WHAT MACRO FACTORS MAKE MICROFINANCE INSTITUTIONS REACH OUT?[1]

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Abstract

This paper identifies factors that explain why microfinance institutions are reaching more clients in some countries than in others. To that end, the paper applies a cross-country analysis on a unique dataset covering 115 countries. Results indicate that the microfinance sector is more present in the richer countries of the developing world. It also reaches more clients in countries that receive more international support. Population density plays a positive role, which could in part explain why the sector is still underdeveloped in rural areas. The level of industrialisation and inflation do not seem to influence microfinance outreach, while regional dummies do.

Keywords: microfinance, financial sector development, aid, developing world

JEL Codes: G21, G28, O16, O57

1. INTRODUCTION

Microfinance, defined as providing financial services to the poorer sections of the population, is a hot topic in current development debates, even though it has a long history[3]. The microfinance sector has experienced a tremendous growth over the last two decades. In 2006, more than a thousand programs ex-

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[3] Seibel (2003 and 2005), Hollis and Sweetman (1998) and Guinnane (2004).

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isted and more than 113 million people were served[4]. Although the literature explains the emergence of the microfinance industry as an answer to an unmet demand[5], microfinance institutions (MFIs) are not equally spread around the globe. Some regions and countries have developed big microfinance markets, while others have not. Hardy (*et al.*, 2002), for example, compares two neighbouring Central African countries, Cameroon and Gabon. Even though these countries have similarities – common currency, comparable per capita income, etc. – the microfinance industry is more expanded in Cameroon than in Gabon. Hardy (*et al.*, 2002) argues that the reasons behind these differences should be investigated. In Latin America too, the progress has been highly unequal. Marulanda and Otero (2005), for example, show that the market coverage of MFIs differs dramatically across Latin American countries. Also on a global level, the development of the sector has been uneven. It seems that the environment in which MFIs operate plays a role in these cross-country differences. But while a lot has been written on factors influencing the development of the financial sector as a whole, almost nothing has been written on the relationship between the microfinance sector and its macro environment. Most work on microfinance industry focuses on the institutional side of the organisations[6]. Especially the transformation of MFIs into commercial entities has increasingly received attention[7]. Conversely, linking the development of microfinance industry with macro-economic variables has only been done by a small number of authors[8]. Until now it is not clear which macro-environments are more conducive for developing successful MFIs. In the current stage of development, where expanding access to financial services in rural areas is becoming increasingly important, this is a particularly interesting research question. Vanroose (2007) has identified possible factors that play a role in the uneven development of MFIs in Latin America. The main drawback of the study is the small number of observations. This paper therefore includes additional regions in order to increase the number of observations. In total, 115 countries are taken into account. The worldwide survey from the Consultative Group to Assist the Poor (CGAP) in 2004 is expanded with data from the Mix Market and different rating agencies. The analysis takes a cross-country perspective and identi-

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[4] Daley-Harris, S. (2006), The State of the Micro-Credit Summit Campaign Report 2006, http://www.microcreditsummit.org/pubs/reports/socr/2006/SOCR06.pdf (consulted September 2007).

[5] See for example Robinson (2001), Littlefield and Rosenberg (2004).

[6] See for example Labie (2001) and Hudon (2006).

[7] See for example Robinson (2001).

[8] See for example Honohan (2004), Marconi and Mosley (2005), Sriram and Kumar (2005) and Ahlin and Lin (2006).

fies factors that help the development of the microfinance sector. Results indicate that the microfinance sector is more present in the richer countries of the developing world. It also reaches more clients in countries that receive more international support. Population density plays also a positive role, which could in part explain why the sector is still underdeveloped in rural areas. The level of industrialisation and inflation does not seem to influence microfinance outreach, while regional dummies do.

The remainder of the paper is structured as follows. Section 2 reviews the literature on factors that determine financial development in general, makes the link with the development of the microfinance sector, and formulates new hypotheses. The data and methodology are presented in Section 3. Results are analysed in Section 4. Finally, conclusions and policy implications are set out in Section 5.

2. THE UNEVEN DEVELOPMENT OF FINANCIAL SECTORS

Financial sectors are unevenly developed around the world. The literature shows that institutions (Acemoglu *et al.*, 2001), infrastructure and governance (Beck *et al.*, 2007), as well as income levels (Edison *et al.*, 2002) play a significant role. Huang (2005), in his overview, distinguishes three groups of factors: policy, geographical and institutional factors. Given that financial sectors are traditionally segmented due to client and industry specificities (Richter, 2004), one could question whether the same factors are equally important in the different segments. As mentioned in the introduction, microfinance can be seen as a part of the financial sector that provides financial services to the poor segments of a population (Morduch, 1999). In the literature, the studies on individual countries mention a number of factors that are needed to create well-functioning microfinance markets. Inspired by Huang (2005), we have grouped these factors in four different categories. A brief introduction on how to measure the development of the microfinance sector is given here.

