government action proposed by practitioners is to create credit bureaus[1] in order to reduce information asymmetry, thereby decreasing the risk of lending and the expense of client research, and improving efficiency and lower the related expenses of administering microloans. This might lower barriers to entry in providing microcredit, which can encourage competition further decreasing interest rates (Holmes, 2005).

Next chapter enhances an empirical model that aims to capture, among other country-specific factors, the impact of an interest rate ceiling policy on MFI portfolio quality underlying GP MIVs.

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[1] *"A private credit bureau is defined as a private firm or nonprofit organization that maintains a database on the creditworthiness of borrowers (persons or businesses) in the financial system and facilitates the exchange of credit information among banks and financial institutions."* Website of Doing Business (IFC), http://www.doingbusiness.org (Accessed on March 15, 2010).

6. Country risk and microfinance: a regression approach

Section 6.1 reviews the empirical literature dealing with the impact of country risk on portfolio quality in microfinance and introduces the empirical strategy. Section 6.2 describes the variables used in this research. Finally, the results are presented and a conclusion is given in section 6.3.

6.1 The research model and preliminary analysis

6.1.1 Impact of country risk on portfolio quality in microfinance: a literature survey

Apart from microfinance-related empirical studies, *"banking crises in emerging markets tend to occur in response to a conjuncture of unfavorable developments in domestic and international markets."* (Eichengreen & Rose, 1997, p.28).

In microfinance, however, empirical studies show that MFIs[1] and MIVs[2] are rather resilient to macroeconomic shocks. For example, Krauss & Walter (2008) find that in terms of global market risk, MFIs are not correlated with capital markets. Janda & Svarovska (2009) demonstrate that MIVs focusing on debt instruments represent an *attractive opportunity* for cross-border investors regarding their portfolio diversification. However, resilience of microfinance to domestic economic conditions is not confirmed; neither by Kraus & Walter (2008), nor by Janda & Svarovska (2009). Krauss & Walter (2008, p.31) demonstrate a negative significant impact of GDP on PaR-30 (the proxy for portfolio quality the study treats). From the viewpoint of practitioners, PaR-30 is *"the most widely accepted measure"* of MFI portfolio quality (MicroRate & IADB, 2003, p.6). In a previous study, Krauss & Walter (2006) also show a significant relation between growth and PaR-30. This indicator might reflect objectively the complete institutional risk, thus making it an adequate proxy for MFI risk of default (MicroRate & IADB, 2003).

Using panel regressions, Ahlin & Lin (2006) also tackle the question of MFI resilience to domestic macroeconomic shocks. Among other MFI performance indicators, they regress on the Write-off Ratio and PaR-30 in regards to assess MFI portfolio quality. Ahlin & Lin (2006, p.6) show that *"MFI performance seems to be non-negligibly driven by the macroeconomic environment"*, but find that only growth negatively affects both indicators (i.e., positive impact with regards to the quality of a portfolio). Other macroeconomic variables[3] have no statistical significance except for inflation in few cases with low significances.

Gonzalez (2007) demonstrates a *high* resilience of MFI portfolios to economic shocks. The study examines whether changes in domestic GNI per capita significantly impacts MFI port-

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[1] E.g. Gonzalez (2007), Krauss & Walter (2008).

[2] E.g. Galema, Lensink & Spierdijk (2008), Janda & Svarovska (2009)

[3] Labor force participation rates, inflation, manufacturing's share in GDP and net foreign direct investment as a fraction of GDP

folio quality, measured by four indicators: PaR-30, PaR-90, Write-off Ratio (WOR) and Loan loss Rate (LLR). No evidence for a relationship between MFI portfolio quality and changes in GNI per capita (i.e., growth) is found, except for a significant relationship between growth and PaR-30. Moreover, Gonzalez (2007, p.4) notices that PaR indicators might be *affected by very recent economic events* [e.g., growth of the same year], *while WOR and LLR may be affected by last's year growth."* Considering such a differed effect, Gonzalez (2007) controls both for growth and one period lag of growth. His model, however, doesn't provide statistical significance of such a differed effect.

In short, several empirical studies have put emphasis on MFI/MIV performance aspects and diversification issues as well as macroeconomic factors. However the question on what country risk factors drive portfolio quality is to some extent missing in the empirical microfinance literature. In particular, no empirical study addresses the impact of an interest rate ceiling policy on portfolio quality.

6.1.2 Research questions and econometrical model

This study aims at investigating the impact of country-specific factors on MFI portfolio quality underlying GP's investments. Special focus will be given to the role of interest rate ceilings in this context. For a matter of clarity, when referring to variables specific to a country, "country risk factors" is used as a generic term, even for variables that might not at first sight encompass solely risk aspects.

The research questions ensue as follows:

- *What country risk factors affect MFI portfolio quality underlying GP's MIVs?*

- *Does an interest rate ceiling policy adversely impact portfolio quality?*

The scope of study is solely limited on country-specific aspects. While the purpose of the model is not to assess a domestic "banking crisis", the study will enlighten country risk factors impacting microfinance from an investor's viewpoint, specifically considering a MIV portfolio investing in Latin America. The study stands from an investor's viewpoint with a risk management approach. Since portfolio quality indicators encompass the default and the risk of default measures of an MFI, exclusively those indicators are considered.

The econometric model states as follows:

$$MFI\ Portfolio\ Quality_{ijt} = Institutional\ Factors_{it} + Country\ Risk\ Factors_{jt}\,,\quad (6.1)$$

where the indexes i, j and t stand for MFI, country and time, respectively. The model also controls for a time variable and country dummies.

It is argued that all explanatory variables in the model are exogenous (i.e. no endogeneity problem with feedback effects exists) and therefore ordinary least squares (OLS) can be used In particular, it is assumed that MFIs from a macroeconomic viewpoint have no influence on country risk aspects. Indeed, Ahlin & Lin (2006) provide evidence against a reverse causality considering growth effect on institutional factors. Furthermore, an MFI portfolio quality may not have an impact on the institutional factors considered in the model; meaning the latter should be chosen carefully to avoid a reverse causality. Trivially, the age of an MFI might have an effect on its portfolio quality, but not the other way around. But, institutional factors such as return on equity and leverage for instance are not clear, and a reverse causality may occur. In short, OLS fits well with regards to the purpose of the present research.

6.2 Selection of variables

This section is divided in three sub-sections dealing with portfolio quality measures in 6.2.1, with country risk factors in 6.2.2, and with institutional characteristics in 6.2.3.

6.2.1 Portfolio quality

The study investigates the proposed research questions for the following portfolio quality variables: PaR-30, PaR-90, WOR, (PaR-30+WOR), Loan Loss Rate (LLR), and Risk Coverage Ratio (RCR). These six measures are used as the dependent variables in this research. It is assumed that this list is exhaustive - neither the MIX, nor MicroRate considers other indicators to reflect the quality of a MFI portfolio.

Dependent variable 1: Portfolio at Risk > 30 days Ratio (PaR-30)

Following the MIX, a portfolio at risk is defined as *"the value of all loans outstanding that have one or more installments of principal past due more than […] days. This includes the entire unpaid principal balance, including both the past due and future installments, but not accrued interest. It also includes loans that have been restructured or rescheduled."*[1]

The ratio is considered as follows: PaR-30 = Portfolio at Risk > 30 days/ Gross Loan Portfolio (cf. section 4.2), expressed in %. Hence, PaR-30 is a measure of risk of default (Gonzalez, 2007).

Dependent variable 2: Portfolio at Risk > 90 days Ratio (PaR-90)

PaR-90 is equivalent to PaR-30, however with arrears over 90 days. The correlation between these indicators is 0.86 (Gonzalez, 2007).

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[1] Website of the MIX, section: "Glossary", http://www.mixmarket.org (Accessed on March 15, 2010).

Dependent variable 3: Write-Off Ratio (WOR)

According to the MIX, a write-off is the "*total amount of loans written off during the period. A write-off is an accounting procedure that removes the outstanding balance of the loan from the Loan Portfolio and from the Impairment Loss Allowance when these loans are recognized as uncollectable.*"[1]

Expressed in %, WOR is a ratio defined by the write-offs over the average gross loan portfolio. In other words it is a measure of default (Gonzalez, 2007).

Dependent variable 4: (PaR-30 + WOR)

To the author's knowledge, no empirical study has addressed a model using (PaR-30 + WOR). It might seem unconventional to add them and create a new variable, since their respective denominators slightly differ (GLP and Average GLP). However, MicroRate & IADB (2003, p.7-13) propose to take into account a possible manipulation from an MFI that would like to "improve" its financial statements, thus adding WOR to PaR-30. In fact, WOR "*serve as a control indicator that will allow better understanding of PaR.*" (MicroRate & IADB, 2003, p.13).

Dependent variable 5: Loan Loss Rate (LLR)

LLR is given by: (Write-offs - Value of Loans Recovered)/ Average GLP

WOR and LLR are closely related by definition. This is confirmed in the data with a almost perfect correlation of 99% (Gonzalez, 2007).

Dependent variable 6: Risk Coverage Ratio (RCR)

RCR is given by: Impairment Loss Allowance/ PaR-30

Where the MIX defines the Impairment Loss Allowance as "*the non-cash expense calculated as a percentage of the value of the loan portfolio that is at risk of default. This value is used to create or increase the impairment loss allowance on the balance sheet.*"[2]

According to MicroRate & IADB (2003, p.11), RCR "*gives an indication of how prepared an institution is for a worst-case scenario.*"

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[1] Website of the MIX, section: "Glossary", http://www.mixmarket.org (Accessed on March 15, 2010).

[2] Website of the MIX, section: "Glossary", http://www.mixmarket.org (Accessed on March 15, 2010).

6.2.2 Country risk factors

In the absence of comprehensive theory adapted to microfinance, an exhaustive classification is necessary in order to make a review of the variables considered as "country risk". The latter is proposed to be categorized in four dimensions not necessarily independent, but a purpose is to avoid recurrence amongst them[1]: socio-political risk, economic risk, and financial system.