The literature suggests several indicators that can be used to measure the financial sector development[9]. However, generally it is argued that, in view of its specific characteristics, the development of the microfinance sector should be measured in a different way. When we look at the literature, the objective of MFIs is generally seen as a double one: to reach the poor, who are financially excluded and to become financially sustainable in order to become independent from donor subsidies (Hartarska and Nadolnyak, 2007). Zeller and

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[9] See for example Beck *et al.* (2007).

Meyer (2002) add social impact to these two objectives. Vanroose (2008) shows that the most feasible way to measure the development of the microfinance sector is the number of clients served. This is due to data constraints. Financial sustainability data is only available for a limited number of institutions and the CGAP database does not contain such information. Furthermore, it is still difficult to measure the social impact. This paper thus focuses solely on the first objective of MFIs; that is, to reach the unbanked.

2.1 Policy factors

Four factors that can be defined as 'macro-economic policy factors', and that are mentioned in the literature, will be examined here.

A first factor is the income level. Westley (2005) states that regions with higher levels of income have less developed microfinance sectors. He provides two reasons. Firstly, micro-entrepreneurs with higher incomes have more opportunities to self-finance through savings. Secondly, they may benefit more easily from informal finance through family and friends, as well as from formal finance. Similarly, Schreiner and Colombet (2001) argue that one of the reasons why microfinance in Argentina has not developed is due to the higher wages people earn. Traditionally, microfinance also focuses on the poor excluded clients, so microfinance should be reaching more clients in regions that are poor. A useful proxy is GNI per capita. Hence hypothesis 1:

Hypothesis 1:
Microfinance is more present in economies with lower GNI per capita.

Second, macro-economic instability is also put forward in the literature. Goldfajn and Rigobon (2000) show that macro-economic stability, determined by stable inflation and real interest rates, plays a major role in financial sector development. According to Rhyne (2001), the process towards a more stable economy, and especially lower inflation rates, has proved crucial in Bolivia in attracting more potential microfinance providers. Vander Weele and Markovich (2001) provide evidence of the devastating effects of inflation, especially hyperinflation, on the performance of MFIs. Thus one could argue that inflation is one of the hindering factors in the development of the sector. It erodes the capital basis and diminishes the value of the currency. For the borrowers, high inflation means high interest rates and increasing repayment problems, although the real value of the remaining part of the loan decreases. This could hinder the development of microfinance, by discouraging potential providers. Countries enjoying macroeconomic stability may not encounter these problems. This said, Hartarska (2005) finds that MFIs reach more clients

in high inflation countries in the Central and East European states. One could argue that in high inflation areas, banks are even more reluctant to serve poor clients so that a bigger potential microfinance market emerges. Following the same line, Patten *et al.* (2001) found that Indonesian MFIs did relatively well during the East-Asian crisis. These observations could point to differences between 'ordinary' banks and MFIs, and are used to construct hypothesis 2.

Hypothesis 2:
Microfinance is more developed in countries that have relative instable economies.

The international donor community has historically played an important role in subsidising the emergence and further development of microfinance programs. As most institutions started as non-governmental organisations, external financial intervention was needed (Imboden, 2005). Microfinance should therefore be more present where the international donor community encourages it. Ideally, the support should come from both domestic and international political actors. For example, the fact that the New Economic Program reform of Bolivia was accompanied by the creation of an Emergency Social Fund, which contained a microfinance program, is seen as one of the reasons microfinance has taken off there. The World Bank has also played an enhancing role by promoting microfinance financially (Rhyne, 2001). To gauge the extent of external intervention and international support, the amount of subsidies received is a good indicator. It is widely known that a high number of MFIs still depend on subsidies (Armendariz and Morduch, 2005 & Hudon and Traca, 2008). The amount of donor support should thus be positively related to the development of the sector.

Hypothesis 3:
Microfinance is more developed in countries that receive more international support.

As a final factor in this category, a number of authors also link the transition to a more service based economy, the growth of the informal sector and the existence of a microfinance market. The argument is that economies that shift away from primary production (industry and mining) to a more service based economy tend to develop a higher demand for microfinance as service providers are a major market for MFIs (Marconi and Mosley, 2005). This would mean that microfinance is less developed in the industrialized regions.

Hypothesis 4:
Microfinance is serving more clients in less-industrialized countries.

2.2 Geographic variables

Transaction and information costs influence financial development. In some cases, they lead to market failures (Stiglitz and Weiss, 1981). Good interconnectivity between regions, the availability of electricity, communications and sanitation networks lower these costs. A high population density also helps. According to Sriram and Kumar (2005), two contradictory arguments could be made. The first is that formal financial institutions may be more developed in regions with higher population density and good regional interconnectivity. Thus the need for specific MFIs may not be present. The second is that, if the development of the two sectors is complementary, these factors could eventually also stimulate the development of the microfinance sector. Latin American evidence has shown that urban MFIs are more common than rural ones (Rhyne, 2001). Schreiner and Colombet (2001) argue that the absence of an adequate infrastructure plays a hindering role in the development of microfinance. Moreover, Yaron and McDonald (1997) see the absence of good infrastructure and sparely populated areas as one of the main reasons why financial sectors are so underdeveloped in rural areas. Hulme and Moore (2006) also support the hypothesis that microfinance tends to develop much faster in densely populated areas. Consequently, the hypothesis that microfinance is reaching more clients in high-density populated countries will be tested.

Hypothesis 5:
Microfinance is more developed in densely populated areas.

2.3 Institutional variables

Institutions play an important role in the development process of a country. One institution that is often mentioned in the microfinance literature is the educational system. The role of human capital in financial sector development is widely recognized. In a study on Thailand, Paulson (2002) finds that regions with higher levels of education have more developed financial systems. Guiso *et al.* (2004) also find positive effects of social capital. Therefore, we hypothesize that human capital - in the form of higher education levels and literacy rates - enhances the outreach of MFIs.

Hypothesis 6:
The microfinance sector has a higher penetration ratio in countries that have higher literacy rates.

2.4 Other variables

In the literature on formal financial development, good governance and colonial background are also mentioned as possible success factors. Although they have not been mentioned yet in the microfinance literature, we do control for these factors in our regressions. Conversely, the regulatory framework is mentioned in the microfinance literature. A number of authors argue that a special microfinance regulation helps. Nevertheless, data on such regulation for microfinance is not yet available for a sufficiently comprehensive set of countries, so this factor is not taken into account.

3. THE DATA AND THE EMPIRICAL MODEL

MFIs represent a broad range of institutions. However, when we look at them from a micro-theoretical point of view, one can identify analogous mechanisms. In this way, MFIs can be defined as a group of innovative organizations that have found new methodologies to overcome four major problems that financial institutions face when lending. These problems are[10]: to ascertain the riskiness of the potential borrower (*adverse selection*), to ensure the proper use of the loan so that the borrower will be able to repay it (*moral hazard)*, to learn how the project really did in case one cannot repay *(auditing costs)*, and to find methods to force the borrower to repay the loan if she is reluctant to do so (*enforcement*). Traditionally, many MFIs work through group lending, using social capital as collateral to overcome these problems. Through joint liability the balance sheet of the poor borrower[11] is strengthened so that financing can be enabled (Tirole 2006). However, there are additional innovations that make MFIs peculiar and different from traditional banking institutions. Armendariz de Aghion and Morduch (2005) show that through different dynamic incentive mechanisms, such as the threat to stop lending and to promise progressive lending, MFIs can successfully implement individual lending methodologies. Furthermore, MFIs overcome potential default risks by using frequent repayment systems and asking public payments. From an institutional perspective, MFIs can be identified as institutions that have a double bottom line. Besides a financial objective, they also have a social objective, namely to reach the financial excluded poor (Christen *et al.*, 2004).

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[10] As listed by Ghatak and Guinanne (1999).

[11] Tirole (2005) argues that the balance sheet of certain people is so weak (due to lack of collateral, no cash or no guaranteed income streams) that traditional financial institutions refuse to lend to them.

Although these are relatively clear definitions, in practice it has not been easy to identify the segment of the financial sector that focuses explicitly on the poor. The two most important reasons are the lack of obligatory reporting for MFIs and the absence of central reporting organizations (Honohan, 2004). In 2004, the CGAP published a worldwide survey on financial institutions serving the poorer sections of the population. The CGAP identified over more than 3000 institutions. Honohan (2005) and the World Bank (2007) both state it is a very representative study allowing a clear image of the current access to MFIs. To this date, no other complete inventory study has been done[12]. This is why we continue to use this database. Christen *et al.* (2004) divide the institutions by region and institutional type. The different regions are: Latin America and Caribbean (LAC), Sub-Saharan Africa (AFR), the Middle East and North Africa (MENA), South Asia (SA), East Asia and the Pacific (EAP) and Eastern Europe and Central Asia (ECA). These regions comprise 137 countries in total. In addition, the World Bank classification of poor and middle and upper income countries is used to assess the level of income and development.

The CGAP database is used to assess the number of MFIs and the number of clients served by these institutions in the years up to 2003. When possible, the database is extended with data from other agencies, namely the MIX and three microfinance rating agencies listed by the Rating Fund: MicroRate, PlaNet Rating and Microfinanza. In this way, more than 125 of the largest institutions were added to the database. In total, 2677 institutions are taken into account. These institutions serve 278,243,699 clients[13].