Socio-political risk

According to Bouchet & al. (2004, p.16), a social-political risk may take three distinct forms:

- **Political:** "Democratic or non-democratic change in the government"

- **Government policy:** "Change in the policy of the local authorities"

- **Social:** "Social movement intending to influence foreign business or host country policy"

This structure fits well for the context of this study. Specifically, an index for political stability is used, and interest rate ceilings-related variables are taken within "social-political risk" category.

Variable 1: Political Stability and Absence of Violence (PV)

PV is a component of the "Worldwide Governance Indicators", an index developed by the World Bank[2]. PV captures *"perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism."* (Kaufmann & al. 2009, p.6). Figure 6.1 presents country PV scoring values.

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[1] An "impressive" amount of country risk indexes and sub-indexes exist through the web. Only (sub)-indexes and variables *a priori* relevant for a microfinance context are considered.

[2] Website of the World Bank, section: "Governance – WGI", http://info.worldbank.org (Accessed on March 15, 2010).

Figure 6.1: Cross-Country Comparisons of PV and standard errors
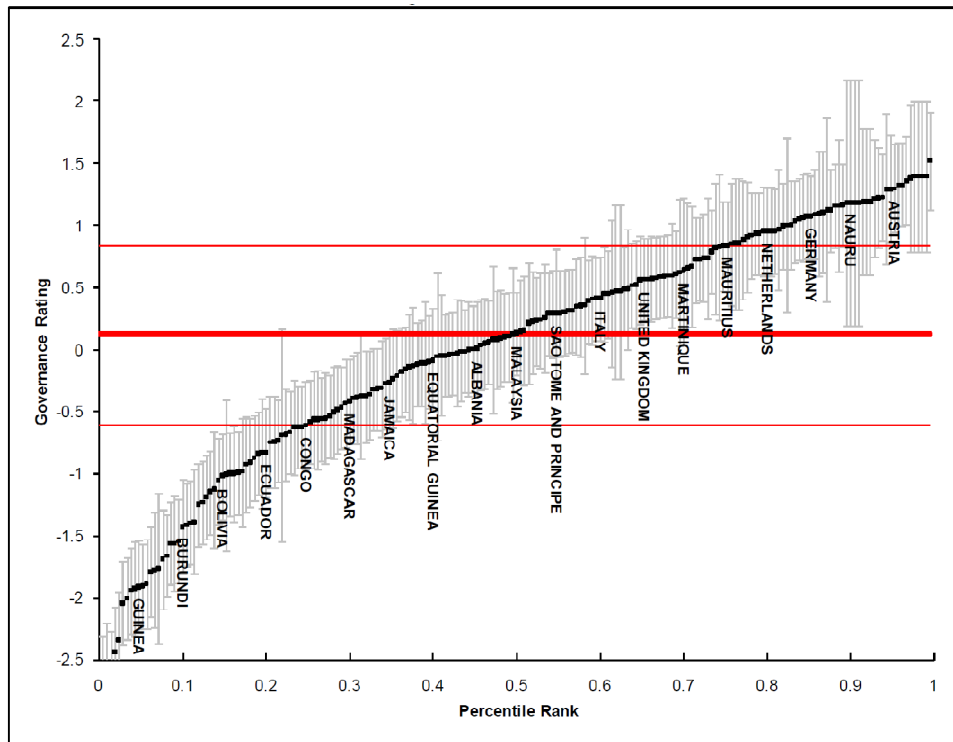
Source: Kaufmann & al. (2009)

Countries are classified on the horizontal axis in ascending order according to their point estimates as of 2008; the vertical axis gives the country scoring value ("Governance Rating") and the associated 90% confidence intervals.

PV variable scales from -2.5 (politically instable country) to 2.5 (stable country).

Variables 2-4: Interest rate ceilings (IRC, IRC YEAR and IRC YEAR+1)

The "interest rate ceilings" variables are treated as dummies.

IRC: For a given country and year when such a policy is observed. According to CGAP (2004ᵃ), Nicaragua introduced a "usury rate" in 2001 and Ecuador as well. However, for the latter, *"microfinance lenders are excluded from interest rate ceilings, or are authorized to charge additional fees."* (CGAP, 2004ᵃ, p.9). But as the Ecuadorian authorities introduced a ceiling on effective interest rates encompassing also MFIs in 2007, thus, 2007 is the year to take into consideration for Ecuador in this research (The Economist Intelligence Unit, 2007). CGAP (2004ᵃ) specifies a ceiling policy for Bolivia introduced in 2004; specifically, NBFIs *"cannot lend individuals or groups a value above 1% of their net equity without a guarantee. The exception*

is a housing credit, in which case NBFIs cannot lend above 5% or 10%."[1] Thus, this research takes into account Bolivia as a country enforcing an interest rate ceiling policy. Finally, Honduras has interest rate ceilings, but a separate regulation for MFIs also exist (CGAP, 2004[a]). Thus, Honduras is not taken into consideration as having an interest rate ceiling policy.

In short, from the seven countries in the data, Nicaragua has ceilings encompassing micro-finance from 2001, Bolivia from 2004, and Ecuador from 2007.

In regards to variables related to "interest rate ceilings", two other variables are tested in the general econometric model 6.1, namely **IRC YEAR and IRC YEAR+1.** The former is a dummy that takes the value "1" **only** for the year when the policy is enforced. Correspondingly, the latter takes the value "1" **only** for the year after the policy is enforced, because the impact of a policy may be deferred in the timeframe.

Economic risk

Five macroeconomic variables are considered; Inflation, GDP per capita, GDP growth rate, Growth volatility over a 5-year interval, and Growth volatility over a 3-year interval. Primary data is gathered from the IMF website[2].

Variable 3: Inflation (INFL)

Following Ahlin & Lin (2006), inflation is added to the model. Even if Ahlin & Lin (2006) find overall little evidence of an inflation effect, a significant result is observed in regards to the Write-off Ratio (WOR) in one case. While their primary result suggests that inflation is associated with a lower WOR, this effect disappears after a robustness check. Moreover, they show that a high inflation is associated with a higher PaR-30 in some specifications. Indeed, *"it makes sense that high inflation would give borrowers incentives to delay loan repayment (raising* PaR-30*) while also perhaps enabling more borrowers eventually to repay (lowering* WOR*)."* (Ahlin & Lin, 2006, p.23). Inflation at end of period consumer prices is considered. It is calculated as the year-on-year % change of the December values.

Variable 4: GDP per capita (LNGDP)

GDP expressed in current $US per person is considered. LNGDP being useful for variable 5, as "growth rates (cf. variable 5) *corrected for population growth better reflect prosperity changes within*

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[1] Website of the Center for Financial Inclusion, http://www.centerforfinancialinclusion.org (Accessed on March 15, 2010).

[2] Website of the International Monetary Fund, section: "Data and Statistics", http://imf.org (Accessed on March 15, 2010).

regions than aggregate regional growth rates." (Crucq & Hemminga, 2007, p.38). This variable is taken in Logs.

Variable 5: GDP growth rate (GROWTH)

The model includes the annual growth rate of GDP per capita. As mentioned in the previous sub-section, several studies show a significant relationship between MFI portfolio quality measures and GROWTH. Moreover, following Ahlin & Lin (2006, p.7), *"the question of how growth correlates with representative firms' performance may appear uninterestingly obvious. In the case of microfinance – given its operation among economically marginal clientele, its concentration in informal sectors, its frequent reliance on local markets, and its common non-profit status – the answer seems far from obvious a priori."* Enhancing their model with different specifications, GROWTH might affect negatively WOR and PaR-30, thus positively impact an MFI portfolio quality.

Variables 6-7: Growth volatility (GROWTH SDTV5 and GROWTH SDTV3)

Growth volatility is measured by the standard deviation of real GDP per capita growth rate over a 5-year interval. The standard deviation measure of volatility is a commonly used in the economic growth literature. Considering growth and volatility figures of developing countries over the last 3 decades, Wermelinger (2009, p.1-2) notices *"large growth spurts whose positive effects are counterbalanced during sharp recessions in subsequent periods, and thus growth is overall more volatile and unstable in poorer countries compared to growth in more developed regions."* Thus, growth volatility proxies well the stability of an economy.

Moreover, an effect on MFI portfolio quality is plausible, since empirical studies confirm that *volatility is negatively related to average growth* (e.g., Ramey & Ramey, 1995) *"and that the direction of causality goes from volatility to growth"* (e.g., Mobarak, 2005; Wermelinger, 2009, p.2).

According to Yang (2008), the use of a 5-year interval – instead of longer intervals – allows for more variation of the volatility numbers over time. Growth volatility over a 3-year interval is also considered in this research.

Financial system

Three variables are considered Foreign exchange volatility over a 5-year interval, Foreign exchange volatility over a 3-year interval, and Private credit bureau coverage.

Variables 8-9: Foreign exchange volatility (FX SDTV5 and FX SDTV3)

Foreign exchange volatility is measured by the standard deviation of real foreign exchange rates **change** over a 5-year interval. A 3-year interval foreign exchange is also considered.

Primary data is gathered from the United States Department of Agriculture[1]. "Real annual country exchange rates (local currency per $US), derived by averaging 12 monthly real exchange rates." Thus, an intermediary step before calculating the standard deviation is to take the **change** in the foreign exchange rate for a given year against the previous year.

As mentioned in previous chapters, foreign investments fund predominantly MFIs in hard currency, exposing MFIs to vulnerability in regards to their domestic financial system stability. However, most of MFIs composing the panel of the study neither disclose publically their capital structure, nor make any historical data available on a possible hedging of their debt to match their assets. GP's MIVs may adopt such a hedging strategy, but no information is provided. Besides, the purpose of this "country risk" category is to proxy the financial stability surrounding MFIs. Crabb (2004, p.54) observes that *"during strong economic conditions,* [foreign exchange] *volatility tends to be low, but geopolitical tensions and changes in capital flows can quickly lead to higher volatility and greater risk of loss."*

Variable 10: Private credit bureau coverage (CRED)

As mentioned in sub-section 5.4.2, credit bureaus reduce information asymmetry between lenders and micro-borrowers, and might decrease the risk of lending. An effect on MFI portfolio quality is not excluded, thus CRED *could* proxy the soundness of the financial system from a domestic perspective. Data is retrieved from "Doing Business", an IFC-related project. Data set is incomplete, but years from 2003-2008 are practically covered.