Three shortcomings of our database should be kept in mind. Firstly, not all institutions reported the number of their clients, even though almost all provided the number of outstanding loans. When the number of clients was available, this number was used; when it was missing, it was proxied by the number of loans outstanding. This could lead to a slight overestimation of the number of clients. A second, related problem is that clients could have loan accounts with multiple institutions. This could also lead to an overestimation of the number of clients served in a specific country. Nevertheless, it is only in those

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[12] Most studies use MIX data, but unfortunately these data do not provide a complete overview of all existing MFIs. Consequently, many studies are confronted with sample selection. By using the CGAP database the present paper tries to avoid this issue.

[13] This is a significantly larger number than the number cited in the introduction. Nevertheless, the MicroCredit Summit only includes institutions that have a 'poorest of the poor' focus. The CGAP data contains also institutions that have a larger objective. The number of the institutions is therefore larger.

countries where the microfinance sector has reached a certain level of development that multiple borrowing becomes an issue[14], so we argue that it is still possible to assess the level of development by approaching it by the number of clients served. Thirdly, as mentioned above, it is not clear whether all MFIs reported. This could lead to an underestimation of the market. However, adding MIX and other rating agencies data should increase the representativeness[15].

In our regressions, the dependent variable is the number of clients divided by the population. On average, MFIs serve 5.4% of the population. Figure 1 gives an overview of the average outreach per region. It can be seen that the MFIs in the Latin American and South Asian region reach more clients. Figure 2 gives the absolute number of institutions per region. Africa has the greatest number of institutions, but these reach only slightly more than 2% of the population. This indicates that there are many small institutions. Conversely, in Latin America the MFIs have reached a significant bigger size. As can be seen in Figure 3, there are also big disparities between countries within a specific region. In what follows, we try to explain these regional and cross-country differences by means of an econometric model.
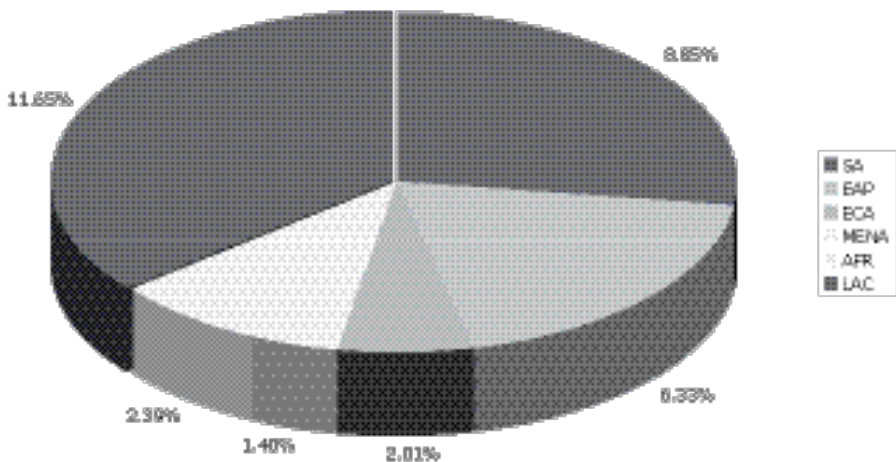

Figure 1. Outreach average per region

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[14] Bolivia is a good example (Marconi and Mosley, 2005).
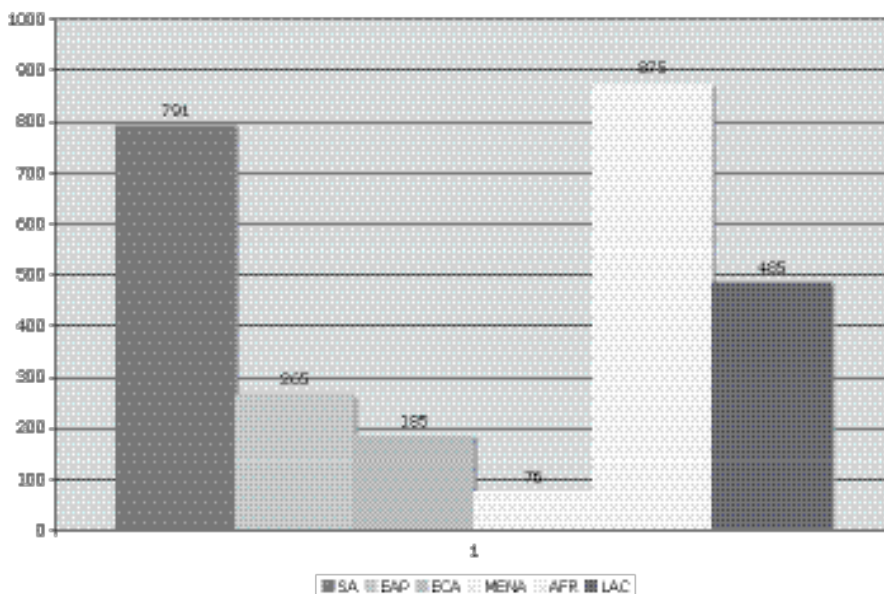[15] Honohan (2004) shows that MFIs reporting to the MIX represent 70% of the market.

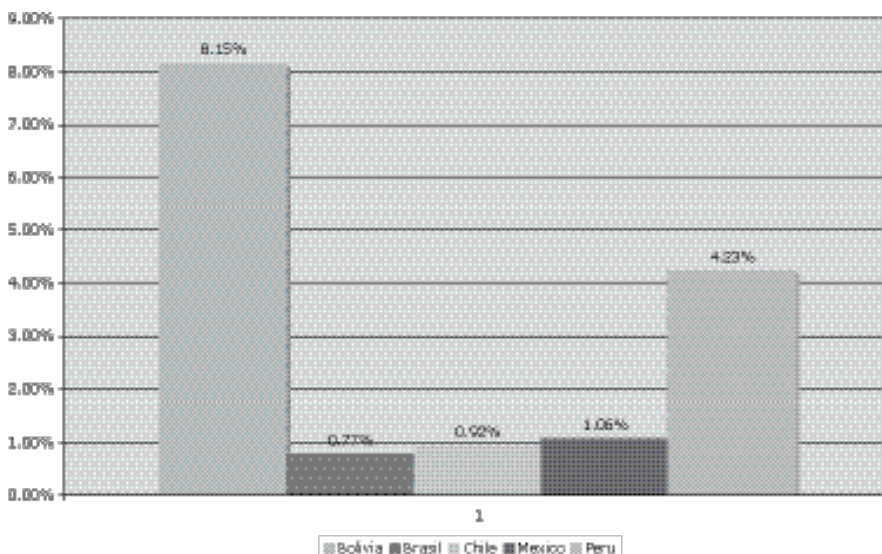**Figure 2. Number of MFIs per region**

Figure 3. Cross-country differences in the Latin American region

The model used to test the hypotheses introduced in Section 2 is of the form:

$$OUT_i = f(POL_i, GEO_i, INST_i, CON_i) + \varepsilon_i \quad (1)$$

where OUT_i is the percentage of the population served by MFIs in country i and ε_i the conventional residual. POL_i are the macro-economic policy variables, GEO_i is the geographical framework variable, $INST_i$ the institutional variable and CON_i is the set of control variables.

As explained, the policy variables comprise GNI per capita, the level of inflation, the amount of international aid per capita (to proxy the international support), and the level of industry value added (to proxy the level of industrialization). The geographical variable used is population density and the institutional variables are literacy rates (to approach the level of education) and colonial background dummies. Finally, the control variables include the level of political stability and a corruption index, the regional dummies (to capture any regional effect), and the number of MFIs in the country (to see whether or not outreach is solely explained by the quantity of MFIs).

Most of the data comes from the Word Development Indicators. The UNDP-Human Development Index is used to assess the level of human capital. The World Bank database on governance indicators is used to estimate the level of governance. The Transparency International database is used to quantify the level of corruption.

The functional specification then becomes

$$OUT_i = \alpha_i + \beta_1 \times \ln GNI_i + \beta_2 \times INFL_i + \beta_3 \times \ln AID_i + \beta_4 \times INDVA_i + \beta_5 \times \ln DENS_i + \beta_6 \times HCL_i + \beta_7 \times PS_i + \beta_8 \times CPI_i + \beta_9 \times MFIs_i + \beta_{10} \times dLA_i + \beta_{11} \times dSA_i + \beta_{12} \times dMENA_i + \beta_{13} \times dECA_i + \beta_{14} \times dEAP_i + \varepsilon_i \quad (2)$$

and including the colonial dummies

$$OUT_i = \alpha_i + \beta_1 \times \ln GNI_i + \beta_2 \times INFL_i + \beta_3 \times \ln AID_i + \beta_4 \times INDVA_i + \beta_5 \times \ln DENS_i + \beta_6 \times dBritish_i + \beta_7 \times dFrench_i + \beta_8 \times dSpanish_i + \beta_9 \times PS_i + \beta_{10} \times MFIs_i + \varepsilon_i \quad (3)$$

where in both specifications, GNI is gross national income per capita; INFL is the average inflation rate over the last five years; AID is international aid per capita; INDVA the industry value-added; DENS is the population density; HCL the literacy rate; PS the political stability factor, and CPI the corruption index. The number of MFIs in a country could, of course, also influence the outreach

variable; in the equation this is controlled for by *MFIs*. Finally, the regional dummies[16] are added and the equation is estimated with and without the colonial background dummies.

Table 1 summarizes the hypotheses, the variables that are tested in equation (2), and the expected sign of the coefficients. Table 2 provides the descriptive statistics. Table 3 is the correlation matrix.