"The private credit bureau coverage indicator reports the number of individuals and firms listed by a private credit bureau with information on repayment history, unpaid debts or credit outstanding from the past 5 years. The number is expressed as a percentage of the adult population. If no private bureau operates, the coverage value is 0."[2]

6.2.3 Institutional factors

While keeping in mind to avoid a "reverse causality" (cf. sub-section 6.1.2), this sub-section provides a brief overview on MFI independent variables selected. Primary data is gathered from the MIX for all variables.

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[1] Website of the United States Department of Agriculture, section: "Data and Statistics", http://www.usda.gov (Accessed on March 15, 2010)

[2] Website of Doing Business (IFC), http://www.doingbusiness.org (Accessed on March 15, 2010).

Variable 11: Age (AGE)

AGE is calculated for each period considering the establishment year as focal point. Ahlin & Lin (2006) find an effect of AGE on WOR at significance level 10% in one case. Besides portfolio quality measures, they assess other MFI variables - falling beyond the concern of this research – and conclude that *"the importance of institution-specific age effects makes clear that much of success originates within the institution."* (Ahlin & Lin, 2006, p.28)

Variable 12: Regulation (REG)

Treated as a dummy, REG indicates whether an MFI is regulated or not. A possible effect on portfolio quality is not to be excluded. A priori a regulated MFI could be more conservative on lending attributions, thus have lower defaults and risk of default. However, the regulatory framework is different across countries, so its effect remains unclear.

Variable 13: Current legal status (STATUS)

STATUS is also a dummy and controls for the type of MFI. The panel is composed of 19 NGOs, seven NBFIs, one bank (FINCA in Ecuador), and one Cooperative (COOP 20 in Nicaragua). STATUS takes 0 if it's an NGO, 1 otherwise. A minor limitation is the availability of historical data; STATUS may have been different in the past due to an MFI transformation (e.g., from NGO to NBFI), the research assume no change in this dummy for a specific MFI. Specific proprieties of MFI type can be consulted in sub-section 2.2.2.

Variable 14: Gross loan portfolio (LNGLP)

Similarly as GDP per capita, the natural logarithm is considered for GLP. Moreover, definition for GLP, and MFI indicators in general, varies slightly across practitioners. Since the data is gathered from the MIX, the definition is adopted as well. GLP is defined as *"all outstanding principals due for all outstanding client loans. This includes current, delinquent, and renegotiated loans, but not loans that have been written off. It does not include interest receivable."*[1] GLP reflects the size of the MFI and is commonly used among practitioners and academics.

Variable 15: GLP growth (GLPGROWTH)

Expressed in percentage on an annual basis; GLP growth reflects the economic expansion of an MFI that might be negatively correlated with PaR, for example.

Variable 16: Average Loan Balance per Borrower (OUTREACH)

OUTREACH is given by "Adjusted Average Outstanding Balance/GNI per Capita" (cf. Table 2.1). A common measure used as a proxy for the depth of outreach to micro-borrowers in regards to social performance (e.g., Gutiérrez Nieto & Serrano Cinca, 2006; Cull & al. 2007).

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[1] Website of the MIX, section: "Glossary", http://www.mixmarket.org (Accessed on March 15, 2010).

Furthermore, Gonzalez (2007) controls portfolio quality for other independent institutional variables (highly suspected to be endogenous).

This study following model 6.1 includes no other institutional indicator due to this feedback problem.

6.3 Empirical results

6.3.1 Data and descriptive statistics

Data for MFI variables is obtained from the MIX database as of March 2010. All available data is gathered leading to a maximum of 174 observations for PaR-30 and the Risk Coverage Ratio to a minimum of 131 observations for PaR-90, from 1997 to 2008. Data is assumed to be of high quality as 24 out of 28 MFIs composing the panel are noted with "5 diamonds"; the highest grade the MIX is attributing in regards to quality of information (e.g., audited financial statements). The remaining 4 MFIs have "4 diamonds", which still reflects reliable information. Moreover, all MFIs have "90-100% operations comprised by microfinance", meaning the panel data is composed exclusively with *stricto sensu* MFIs. Indeed, some MFIs claim to provide microfinance services, but in fact those are e.g., banks providing low-income borrowers with consumer loans, or with financial products not being microfinance as defined in chapter 2. Moreover, for the reason of singularity the country dummy for Mexico is retrieved from the dataset.

The descriptive statistics are provided in Appendix V. In regards to MFI variables, OUTREACH is particularly pertinent; all the panel is characterized by a low average loan balance, i.e., less than 250% of GNI per capita (cf. Chapter 2, Table 2.1). The maximum value of the OUTREACH variable is 201.6% (2.016), while the mean is approximately 40%. An important finding, because GP is putting great emphasis on the social performance issue. With respect to outliers, one can notice that the LNGDP variable takes the minimum with Nicaragua and the maximum with Mexico; severe outlier values. Instead of excluding data of Nicaragua and Mexico, a robustness check by excluding the LNGDP variable could be performed. Regarding the PV index, Bolivia is with a value of -1.13 in 2006 the most instable country, whereas El Salvador in 2002 reported the highest number.

The correlation matrix is provided in Appendix VI[1]. Correlations over 0.5 and under -0.5 are highlighted in yellow. In regards to country risk factors, PV is negatively correlated with GROWTH and LNGDP at more than 50%. Growth volatility over a 5-year interval is correlated with both measures of foreign exchange volatility, but growth volatility over a 3-year interval doesn't show a high correlation with them. Furthermore, the result for LLR and

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[1] For a matter of clarity, the left-hand features column is kept the "split" matrix.

WOR is 98.6% being in line with Gonzalez (2007). By construction, PAR-30 and PAR-90 provide a high linear relationship. (PAR-30 + WOR) highly correlates with WOR, PAR-30, and PaR-90, but WOR does correlate neither with PAR-30, nor with PAR-90.

6.3.2 Regression results

The results are presented by MFI portfolio quality indicator, where two specifications are treated for a robustness check. The first one incorporates all variables, while the second one retrieves time effect and country dummies. It must be emphasized that the first specification modelizes better the reality; indeed country dummies particularly are catching country-specific effects that country risk factors don't. Considering six dependent variables and two specifications, 12 approaches to regress country risk factors on portfolio quality are tackled.

a) PAR-30 (Appendix VII &VIII)

- In the first specification, GROWTH and PV affect significantly PAR-30. Both have a negative coefficient; e.g., the higher GROWTH, the lower PAR-30. The economic progress and a politically stable country might avoid delays and disorder in regards to loan repayments. Inflation and growth volatility over a 3-year interval are significant but at lower levels.

- In order to check the robustness of the model, time effect and country dummies are retrieved. The results change considerably. The model suggests significance only for institutional factors, namely LNGLP and GLPGROWTH.

- While the first specification implies strong effects of macroeconomic variables and of the index that should proxy socio-political risk, the robustness check cannot confirm such effects.

b) PAR-90 (Appendix IX &X)

- In the first specification, several country risk factors are highly significant; namely GROWTH, INFL, GROWTH SDTV3, FX SDTV3, FX SDTV5, IRC, and IRC YEAR +1.

- The robustness check confirms solely IRC; that is a major implication for the research. PAR-90 is the only portfolio quality proxy to be significantly affected by such a policy. On the other hand, the IRC coefficient is negative, suggesting a negative relationship between PAR-90 and IRC. Recall that IRC is a dummy variable that takes "1" for the years that an interest rate ceiling policy is occurring. This effect is translated into a higher portfolio quality for an MFI.

c) WOR (Appendix XI &XII)

- Both specifications for WOR provide no significance for country risk factors, except in two cases; GROWTH has significance at 90% when regressing with time effect and country dummies. GROWTH SDTV5 has a high significance as well, it might affect WOR, but its coefficient is negatively related; i.e., the higher the volatility, the lower the write-off ratio. WOR as a stand-alone measure might not be so reliable; from a practitioner approach, *NGOs particularly resist writing off their seriously delinquent loans because, they argue, "collection efforts continue"*. (MicroRate & IADB, 2003, p.13).

d) (PAR-30 + WOR) (Appendix XIII &XIV)

- In the first specification, GROWTH SDTV5 and GROWTH may affect (PAR-30 + WOR), as well as PV. But significance is not confirmed in the robustness check.

e) LLR (Appendix XV &XVI)

- In the first specification, only GROWTH SDTV5 as a country risk factor may have a negative impact. The robustness check confirms high significance for two institutional factors; namely OUTREACH and GLPGROWTH. The former is significant also when regressing against WOR.

f) RCR (Appendix XVII &XVIII)

- In the first specification, country risk factors related to economic and foreign exchange stability (GROWTH SDTV5, FX SDTV5 and FX SDTV3) have high significance. They are not confirmed in the second specification; however in regards to institutional factors, OUTREACH and GLPGROWTH are significant in both specifications. Moreover, through the entire research, OUTREACH is often significant and negatively related to the dependent variables; i.e. the larger the loan size, the better the portfolio quality.

6.3.3 Conclusion

Recall the research questions that ensue as follows:

- *What country risk factors affect MFI portfolio quality underlying GP's MIVs?*

- *Does an interest rate ceiling policy adversely impact portfolio quality?*

- First, country risk factors are seldom confirmed by a robustness check, but often the second specification provides significance of another country-related variable. In specifications for the risk coverage ratio for instance, the first specification finds high significance for three macroeconomic stability variables; while checking for robustness, their significance disappears, but growth "appears" in the second specification with a high significant relationship to a portfolio quality proxy. The model in both specifications tends to be explained by country risk factors; might be macroeconomic variables, or might be a country-specific index. In short, growth, growth volatility, foreign exchange volatility, and political stability might significantly affect MFI portfolio quality underlying GP's MIVs. On the other hand, a country-indicator such as private credit bureau coverage (CRED) is plausibly excluded to affect the present portfolio underlying.

Second, an adverse impact of interest rate ceilings on portfolio quality measures has not been observed. Conversely, interest rate ceilings may lower portfolio at risk with arrears over 90 days. Treating interest rate ceiling policy as a dummy fits well the context; however, as the study faces annual data, controlling for such a policy is a more complex issue.