Table 1. Summarizing table of hypotheses

	Hypothesis that will be tested	Variable	Expected sign
1.	Microfinance is more present in countries with lower **GNI per capita**.	**GNI per capita**	**Negative**
2.	Microfinance tends to exist in high-**inflation** areas.	**Inflation rate**	**Positive**
3.	Microfinance reaches more clients in countries that receive a higher proportion of **international aid**.	**Aid per capita**	**Positive**
4.	Microfinance is more present in countries that have higher **literacy rates.**	**Literacy rate**	**Positive**
5.	The microfinance sector is more developed in **densely populated areas.**	**Population density**	**Positive**
6.	Microfinance is more developed in less **industrialized** economies.	**Industry value added**	**Negative**

From table 3, one can see that there is a high correlation between literacy rate HCL and GNI per capita (rho > 0.7). This is the reason why the equation is also estimated without literacy rates. There exists also a (low) correlation between the corruption index and political stability factors on the one hand and GNI per capita on the other hand (both rho of about 0.4). There is also a slightly significant correlation between the corruption index and the political stability level. The equation is therefore estimated once only with the political stability variable and once, including the latter and separately, the other two variables. Another reason is that the number of countries reporting the corruption index is substantially smaller. A final significant (negative) correlation is the one between the dummy variable for Africa and the level of income (rho > -0.7).

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[16] where *dLA* is the dummy for the Latin American and Caribbean region; *dSA* the one for the South-Asian region; *dMENA*, the one for the Middle-Eastern and Northern African region; *dECA* is the dummy for the Eastern Europe and Central Asian region and *dEAP* the one for the East-Asian and Pacific region. Finally, the Sub-Saharan African (AFR) region is left out in order to avoid the dummy trap.

Table 2. Descriptive statistics

Variable	obs	mean	std. Dev.	Min.	Max.
OUT	128	0,0543	0,0820	0,0000131	0,3976889
lnGNI	124	7,4517	1,3453	4,382027	10,19895
INFL	130	19,2949	63,2049	0	611,3
lnAID	128	3,0451	1,3361	-1,433279	6,508769
INDVA	130	28,4569	12,3176	0	81,51286
lnDENS	131	4,0417	1,3925	0,4306503	8,767967
HCL	105	77,0549	22,7465	0	99,76
DBritish	137	0,3066	0,4628	0	1
DFrench	137	0,2190	0,4151	0	1
DSpanish	137	0,1314	0,3391	0	1
PS	133	38,7744	24,8598	0	97,1
CPI	112	3,2277	1,3725	1,3	9,4
MFIs	137	19,5402	41,6447	1	330
dLA	137	0,2336	0,4247	0	1
dSA	137	0,0438	0,2054	0	1
dMENA	137	0,1095	0,3134	0	1
dECA	137	0,1752	0,3815	0	1
dEAP	137	0,1314	0,3391	0	1
dAFR	137	0,3066	0,4628	0	1

4. DISCUSSION OF THE RESULTS

Our analysis relies on simple multiple regressions (Ordinary Least Squares). All equations are tested with White's robust standard errors. Note that due to missing data a number of countries were eliminated from our data-base[17]. Also, due to the conversion into logs, additional observations were lost. The highest number of countries (115) is used in equations 1 and 4. In equation 2 the number of countries is 89. Nevertheless, the results do not really change between the different equations, indicating that they are fairly robust.

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[17] Afghanistan, Algeria, Bermuda, Cayman Islands, East Timor, Iraq, Gabon, Kosovo, Liberia, Libya, Montserrat, Montenegro, Palestine, Tortola, Syria and Yugoslavia.

Table 3. Correlation matrix

	OUT	lnGNI	INFL	lnAID	INDVA	lnDENS	HCL	DBritish	Dfrench	DSpan	PS	CPI	MFIs	dLA	dSA	dMENA	dECA	dEAP	dAFR
OUT	1.00																		
lnGNI	0.21	1.00																	
INFL	-0.09	-0.03	1.00																
lnAID	-0.09	-0.40	0.02	1.00															
INDVA	-0.05	0.36	0.43	-0.32	1.00														
lnDENS	0.10	0.13	-0.12	-0.35	-0.10	1.00													
HCL	0.20	0.73	-0.12	-0.17	0.20	0.01	1.00												
DBritish	0.11	-0.02	-0.11	-0.18	0.10	0.24	-0.05	1.00											
DFrench	-0.17	-0.40	-0.07	0.14	-0.19	-0.13	-0.39	-0.31	1.00										
DSpanish	0.28	0.27	-0.08	-0.15	0.04	-0.12	0.30	-0.35	-0.26	1.00									
PS	0.02	0.47	-0.10	0.02	0.11	-0.08	0.38	-0.08	-0.11	0.03	1.00								
CPI	0.13	0.43	-0.10	-0.38	0.14	0.22	0.30	0.02	-0.20	-0.04	0.48	1.00							
MFIs	0.10	-0.03	-0.08	-0.23	-0.12	0.34	-0.27	0.28	-0.06	0.00	-0.25	-0.21	1.00						
dLA	0.34	0.25	-0.08	-0.12	0.02	-0.15	0.31	-0.35	-0.08	0.77	0.05	-0.02	-0.08	1.00					
dSA	0.31	0.09	-0.05	-0.17	-0.09	0.33	-0.18	0.37	-0.11	-0.13	-0.21	-0.12	0.73	-0.15	1.00				
dMENA	-0.11	0.12	0.01	0.01	0.06	0.01	0.22	0.02	0.08	-0.11	-0.15	0.03	-0.09	-0.13	-0.05	1.00			
dECA	-0.20	0.37	0.09	0.17	0.00	0.07	0.35	-0.21	-0.15	-0.17	0.22	0.11	-0.13	-0.21	-0.08	-0.07	1.00		
dEAP	0.01	0.32	-0.05	-0.27	0.27	0.09	0.14	-0.03	-0.05	-0.08	0.23	0.36	-0.06	-0.22	-0.08	-0.07	-0.11	1.00	
dAFR	-0.30	-0.74	0.07	0.25	-0.17	-0.12	-0.58	0.29	0.22	-0.45	-0.16	-0.23	-0.10	-0.54	-0.20	-0.17	-0.27	-0.29	1.00