To conclude, the quality of information might play a role in regards to the interest rate ceilings; in some countries such a policy doesn't systematically encompass MFIs (e.g., Ecuador from 2004 to 2007), in others microfinance is targeted following populist arguments.

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Appendix I: Key principles of microfinance

1. Poor people need a variety of financial services, not just loans. In addition to credit, they want savings, insurance, and money transfer services.

2. Microfinance is a powerful tool to fight poverty. Poor households use financial services to raise income, build their assets, and cushion themselves against external shocks.

3. Microfinance means building financial systems that serve the poor. Microfinance will reach its full potential only if it is integrated into a country's mainstream financial system.

4. Microfinance can pay for itself, and must do so if it is to reach very large numbers of poor people. Unless microfinance providers charge enough to cover their costs, they will always be limited by the scarce and uncertain supply of subsidies from governments and donors.

5. Microfinance is about building permanent local financial institutions that can attract domestic deposits, recycle them into loans, and provide other financial services.

6. Microcredit is not always the answer. Other kinds of support may work better for people who are so destitute that they are without income or means of repayment.

7. Interest rate ceilings hurt poor people by making it harder for them to get credit. Making many small loans costs more than making a few large ones. Interest rate ceilings prevent microfinance institutions from covering their costs, and thereby choke off the supply of credit for poor people.

8. The job of government is to enable financial services, not to provide them directly. Governments can almost never do a good job of lending, but they can set a supporting policy environment.

9. Donor funds should complement private capital, not compete with it. Donor subsides should be temporary start-up support designed to get an institution to the point where it can tap private funding sources, such as deposits.

10. The key bottleneck is the shortage of strong institutions and managers. Donors should focus their support on building capacity.

11. Microfinance works best when it measures—and discloses—its performance. Reporting not only helps stakeholders judge costs and benefits, but it also improves performance. MFIs need to produce accurate and comparable reporting on financial performance (e.g., loan repayment and cost recovery) as well as social performance (e.g., number and poverty level of clients being served).

Source: CGAP (2004)

Appendix II: Advantages and disadvantages of debt versus equity

Capital structure	Advantages	Disavantages
Debt	Often, there is greater local demand for debt than equity. Greater administrative efficiency for the MFI (e.g., easier to negotiate, shorter negotiation time, less intensive relationship with lenders than with equity holders. Interest payments may be deductible as expense for tax purposes. MFI does not lose control of the enterprise.	Regulatory constraints to leverage Increased financial risk attached to managing higher leverage. Debt agreements can limit the MFI's alternatives when problems arise.
Equity	Longer-term commitment of funds (although some investors may require exit strategy) Shareholders can bring additional benefits to the MFI: 1. Financial and business expertise of shareholders can help develop MFI capacity 2. Some shareholders may be able to respond to emergencies with additional capital 3. Some international and other shareholders can bring prestige, which can improve the reputation and risk rating of the MFI, facilitate access to credit lines and help with regulators Conservative dividend policy can facilitate capital accumulation	Difficulties in identifying equity partners who are fully dedicated to the MFI's social mission Disputes may arise with new investors in numerous areas, such as exit strategy, personnel appointments, board control and dividend policy The negotiation process can be longer, require greater management involvement, and result in a longer documentation process

Source: based on (Maisch & al. 2006)

Appendix III: Top 10 MIV in 2008

Horizontal bar chart titled by category. X-axis labeled "Assets in US$ millions" ranging from 0 to 1000. Categories from top to bottom: ASN Novib, Blue Orchard Loans for Development…, responsAbility Microfinance Leaders, SNS Institutional Microfinance Fund II, Triodos MF Funds (Combined), SNS Institutional Microfinance Fund I, responsAbility Global Microfinance…, Dexia Microcredit Fund, Oikocredit, EFSE. Legend: Total MIV assets, Microfinance Assets.

Source: MicroRate (2009ᶜ)

Appendix IV: MIV survey participants

MIVs	
ACCION Gateway Fund	Hivos Triodos Fund Foundation
ASN-Novib Fund	Impulse Microfinance Investment Fund
Blue Orchard Loans for Development 2006-1	Incofin CVSO
Blue Orchard Loans for Development	LocFund
Blue Orchard Microfinance Securities 1	MicroAccess Trust 2007
Dexia Microcredit Fund	MicroVest LP
Deutsche Bank - Global Commercial Microfinance Consortium	Oikocredit
	responsAbility Microfinanz-Fonds
Deutsche Bank - Microfinance-Invest. Nr 1- First German Fund for Microfinance	responsAbility Global Microfinance Fund
	responsAbility Microfinance Leaders Fund
Global Partnerships Microfinance Fund 2005	Triodos-Doen Foundation
Global Partnerships Microfinance Fund 2006	Triodos Fair Share Fund
Global Partnerships Microfinance Fund 2008	

Source: MicroRate (2009ᵃ)

Appendix V: Descriptive statistics

Variable	Observations	Minimum	Maximum	Mean	Std. deviation
PAR30	174	0.000	0.414	0.043	0.051
PAR90	174	0.000	0.409	0.022	0.033
WOR	174	0.000	0.417	0.017	0.036
(PAR30+WOR)	174	0.003	0.494	0.058	0.066
LLR	174	-0.034	0.375	0.015	0.033
RCR	174	-0.684	37.536	2.189	3.882
AGE	174	1.000	36.000	11.920	5.741
STATUS	174	0.000	1.000	0.253	0.436
REG	174	0.000	1.000	0.121	0.327
LNGLP	174	11.847	18.627	15.592	1.161
GLPGROWTH	174	-0.190	1.096	0.300	0.251
OUTREACH	174	0.037	2.016	0.397	0.372
GROWTH	174	0.004	0.098	0.044	0.020
LNGDP	174	6.588	9.230	7.546	0.648
INFL	174	0.002	0.377	0.064	0.049
GROWTH SDTV5	174	0.266	4.695	1.607	0.835
GROWTH SDTV3	174	0.190	6.119	1.214	0.771
PV	174	-1.130	0.140	-0.468	0.347
IRC	174	0.000	1.000	0.489	0.501
IRC YEAR	174	0.000	1.000	0.057	0.233
IRC YEAR +1	174	0.000	1.000	0.057	0.233
CRED	174	0.000	1.000	0.288	0.304
FX SDTV3	174	0.000	0.354	0.026	0.046
FX SDTV5	174	0.000	0.270	0.036	0.057
Obs. Year	174	1997.000	2008.000	2004.736	2.605
Honduras	174	0.000	1.000	0.080	0.273
El Salvador	174	0.000	1.000	0.155	0.363
Nicaragua	174	0.000	1.000	0.328	0.471
Ecuador	174	0.000	1.000	0.155	0.363
Peru	174	0.000	1.000	0.121	0.327
Bolivia	174	0.000	1.000	0.144	0.352

Source: own research

Appendix VI: Correlations

Variables	AGE	STATUS	REG	LNGLP	GLPGROWTH	OUTREACH	GROWTH	LNGDP	INFL	G. SDTV5
AGE	**1.000**	0.142	0.051	0.574	0.033	0.574	-0.017	0.139	-0.018	-0.220
STATUS	0.142	**1.000**	0.637	0.274	-0.044	0.171	-0.072	0.315	-0.140	-0.349
REG	0.051	0.637	**1.000**	0.266	-0.017	-0.103	0.178	0.208	-0.112	-0.103
LNGLP	0.574	0.274	0.266	**1.000**	0.103	0.478	-0.048	0.158	0.019	-0.336
GLPGROWTH	0.033	-0.044	-0.017	0.103	**1.000**	-0.101	0.262	0.124	-0.094	0.114
OUTREACH	0.574	0.171	-0.103	0.478	-0.101	**1.000**	-0.217	-0.353	0.298	-0.202
GROWTH	-0.017	-0.072	0.178	-0.048	0.262	-0.217	**1.000**	0.269	-0.076	0.113
LNGDP	0.139	0.315	0.208	0.158	0.124	-0.353	0.269	**1.000**	-0.482	-0.098
INFL	-0.018	-0.140	-0.112	0.019	-0.094	0.298	-0.076	-0.482	**1.000**	0.133
GROWTH SDT	-0.220	-0.349	-0.103	-0.336	0.114	-0.202	0.113	-0.098	0.133	**1.000**
GROWTH SDT	-0.178	-0.234	-0.037	-0.228	-0.042	-0.143	0.129	-0.086	0.104	0.476
PV	0.028	0.326	-0.020	0.078	-0.174	0.405	-0.552	-0.424	0.153	-0.371
IRC	0.042	-0.304	-0.115	0.183	0.068	0.230	-0.113	-0.542	0.333	-0.110
IRC YEAR	-0.031	-0.087	-0.016	0.009	0.055	-0.066	-0.169	-0.023	-0.147	0.021
IRC YEAR +1	0.012	-0.087	-0.016	0.086	0.157	-0.057	-0.077	0.004	-0.058	0.119
CRED	0.296	0.480	0.157	0.392	0.041	0.192	-0.146	0.407	-0.038	-0.438
FX SDTV3	-0.090	-0.161	-0.071	-0.121	0.051	-0.113	0.177	0.122	0.442	0.508
FX SDTV5	-0.150	-0.168	-0.049	-0.189	0.124	-0.178	0.163	0.115	0.243	0.673
Obs. Year	0.333	0.197	0.167	0.531	0.244	0.158	0.302	0.358	0.095	-0.234
Honduras	-0.129	0.071	0.215	-0.287	0.013	-0.152	0.209	-0.126	0.094	-0.084
El Salvador	0.175	0.737	0.182	0.194	-0.053	0.192	-0.301	0.325	-0.187	-0.413
Nicaragua	-0.022	-0.322	-0.259	0.087	-0.079	0.465	-0.263	-0.872	0.496	-0.007
Ecuador	-0.108	-0.067	0.085	-0.033	0.212	-0.271	0.132	0.254	0.002	0.553
Peru	0.048	-0.053	0.079	-0.112	-0.006	-0.155	0.574	0.322	-0.268	0.154
Bolivia	0.032	-0.238	-0.152	0.058	-0.039	-0.231	-0.140	0.244	-0.275	-0.205
PAR30	-0.037	0.067	0.036	-0.206	-0.256	0.069	-0.016	-0.151	0.130	-0.029
PAR90	0.093	0.047	0.066	-0.004	-0.215	0.009	-0.091	-0.024	0.018	-0.006
WOR	0.004	-0.010	-0.027	-0.133	-0.261	-0.096	-0.052	-0.008	-0.049	-0.027
(PAR30+WOR	-0.015	0.044	0.009	-0.206	-0.310	0.009	-0.039	-0.119	0.071	-0.042
LLR	-0.040	-0.013	-0.023	-0.137	-0.256	-0.104	-0.086	-0.041	-0.026	-0.032
RCR	-0.004	-0.197	-0.094	-0.044	0.210	-0.208	-0.105	0.029	-0.094	0.196

Cells highlighted in yellow indicate correlation over 0.5 or under -0.5. A correlation matrix is symmetric, thus only the bottom part is considered.