Table 4. OLS Regressions

Expl Var OUT				
Explanatory var		with literacy	with CPI	with colonial
	EQ1	EQ2	EQ3	EQ4
lnGNI	0.0155942	.0149741	.0134294	.0110414
	(.0069002)**	(.0085299)*	(.0086739)	(.0051597)**
INFL	-0.0000141	0.0000472	-0.0000511	-6.28E-06
	(0.0000463)	(.000039)	(.0000453)	(.0000591)
lnAID	0.0120208	0.0121774	0.0121718	0.0122446
	(.0049043)**	(.0056269)**	(.0065577)*	(.0054427)**
INDVA	0.0003227	-0.0008124	0.0005519	0.0002849
	(.0006845)	(.000661)	(.0007201)	(.0007401)
lnDENS	0.0100181	0.008448	0.0039173	0.0102278
	(.004809)**	(.0052019)	(.0050755)	(.0050934)**
HCL		0.0003893		
		(.0004168)		
dBritish				0.0314165
				(.0191418)
dFrench				0.0196599
				(.0129418)
dSpanish				0.0546943
				(.022099)**
PS	-0.0001029	-.0000459	-0.0002548	0.0000543
	(.0003219)	(.0002686)	(.0003646)	(.0003056)
CPI			0.005969	
			(.0061684)	
MFIs	.0000209	-.000315	-1.78E-06	0.0000792
	(.0002088)	(.0002692)	(.0002663)	(.0001197)
dLA	0.0474667	0.0411026	0.0395508	
	(.0185107)**	(.0191446)	(.0181458)**	
dSA	0.0277073	0.1273886	0.0636103	
	(.0601486)	(.0878727)	(.0788696)	
dMENA	-0.0366242	-0.0575109	-0.0328724	
	(.0178144)**	(.0220824)**	(.0222025)	
dECA	-.0460429	-.0853098	-.0346145	
	(.0178082)**	(.0207464)***	(.0225692)	
dEAP	-0.0048905	-0.0017311	0.0094086	
	(.0213096)	(.0238019)	(.0251648)	
dAFR	constant	constant	constant	
constant	-0.1506211	-0.1334003	-0.1360721	-0.1456816
	(.0443823)***	(.0445856)***	(.0708246)	(.0499737)***
N	115	89	96	115
R2	29%	45%	20%	20%
F-statistic	3.97***	4.87***	4.67***	2.74***
All estimations are with White's robust standard errors.				

Values of standard error in parentheses
* Significant at the 10% level; ** Significant at the 5% level; *** Significant at the 1% level

Our results in Table 4 indicate that GNI per capita plays a significant role. The coefficient of GNI is significant in all but one equation (**hypothesis 1)**[18]. However, contrary to expectations, the sign is positive. This means that microfinance reaches more clients in the richer countries of the developing region. This suggests that a country must have reached a threshold level of development before microfinance reaches significant levels. This sounds logical, but is nevertheless an interesting result in the current stage of research on why microfinance is more developed in some regions than in others. It could also explain why, within a country, microfinance is concentrated in urban regions, as these are traditionally richer than rural ones.

The coefficient of the second variable, inflation, is not significant. Our **second** hypothesis is thus not confirmed. Note that there are a couple of countries in our database with really high inflation over the past 5 years. For example, Angola had an average inflation of more than 600%. Congo, Bulgaria, Belarus and Turkey also experienced inflation rates higher than 100%. We tested the model without these high-inflation countries, but the results (which are not reported in Table 4) did not change significantly[19]. A possible explanation is that the two reasons proffered in the construction of hypothesis 2 offset each other. Inflation could create a bigger microfinance market, but it could also be that some MFIs are more risk-averse and avoid high-inflation countries.