Blue font cells are the dependent variables.

Variables	G. SDTV3	PV	IRC	IRC YEAR	IRC YEAR +1	CRED	FX SDTV3	FX SDTV5	Obs. Year	Honduras
AGE	-0.178	0.028	0.042	-0.031	0.012	0.296	-0.090	-0.150	0.333	-0.129
STATUS	-0.234	0.326	-0.304	-0.087	-0.087	0.480	-0.161	-0.168	0.197	0.071
REG	-0.037	-0.020	-0.115	-0.016	-0.016	0.157	-0.071	-0.049	0.167	0.215
LNGLP	-0.228	0.078	0.183	0.009	0.086	0.392	-0.121	-0.189	0.531	-0.287
GLPGROWTH	-0.042	-0.174	0.068	0.055	0.157	0.041	0.051	0.124	0.244	0.013
OUTREACH	-0.143	0.405	0.230	-0.066	-0.057	0.192	-0.113	-0.178	0.158	-0.152
GROWTH	0.129	-0.552	-0.113	-0.169	-0.077	-0.146	0.177	0.163	0.302	0.209
LNGDP	-0.086	-0.424	-0.542	-0.023	0.004	0.407	0.122	0.115	0.358	-0.126
INFL	0.104	0.153	0.333	-0.147	-0.058	-0.038	0.442	0.243	0.095	0.094
GROWTH SDT	0.476	-0.371	-0.110	0.021	0.119	-0.438	0.508	0.673	-0.234	-0.084
GROWTH SDT	1.000	-0.182	-0.121	0.162	0.152	-0.328	0.248	0.272	-0.288	-0.140
PV	-0.182	1.000	0.047	-0.045	-0.087	0.222	-0.377	-0.451	-0.232	-0.019
IRC	-0.121	0.047	1.000	0.253	0.253	-0.149	-0.077	-0.218	0.294	0.303
IRC YEAR	0.162	-0.045	0.253	1.000	-0.061	-0.067	-0.114	-0.085	-0.070	-0.073
IRC YEAR +1	0.152	-0.087	0.253	-0.061	1.000	-0.042	-0.059	-0.096	0.025	-0.073
CRED	-0.328	0.222	-0.149	-0.067	-0.042	1.000	-0.182	-0.257	0.528	-0.038
FX SDTV3	0.248	-0.377	-0.077	-0.114	-0.059	-0.182	1.000	0.824	0.015	-0.097
FX SDTV5	0.272	-0.451	-0.218	-0.085	-0.096	-0.257	0.824	1.000	-0.080	-0.112
Obs. Year	-0.288	-0.232	0.294	-0.070	0.025	0.528	0.015	-0.080	1.000	0.095
Honduras	-0.140	-0.019	0.303	-0.073	-0.073	-0.038	-0.097	-0.112	0.095	1.000
El Salvador	-0.287	0.530	-0.419	-0.106	-0.106	0.532	-0.166	-0.203	0.056	-0.127
Nicaragua	0.044	0.424	0.543	0.038	0.038	-0.240	-0.133	-0.175	-0.127	-0.206
Ecuador	0.448	-0.493	-0.165	0.167	0.167	-0.125	0.392	0.658	0.050	-0.127
Peru	0.052	-0.414	-0.362	-0.091	-0.091	0.021	-0.024	-0.058	0.160	-0.110
Bolivia	-0.171	-0.197	0.026	0.040	0.040	-0.151	0.042	-0.100	-0.204	-0.121
PAR30	0.038	0.075	-0.041	-0.078	-0.102	-0.004	-0.051	-0.065	-0.138	0.306
PAR90	0.023	0.022	-0.131	-0.071	-0.074	0.052	-0.038	-0.020	-0.083	0.011
WOR	-0.046	0.030	-0.088	-0.013	0.005	-0.002	-0.049	-0.076	-0.112	0.009
(PAR30+WOI	-0.012	0.072	-0.068	-0.067	-0.070	0.009	-0.074	-0.094	-0.137	0.232
LLR	-0.041	0.065	-0.058	-0.004	0.013	-0.016	-0.046	-0.071	-0.127	0.016
RCR	-0.039	-0.138	0.014	0.023	0.032	-0.198	0.091	0.177	-0.120	-0.105

Variables	El Salvador	Nicaragua	Ecuador	Peru	Bolivia	PAR30	PAR90	WOR	PAR30+WOR	LLR	RCR
AGE	0.175	-0.022	-0.108	0.048	0.032	-0.037	0.093	0.004	-0.015	-0.040	-0.004
STATUS	0.737	-0.322	-0.067	-0.053	-0.238	0.067	0.047	-0.010	0.044	-0.013	-0.197
REG	0.182	-0.259	0.085	0.079	-0.152	0.036	0.066	-0.027	0.009	-0.023	-0.094
LNGLP	0.194	0.087	-0.033	-0.112	0.058	-0.206	-0.004	-0.133	-0.206	-0.137	-0.044
GLPGROWTH	-0.053	-0.079	0.212	-0.006	-0.039	-0.256	-0.215	-0.261	-0.310	-0.256	0.210
OUTREACH	0.192	0.465	-0.271	-0.155	-0.231	0.069	0.009	-0.096	0.009	-0.104	-0.208
GROWTH	-0.301	-0.263	0.132	0.574	-0.140	-0.016	-0.091	-0.052	-0.039	-0.086	-0.105
LNGDP	0.325	-0.872	0.254	0.322	0.244	-0.151	-0.024	-0.008	-0.119	-0.041	0.029
INFL	-0.187	0.496	0.002	-0.268	-0.275	0.130	0.018	-0.049	0.071	-0.026	-0.094
GROWTH SDT	-0.413	-0.007	0.553	0.154	-0.205	-0.029	-0.006	-0.027	-0.042	-0.032	0.196
GROWTH SDT	-0.287	0.044	0.448	0.052	-0.171	0.038	0.023	-0.046	-0.012	-0.041	-0.039
PV	0.530	0.424	-0.493	-0.414	-0.197	0.075	0.022	0.030	0.072	0.065	-0.138
IRC	-0.419	0.543	-0.165	-0.362	0.026	-0.041	-0.131	-0.088	-0.068	-0.058	0.014
IRC YEAR	-0.106	0.038	0.167	-0.091	0.040	-0.078	-0.071	-0.013	-0.067	-0.004	0.023
IRC YEAR +1	-0.106	0.038	0.167	-0.091	0.040	-0.102	-0.074	0.005	-0.070	0.013	0.032
CRED	0.532	-0.240	-0.125	0.021	-0.151	-0.004	0.052	-0.002	0.009	-0.016	-0.198
FX SDTV3	-0.166	-0.133	0.392	-0.024	0.042	-0.051	-0.038	-0.049	-0.074	-0.046	0.091
FX SDTV5	-0.203	-0.175	0.658	-0.058	-0.100	-0.065	-0.020	-0.076	-0.094	-0.071	0.177
Obs. Year	0.056	-0.127	0.050	0.160	-0.204	-0.138	-0.083	-0.112	-0.137	-0.127	-0.120
Honduras	-0.127	-0.206	-0.127	-0.110	-0.121	0.306	0.011	0.009	0.232	0.016	-0.105
El Salvador	1.000	-0.299	-0.184	-0.159	-0.176	0.108	0.081	0.020	0.094	0.018	-0.185
Nicaragua	-0.299	1.000	-0.299	-0.259	-0.286	0.004	-0.022	-0.014	0.005	0.017	-0.062
Ecuador	-0.184	-0.299	1.000	-0.159	-0.176	-0.193	-0.151	-0.121	-0.211	-0.118	0.095
Peru	-0.159	-0.259	-0.159	1.000	-0.152	0.156	0.245	0.201	0.224	0.141	-0.103
Bolivia	-0.176	-0.286	-0.176	-0.152	1.000	-0.281	-0.124	-0.086	-0.269	-0.077	0.370
PAR30	0.108	0.004	-0.193	0.156	-0.281	1.000	0.662	0.174	0.844	0.167	-0.283
PAR90	0.081	-0.022	-0.151	0.245	-0.124	0.662	1.000	0.127	0.559	0.111	-0.104
WOR	0.020	-0.014	-0.121	0.201	-0.086	0.174	0.127	1.000	0.670	0.986	-0.079
(PAR30+WOI	0.094	0.005	-0.211	0.224	-0.269	0.844	0.559	0.670	1.000	0.657	-0.254
LLR	0.018	0.017	-0.118	0.141	-0.077	0.167	0.111	0.986	0.657	1.000	-0.068
RCR	-0.185	-0.062	0.095	-0.103	0.370	-0.283	-0.104	-0.079	-0.254	-0.068	1.000

Appendix VII: PAR-30

Goodness of fit statistics:						
Observation	174.000			Significance level 1%		
Sum of weig	174.000					
DF	148.000			Significance level 5%		
R²	0.418					
Adjusted R²	0.319			Significance level 10%		
MSE	0.002					
RMSE	0.042					
MAPE	171.285					
DW	1.825					
Cp	26.000					
AIC	-1077.919					
SBC	-995.783					
PC	0.787					

Analysis of variance:

Source	DF	Sum of squares	Mean squares	F	Pr > F
Model	25	0.189	0.008	4.247	< 0.0001
Error	148	0.263	0.002		
Corrected To	173	0.452			

Computed against model Y=Mean(Y)

Model parameters:

Source	Value	Standard error	t	Pr > |t|	Lower bound (95%)	Upper bound (95%)
Intercept	15.989	7.969	2.006	0.047	0.241	31.738
AGE	0.000	0.001	-0.309	0.757	-0.002	0.001
STATUS	-0.023	0.018	-1.258	0.210	-0.060	0.013
REG	0.004	0.018	0.213	0.832	-0.032	0.040
LNGLP	0.005	0.005	0.964	0.337	-0.005	0.016
GLPGROWTH	-0.021	0.015	-1.349	0.179	-0.051	0.010
OUTREACH	0.008	0.016	0.460	0.646	-0.025	0.040
GROWTH	-0.666	0.312	-2.136	0.034	-1.282	-0.050
LNGDP	-0.006	0.047	-0.121	0.904	-0.099	0.087
INFL	0.230	0.122	1.884	0.062	-0.011	0.472
GROWTH SD	-0.011	0.008	-1.417	0.159	-0.027	0.004
GROWTH SD	0.010	0.006	1.664	0.098	-0.002	0.023
PV	-0.063	0.023	-2.709	0.008	-0.108	-0.017
IRC	0.023	0.022	1.044	0.298	-0.020	0.066
IRC YEAR	-0.014	0.021	-0.655	0.514	-0.055	0.028
IRC YEAR +1	-0.006	0.020	-0.310	0.757	-0.046	0.033
CRED	0.001	0.018	0.075	0.940	-0.035	0.037
FX SDTV3	-0.197	0.208	-0.950	0.344	-0.607	0.213
FX SDTV5	0.203	0.190	1.067	0.287	-0.173	0.579
Obs. Year	-0.008	0.004	-1.937	0.055	-0.016	0.000
Honduras	0.058	0.090	0.637	0.525	-0.121	0.236
El Salvador	0.058	0.060	0.975	0.331	-0.060	0.176
Nicaragua	-0.026	0.108	-0.244	0.808	-0.239	0.186
Ecuador	-0.039	0.060	-0.645	0.520	-0.157	0.080
Peru	0.051	0.061	0.842	0.401	-0.069	0.171
Bolivia	-0.056	0.059	-0.954	0.342	-0.173	0.060

Appendix VIII: PAR-30 without time effects and country dummies

Goodness of fit statistics:						
Observation	174.000			Significance	level 1%	
Sum of weig	174.000					
DF	155.000			Significance	level 5%	
R²	0.180					
Adjusted R²	0.084			Significance	level 10%	
MSE	0.002					
RMSE	0.049					
MAPE	203.702					
DW	1.547					
Cp	19.000					
AIC	-1032.289					
SBC	-972.267					
PC	1.021					

Analysis of variance:

Source	DF	Sum of squares	Mean squares	F	Pr > F
Model	18	0.081	0.005	1.887	0.021
Error	155	0.371	0.002		
Corrected To	173	0.452			

Computed against model Y=Mean(Y)

Model parameters:

Source	Value	Standard error	t	Pr > |t|	Lower bound (95%)	Upper bound (95%)
Intercept	0.363	0.110	3.291	0.001	0.145	0.581
AGE	0.001	0.001	0.596	0.552	-0.001	0.002
STATUS	0.014	0.017	0.820	0.414	-0.019	0.047
REG	0.010	0.019	0.526	0.599	-0.027	0.047
LNGLP	-0.015	0.005	-2.926	0.004	-0.024	-0.005
GLPGROWTH	-0.037	0.017	-2.212	0.028	-0.071	-0.004
OUTREACH	0.015	0.018	0.787	0.432	-0.022	0.051
GROWTH	0.034	0.259	0.133	0.895	-0.477	0.545
LNGDP	-0.016	0.014	-1.146	0.254	-0.043	0.011
INFL	0.129	0.124	1.041	0.299	-0.116	0.373
GROWTH SD	-0.002	0.008	-0.282	0.778	-0.017	0.013
GROWTH SD	0.002	0.006	0.336	0.737	-0.010	0.014
PV	-0.029	0.020	-1.447	0.150	-0.070	0.011
IRC	-0.009	0.013	-0.656	0.513	-0.034	0.017
IRC YEAR	-0.006	0.019	-0.329	0.743	-0.045	0.032
IRC YEAR +1	-0.006	0.019	-0.287	0.775	-0.044	0.033
CRED	0.018	0.018	0.974	0.331	-0.018	0.054
FX SDTV3	-0.072	0.184	-0.392	0.696	-0.436	0.291
FX SDTV5	-0.073	0.157	-0.464	0.643	-0.382	0.237

Appendix IX: PAR-90

Goodness of fit statistics:					
Observation	131.000		Significance level 1%		
Sum of weig	131.000				
DF	105.000		Significance level 5%		
R²	0.553				
Adjusted R²	0.447		Significance level 10%		
MSE	0.001				
RMSE	0.028				
MAPE	224.368				
DW	2.094				
Cp	26.000				
AIC	-910.095				
SBC	-835.340				
PC	0.668				

Analysis of variance:					
Source	DF	um of square	Mean square	F	Pr > F
Model	25	0.105	0.004	5.204	< 0.0001
Error	105	0.085	0.001		
Corrected To	130	0.190			

Computed against model Y=Mean(Y)

Model parameters:						
Source	Value	standard erro	t	Pr > |t|	Lower bound (95%)	Upper bound (95%)
Intercept	9.977	20.524	0.486	0.628	-30.717	50.672
AGE	0.000	0.001	0.079	0.937	-0.001	0.001
STATUS	-0.010	0.013	-0.750	0.455	-0.036	0.016
REG	0.009	0.013	0.675	0.501	-0.018	0.036
LNGLP	0.009	0.004	2.054	0.042	0.000	0.018
GLPGROWTH	0.012	0.013	0.920	0.360	-0.014	0.038
OUTREACH	-0.009	0.012	-0.741	0.460	-0.033	0.015
GROWTH	-1.637	0.326	-5.023	< 0.0001	-2.284	-0.991
LNGDP	-0.062	0.118	-0.527	0.600	-0.297	0.172
INFL	0.478	0.183	2.610	0.010	0.115	0.841
GROWTH SD	-0.001	0.012	-0.118	0.906	-0.025	0.022
GROWTH SD	0.024	0.007	3.362	0.001	0.010	0.038
PV	-0.005	0.034	-0.160	0.873	-0.074	0.063
IRC	0.096	0.027	3.579	0.001	0.043	0.149
IRC YEAR	-0.068	0.025	-2.696	0.008	-0.118	-0.018
IRC YEAR +1	-0.024	0.025	-0.952	0.343	-0.074	0.026
CRED	0.012	0.018	0.660	0.510	-0.024	0.047
FX SDTV3	-0.675	0.313	-2.157	0.033	-1.295	-0.055
FX SDTV5	0.964	0.276	3.494	0.001	0.417	1.511
Obs. Year	-0.005	0.011	-0.443	0.658	-0.026	0.017
Honduras	-0.147	0.227	-0.650	0.517	-0.598	0.303
El Salvador	-0.030	0.127	-0.239	0.812	-0.282	0.221
Nicaragua	-0.246	0.284	-0.865	0.389	-0.810	0.318
Ecuador	-0.122	0.124	-0.983	0.328	-0.369	0.124
Peru	0.069	0.123	0.557	0.579	-0.176	0.314
Bolivia	-0.094	0.134	-0.702	0.484	-0.361	0.172

Appendix X: PAR-90 without time effects and country dummies

Goodness of fit statistics:					
Observation	131.000		Significance level 1%		
Sum of weig	131.000				
DF	112.000		Significance level 5%		
R²	0.187				
Adjusted R²	0.056		Significance level 10%		
MSE	0.001				
RMSE	0.037				
MAPE	323.593				
DW	1.765				
Cp	19.000				
AIC	-845.559				
SBC	-790.930				
PC	1.089				

Analysis of variance:

Source	DF	um of square	Mean square	F	Pr > F
Model	18	0.035	0.002	1.427	0.133
Error	112	0.154	0.001		
Corrected To	130	0.190			

Computed against model Y=Mean(Y)

Model parameters:

Source	Value	Standard erro	t	Pr > |t|	Lower bound (95%)	Upper bound (95%)
Intercept	0.232	0.123	1.883	0.062	-0.012	0.477
AGE	0.001	0.001	1.504	0.135	0.000	0.003
STATUS	0.002	0.015	0.138	0.891	-0.028	0.032
REG	0.006	0.016	0.382	0.703	-0.026	0.038
LNGLP	0.000	0.005	0.034	0.973	-0.010	0.010
GLPGROWTH	-0.028	0.016	-1.801	0.074	-0.059	0.003
OUTREACH	-0.019	0.016	-1.217	0.226	-0.050	0.012
GROWTH	-0.385	0.254	-1.515	0.133	-0.888	0.118
LNGDP	-0.028	0.013	-2.070	0.041	-0.055	-0.001
INFL	0.077	0.121	0.638	0.525	-0.163	0.317
GROWTH SD	0.000	0.010	-0.007	0.995	-0.021	0.020
GROWTH SD	0.008	0.008	0.986	0.326	-0.008	0.025
PV	-0.040	0.020	-1.967	0.052	-0.081	0.000
IRC	-0.034	0.015	-2.217	0.029	-0.064	-0.004
IRC YEAR	-0.012	0.022	-0.537	0.592	-0.057	0.032
IRC YEAR +1	-0.007	0.024	-0.311	0.756	-0.054	0.039
CRED	0.020	0.016	1.254	0.213	-0.012	0.052
FX SDTV3	0.251	0.225	1.117	0.266	-0.194	0.696
FX SDTV5	-0.296	0.185	-1.602	0.112	-0.663	0.070

Appendix XI: WOR

Goodness of fit statistics:						
Observation	156.000			Significance level 1%		
Sum of weig	156.000					
DF	130.000			Significance level 5%		
R²	0.278					
Adjusted R²	0.139			Significance level 10%		
MSE	0.001					
RMSE	0.035					
MAPE	320.962					
DW	1.932					
Cp	26.000					
AIC	-1024.215					
SBC	-944.919					
PC	1.011					

Analysis of variance:

Source	DF	um of square	Mean square	F	Pr > F	
Model	25	0.061	0.002	2.004	0.006	
Error	130	0.157	0.001			
Corrected Tc	155	0.218				

Computed against model Y=Mean(Y)

Model parameters:

Source	Value	tandard erro	t	Pr > |t|	Lower bound (95%)	Upper bound (95%)
Intercept	13.813	7.797	1.772	0.079	-1.612	29.239
AGE	0.002	0.001	2.163	0.032	0.000	0.003
STATUS	0.016	0.016	0.965	0.336	-0.016	0.047
REG	-0.023	0.016	-1.396	0.165	-0.055	0.009
LNGLP	0.005	0.005	1.020	0.309	-0.005	0.015
GLPGROWTH	-0.033	0.013	-2.457	0.015	-0.060	-0.006
OUTREACH	-0.040	0.015	-2.720	0.007	-0.068	-0.011
GROWTH	-0.476	0.281	-1.695	0.092	-1.031	0.079
LNGDP	-0.009	0.045	-0.189	0.850	-0.098	0.081
INFL	-0.008	0.120	-0.069	0.945	-0.246	0.229
GROWTH SD	-0.016	0.007	-2.214	0.029	-0.030	-0.002
GROWTH SD	-0.006	0.007	-0.824	0.411	-0.019	0.008
PV	0.023	0.022	1.064	0.289	-0.020	0.067
IRC	0.031	0.022	1.420	0.158	-0.012	0.074
IRC YEAR	-0.015	0.020	-0.784	0.434	-0.054	0.024
IRC YEAR +1	0.003	0.017	0.197	0.844	-0.031	0.038
CRED	-0.005	0.016	-0.311	0.757	-0.037	0.027
FX SDTV3	0.109	0.210	0.517	0.606	-0.307	0.524
FX SDTV5	0.084	0.183	0.460	0.646	-0.278	0.446
Obs. Year	-0.007	0.004	-1.699	0.092	-0.015	0.001
Honduras	-0.035	0.084	-0.420	0.675	-0.201	0.130
El Salvador	-0.046	0.054	-0.857	0.393	-0.152	0.060
Nicaragua	-0.058	0.102	-0.567	0.572	-0.259	0.144
Ecuador	-0.013	0.057	-0.227	0.821	-0.125	0.100
Peru	0.044	0.057	0.768	0.444	-0.069	0.157
Bolivia	-0.068	0.055	-1.235	0.219	-0.177	0.041

Appendix XII: WOR without time effects and country dummies

Goodness of fit statistics:						
Observation	156.000			Significance	level 1%	
Sum of weig	156.000					
DF	137.000			Significance	level 5%	
R²	0.163					
Adjusted R²	0.053			Significance	level 10%	
MSE	0.001					
RMSE	0.037					
MAPE	460.728					
DW	1.848					
Cp	19.000					
AIC	-1015.111					
SBC	-957.163					
PC	1.069					

Analysis of variance:

Source	DF	um of square	Mean square	F	Pr > F	
Model	18	0.036	0.002	1.482	0.105	
Error	137	0.183	0.001			
Corrected To	155	0.218				

Computed against model Y=Mean(Y)

Model parameters:

Source	Value	Standard erro	t	Pr > |t|	Lower bound (95%)	Upper bound (95%)
Intercept	0.222	0.089	2.504	0.013	0.047	0.397
AGE	0.001	0.001	1.795	0.075	0.000	0.003
STATUS	0.006	0.014	0.424	0.672	-0.021	0.032
REG	-0.007	0.015	-0.452	0.652	-0.036	0.023
LNGLP	-0.003	0.004	-0.872	0.385	-0.011	0.004
GLPGROWTH	-0.048	0.013	-3.572	0.000	-0.075	-0.021
OUTREACH	-0.027	0.015	-1.819	0.071	-0.056	0.002
GROWTH	0.125	0.208	0.601	0.549	-0.286	0.535
LNGDP	-0.018	0.011	-1.632	0.105	-0.040	0.004
INFL	-0.036	0.102	-0.347	0.729	-0.238	0.167
GROWTH SD	0.001	0.006	0.217	0.828	-0.010	0.013
GROWTH SD	-0.006	0.006	-1.034	0.303	-0.017	0.005
PV	-0.004	0.017	-0.237	0.813	-0.037	0.029
IRC	-0.017	0.011	-1.593	0.113	-0.038	0.004
IRC YEAR	0.013	0.016	0.845	0.399	-0.018	0.045
IRC YEAR +1	0.019	0.015	1.251	0.213	-0.011	0.049
CRED	0.010	0.015	0.651	0.516	-0.019	0.038
FX SDTV3	0.146	0.166	0.876	0.383	-0.183	0.475
FX SDTV5	-0.107	0.132	-0.809	0.420	-0.369	0.155

Appendix XIII: (PAR-30+WOR)

Goodness of fit statistics:					
Observation	174.000		Significance level 1%		
Sum of weig	174.000				
DF	148.000		Significance level 5%		
R²	0.413				
Adjusted R²	0.314		Significance level 10%		
MSE	0.003				
RMSE	0.055				
MAPE	118.490				
DW	1.402				
Cp	26.000				
AIC	-986.260				
SBC	-904.124				
PC	0.793				

Analysis of variance:

Source	DF	Sum of squares	Mean squares	F	Pr > F
Model	25	0.314	0.013	4.169	< 0.0001
Error	148	0.446	0.003		
Corrected To	173	0.760			

Computed against model Y=Mean(Y)

Model parameters:

Source	Value	Standard error	t	Pr > |t|	Lower bound (95%)	Upper bound (95%)
Intercept	20.361	10.371	1.963	0.051	-0.133	40.855
AGE	0.001	0.001	0.985	0.326	-0.001	0.003
STATUS	-0.012	0.024	-0.515	0.607	-0.060	0.035
REG	-0.016	0.024	-0.685	0.495	-0.063	0.031
LNGLP	0.009	0.007	1.232	0.220	-0.005	0.023
GLPGROWTH	-0.045	0.020	-2.280	0.024	-0.084	-0.006
OUTREACH	-0.028	0.021	-1.307	0.193	-0.070	0.014
GROWTH	-1.008	0.406	-2.483	0.014	-1.809	-0.206
LNGDP	-0.023	0.061	-0.383	0.702	-0.144	0.097
INFL	0.169	0.159	1.062	0.290	-0.145	0.483
GROWTH SD	-0.021	0.010	-2.035	0.044	-0.042	-0.001
GROWTH SD	0.002	0.008	0.277	0.782	-0.014	0.018
PV	-0.050	0.030	-1.676	0.096	-0.110	0.009
IRC	0.028	0.028	0.979	0.329	-0.028	0.084
IRC YEAR	-0.016	0.027	-0.579	0.563	-0.070	0.038
IRC YEAR +1	0.005	0.026	0.208	0.836	-0.046	0.057
CRED	-0.002	0.024	-0.097	0.923	-0.049	0.045
FX SDTV3	-0.006	0.270	-0.021	0.983	-0.539	0.528
FX SDTV5	0.154	0.247	0.621	0.536	-0.335	0.643
Obs. Year	-0.010	0.005	-1.879	0.062	-0.021	0.001
Honduras	0.025	0.118	0.211	0.833	-0.208	0.257
El Salvador	0.013	0.078	0.170	0.865	-0.140	0.167
Nicaragua	-0.072	0.140	-0.512	0.609	-0.348	0.205
Ecuador	-0.055	0.078	-0.706	0.482	-0.209	0.099
Peru	0.066	0.079	0.835	0.405	-0.090	0.222
Bolivia	-0.115	0.077	-1.489	0.139	-0.267	0.038

Appendix XIV: (PAR-30+WOR) without time effects and country dummies

Goodness of fit statistics:						
Observation	174.000			Significance level 1%		
Sum of weig	174.000					
DF	155.000			Significance level 5%		
R²	0.191					
Adjusted R²	0.097			Significance level 10%		
MSE	0.004					
RMSE	0.063					
MAPE	179.102					
DW	1.169					
Cp	19.000					
AIC	-944.354					
SBC	-884.332					
PC	1.007					

Analysis of variance:

Source	DF	um of square	Mean square	F	Pr > F	
Model	18	0.145	0.008	2.032	0.011	
Error	155	0.615	0.004			
Corrected To	173	0.760				

Computed against model Y=Mean(Y)

Model parameters:

Source	Value	tandard erro	t	Pr > |t|	Lower bound (95%)	Upper bound (95%)
Intercept	0.521	0.142	3.669	0.000	0.241	0.802
AGE	0.002	0.001	1.468	0.144	-0.001	0.004
STATUS	0.018	0.022	0.838	0.403	-0.025	0.061
REG	0.000	0.024	-0.011	0.991	-0.048	0.048
LNGLP	-0.015	0.006	-2.392	0.018	-0.028	-0.003
GLPGROWTH	-0.072	0.022	-3.321	0.001	-0.115	-0.029
OUTREACH	-0.012	0.024	-0.512	0.609	-0.059	0.035
GROWTH	0.144	0.333	0.431	0.667	-0.514	0.802
LNGDP	-0.032	0.018	-1.801	0.074	-0.067	0.802
INFL	0.092	0.159	0.578	0.564	-0.222	0.802
GROWTH SD	0.000	0.010	0.037	0.971	-0.019	0.802
GROWTH SD	-0.005	0.008	-0.645	0.520	-0.021	0.802
PV	-0.033	0.026	-1.271	0.206	-0.085	0.802
IRC	-0.021	0.017	-1.275	0.204	-0.055	0.802
IRC YEAR	0.004	0.025	0.175	0.861	-0.045	0.802
IRC YEAR +1	0.011	0.025	0.435	0.664	-0.038	0.802
CRED	0.030	0.024	1.264	0.208	-0.017	0.802
FX SDTV3	0.010	0.237	0.044	0.965	-0.458	0.802
FX SDTV5	-0.156	0.202	-0.774	0.440	-0.555	0.802

Appendix XV: LLR

Regression of variable LLR:					
Goodness of fit statistics:					
Observations	156.000		Significance level 1%		
Sum of weights	156.000				
DF	130.000		Significance level 5%		
R²	0.244				
Adjusted R²	0.099		Significance level 10%		
MSE	0.001				
RMSE	0.033				
MAPE	414.069				
DW	2.077				
Cp	26.000				
AIC	-1036.567				
SBC	-957.271				
PC	1.058				

Analysis of variance:

Source	DF	Sum of squares	Mean squares	F	Pr > F
Model	25	0.047	0.002	1.680	0.033
Error	130	0.145	0.001		
Corrected Total	155	0.192			

Computed against model Y=Mean(Y)

Model parameters:

Source	Value	Standard error	t	Pr > |t|	Lower bound (95%)	Upper bound (95%)
Intercept	13.099	7.494	1.748	0.083	-1.728	27.925
AGE	0.001	0.001	1.655	0.100	0.000	0.003
STATUS	0.012	0.015	0.805	0.422	-0.018	0.043
REG	-0.018	0.016	-1.146	0.254	-0.049	0.013
LNGLP	0.004	0.005	0.926	0.356	-0.005	0.014
GLPGROWTH	-0.030	0.013	-2.343	0.021	-0.056	-0.005
OUTREACH	-0.036	0.014	-2.586	0.011	-0.064	-0.008
GROWTH	-0.452	0.270	-1.675	0.096	-0.985	0.082
LNGDP	0.003	0.044	0.078	0.938	-0.083	0.090
INFL	0.000	0.115	-0.002	0.999	-0.229	0.228
GROWTH SDTV5	-0.014	0.007	-2.131	0.035	-0.028	-0.001
GROWTH SDTV3	-0.005	0.006	-0.795	0.428	-0.018	0.008
PV	0.028	0.021	1.340	0.183	-0.014	0.070
IRC	0.029	0.021	1.379	0.170	-0.012	0.070
IRC YEAR	-0.014	0.019	-0.726	0.469	-0.051	0.024
IRC YEAR +1	0.004	0.017	0.210	0.834	-0.030	0.037
CRED	-0.006	0.015	-0.391	0.696	-0.036	0.024
FX SDTV3	0.079	0.202	0.390	0.697	-0.320	0.478
FX SDTV5	0.103	0.176	0.586	0.559	-0.245	0.451
Obs. Year	-0.007	0.004	-1.688	0.094	-0.014	0.001
Honduras	-0.012	0.080	-0.153	0.878	-0.171	0.147
El Salvador	-0.031	0.051	-0.603	0.548	-0.133	0.071
Nicaragua	-0.028	0.098	-0.281	0.779	-0.221	0.166
Ecuador	0.001	0.055	0.026	0.979	-0.107	0.110
Peru	0.049	0.055	0.892	0.374	-0.060	0.157
Bolivia	-0.048	0.053	-0.898	0.371	-0.153	0.057

Appendix XVI: LLR without time effects and country dummies

Goodness of fit statistics:					
Observation	156.000		Significance level 1%		
Sum of weig	156.000				
DF	137.000		Significance level 5%		
R²	0.147				
Adjusted R²	0.035		Significance level 10%		
MSE	0.001				
RMSE	0.035				
MAPE	532.632				
DW	1.999				
Cp	19.000				
AIC	-1031.789				
SBC	-973.842				
PC	1.089				

Analysis of variance:

Source	DF	um of square	Mean square	F	Pr > F
Model	18	0.028	0.002	1.317	0.187
Error	137	0.164	0.001		
Corrected To	155	0.192			

Computed against model Y=Mean(Y)

Model parameters:

Source	Value	Standard erro	t	Pr > |t|	Lower bound (95%)	Upper bound (95%)
Intercept	0.192	0.084	2.287	0.024	0.026	0.358
AGE	0.001	0.001	1.329	0.186	0.000	0.002
STATUS	0.003	0.013	0.252	0.801	-0.022	0.029
REG	-0.004	0.014	-0.253	0.801	-0.032	0.024
LNGLP	-0.003	0.004	-0.755	0.452	-0.010	0.005
GLPGROWTH	-0.043	0.013	-3.367	0.001	-0.068	-0.018
OUTREACH	-0.025	0.014	-1.810	0.073	-0.053	0.002
GROWTH	0.081	0.197	0.412	0.681	-0.308	0.470
LNGDP	-0.015	0.011	-1.412	0.160	-0.036	0.006
INFL	-0.021	0.097	-0.211	0.833	-0.213	0.172
GROWTH SD1	0.000	0.006	-0.011	0.991	-0.011	0.011
GROWTH SD1	-0.005	0.005	-0.941	0.348	-0.016	0.006
PV	0.003	0.016	0.179	0.858	-0.028	0.034
IRC	-0.013	0.010	-1.312	0.192	-0.034	0.007
IRC YEAR	0.013	0.015	0.839	0.403	-0.017	0.042
IRC YEAR +1	0.018	0.014	1.262	0.209	-0.010	0.046
CRED	0.006	0.014	0.449	0.654	-0.021	0.034
FX SDTV3	0.122	0.158	0.773	0.441	-0.190	0.434
FX SDTV5	-0.069	0.125	-0.552	0.582	-0.317	0.179

Appendix XVII: RCR

Regression of variable RCR:					
Goodness of fit statistics:					
Observation	174.000		Significance level 1%		
Sum of weig	174.000				
DF	148.000		Significance level 5%		
R²	0.352				
Adjusted R²	0.243		Significance level 10%		
MSE	11.412				
RMSE	3.378				
MAPE	150.230				
DW	1.783				
Cp	26.000				
AIC	447.474				
SBC	529.610				
PC	0.875				

Analysis of variance:

Source	DF	um of square	Mean square	F	Pr > F
Model	25	918.578	36.743	3.220	< 0.0001
Error	148	1689.006	11.412		
Corrected To	173	2607.584			

Computed against model Y=Mean(Y)

Model parameters:

Source	Value	Standard erro	t	Pr > |t|	Lower bound (95%)	Upper bound (95%
Intercept	-154.678	638.368	-0.242	0.809	-1416.170	1106.815
AGE	0.152	0.069	2.215	0.028	0.016	0.287
STATUS	1.295	1.482	0.874	0.384	-1.633	4.223
REG	-0.371	1.464	-0.253	0.800	-3.264	2.522
LNGLP	-0.191	0.434	-0.441	0.660	-1.048	0.665
GLPGROWTH	3.100	1.221	2.539	0.012	0.687	5.513
OUTREACH	-3.272	1.313	-2.491	0.014	-5.867	-0.676
GROWTH	-33.304	24.974	-1.334	0.184	-82.657	16.048
LNGDP	2.555	3.767	0.678	0.499	-4.889	9.999
INFL	8.300	9.789	0.848	0.398	-11.045	27.645
GROWTH SD	1.277	0.642	1.987	0.049	0.007	2.546
GROWTH SD	0.024	0.497	0.048	0.962	-0.959	1.007
PV	1.581	1.851	0.854	0.394	-2.076	5.239
IRC	0.622	1.753	0.355	0.723	-2.842	4.086
IRC YEAR	-0.804	1.683	-0.478	0.633	-4.130	2.521
IRC YEAR +1	-0.960	1.596	-0.602	0.548	-4.113	2.193
CRED	-1.325	1.458	-0.909	0.365	-4.207	1.557
FX SDTV3	-38.876	16.623	-2.339	0.021	-71.725	-6.027
FX SDTV5	36.389	15.234	2.389	0.018	6.285	66.493
Obs. Year	0.066	0.330	0.201	0.841	-0.585	0.718
Honduras	4.449	7.244	0.614	0.540	-9.867	18.764
El Salvador	2.862	4.779	0.599	0.550	-6.581	12.306
Nicaragua	7.161	8.619	0.831	0.407	-9.872	24.195
Ecuador	2.378	4.804	0.495	0.621	-7.117	11.872
Peru	4.075	4.853	0.840	0.402	-5.514	13.665
Bolivia	8.915	4.740	1.881	0.062	-0.451	18.281

Appendix XVIII: RCR without time effects and country dummies

Regression of variable RCR:

Goodness of fit statistics:

Observation	174.000		Significance level 1%	
Sum of weig	174.000			
DF	155.000		Significance level 5%	
R²	0.248			
Adjusted R²	0.161		Significance level 10%	
MSE	12.650			
RMSE	3.557			
MAPE	181.654			
DW	1.666			
Cp	19.000			
AIC	459.437			
SBC	519.459			
PC	0.936			

Analysis of variance:

Source	DF	Sum of squares	Mean squares	F	Pr > F
Model	18	646.780	35.932	2.840	0.000
Error	155	1960.803	12.650		
Corrected To	173	2607.584			

Computed against model Y=Mean(Y)

Model parameters:

Source	Value	Standard erro	t	Pr > |t|	Lower bound (95%)	Upper bound (95%)
Intercept	-3.641	8.028	-0.454	0.651	-19.500	12.218
AGE	0.140	0.070	1.997	0.048	0.001	0.278
STATUS	-0.589	1.224	-0.481	0.631	-3.007	1.829
REG	-0.356	1.372	-0.259	0.796	-3.065	2.354
LNGLP	0.330	0.360	0.916	0.361	-0.382	1.042
GLPGROWTH	3.386	1.229	2.755	0.007	0.958	5.814
OUTREACH	-3.496	1.341	-2.607	0.010	-6.145	-0.847
GROWTH	-57.416	18.813	-3.052	0.003	-94.579	-20.254
LNGDP	0.357	1.001	0.357	0.722	-1.620	2.334
INFL	-2.595	8.992	-0.289	0.773	-20.358	15.169
GROWTH SD	0.548	0.549	0.999	0.319	-0.536	1.632
GROWTH SD	-0.521	0.451	-1.157	0.249	-1.411	0.369
PV	-0.015	1.482	-0.010	0.992	-2.942	2.912
IRC	0.496	0.949	0.523	0.602	-1.379	2.372
IRC YEAR	-1.455	1.414	-1.029	0.305	-4.247	1.338
IRC YEAR +1	-1.447	1.410	-1.026	0.307	-4.232	1.339
CRED	-3.067	1.334	-2.298	0.023	-5.703	-0.431
FX SDTV3	-5.164	13.381	-0.386	0.700	-31.596	21.269
FX SDTV5	7.722	11.396	0.678	0.499	-14.790	30.233