The role the international donor organizations play is significant in all the estimations. The **third** hypothesis is therefore verified. Countries that receive more international aid have developed considerably bigger microfinance markets. However, one could argue that a reverse causality exists between aid and the development of microfinance, or that countries that have developed bigger microfinance markets receive more aid, as microfinance stands high on the development agendas these days. We argue that microfinance is more developed in countries that receive more international aid, because they are also under stronger political pressure to develop microfinance markets. Higher aid is thus associated with higher microfinance outreach.

The results do not confirm our **fourth** hypothesis. The coefficient of the industrial sector development variable is not significant.

With regard to factors related to the physical environment, the results of equations 1 and 4 confirm our **fifth** hypothesis. MFIs reach more clients in

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[18] In equation 3, the coefficient is probably not significant due to the existence of significant correlation between CPI and the level of income of the country.

[19] The same coefficients were significant at the same level of significance and the F-stat was 3.91 instead of 3.97.

densely populated countries. This strengthens the idea that high population density lowers the operational costs of serving microfinance clients. Moreover, it helps explain why microfinance is still relatively underdeveloped in rural areas, as these regions are less densely populated, although there are of course other important reasons making microfinance harder to offer in rural areas.

The coefficient of the literacy rate is not significant. However, there is a positive correlation between the literacy rate and GNI per capita (correlation coefficient = 0.76). It is probably GNI per capita that takes up the significance of the variable.

The colonial dummies play no significant role and thus are not associated with higher or lower microfinance outreach. In none of the equations the level of political stability or the level of corruption plays a significant role. The same is true for the number of MFIs. Conversely, some of the regional dummies are highly significant. Microfinance reaches more clients in the Latin American region and fewer in the African region (the constant term). The coefficients of the dummies of the Middle-Eastern and Central-European region also are significant. This pinpoints to potentially big regional influences, such as the existence of a big 'example institution', like the Grameen Bank in Bangladesh and BancoSol in Bolivia[20]. It is possible that such institutions influence neighbouring countries. Also, it could be that donors are influenced by the success of example institutions and that they push to implement similar governance policies and good practices in the neighbouring countries. This should be further investigated on a regional level.

5. CONCLUSIONS, POLICY IMPLICATIONS AND FURTHER RESEARCH POSSIBILITIES

This paper studies the relationship between the macro environment and the uneven outreach of the microfinance sector in the developing world. Insights from the literature on individual countries were used to construct a set of hypotheses that are tested on a cross-sectional basis. Our most interesting result is that MFIs serve more clients in the richer countries of the developing world. This suggests the need for a minimum level of development, before microfinance can take off and reach substantial outreach levels. Consequently, there is still a need for specific development programmes helping countries

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[20] This could also explain why microfinance reaches a large number of clients in these countries, even though they are poor, which contradicts the argument made in the beginning of this paragraph.

reach this level of development, before they start to put effort in developing microfinance markets.

Our findings also confirm that the microfinance sector reaches more clients in countries that receive a higher proportion of international aid. This highlights the important role the international community plays and is particularly interesting in times when the role of donors is questioned. The part that domestic governments can play in the encouragement of the industry should be further investigated. The paper further shows that densely populated areas have bigger microfinance markets.

Potential microfinance providers should take these specificities into account. Specifically, our results indicate that regions with different characteristics need special attention.

It is true that individual market players cannot directly influence the indicators pointed out above. However, the factors are important when analyzing the macro-environment of the microfinance industry, and public policy should them take into account, obviously without ignoring specific local influences.

For MFIs, the analysis shows that in regions with low population density, it is more difficult to serve microfinance clients, especially in a profitable manner. This is also true for regions with a lower degree of human capital. However, of course, there are examples of how such difficulties can be overcome by a strategic alignment of MFIs, such as the provision of micro-credits and educational programs. These programs should thus be encouraged. Nevertheless, they should be implemented under suitable conditions and take into account the characteristics of the target customers.

Donors wanting to develop rural microfinance markets should be aware that these markets need extra time and support in reaching substantial outreach levels. Regions that do not attract commercial money should also receive special attention. Commercial investors may be keener on investing in areas that become more rapidly profitable by reaching more clients. A macro-analysis of the environment could help them to identify these. In this respect, more complementary strategies between donors and commercial investors could be worked out.

Further research is needed in order to better understand the development process and the specific role environmental factors play. Firstly, the paper concentrates on the outreach of MFIs in terms of number of clients. Using the average loan size as dependent variable could shed light on the depth of MFIs' outreach. The level of sustainability could also be a measure of the sector's development. Secondly, the role that informal markets play could be studied. Finally, analyzing the microfinance emergence and development process using panel data would be of great value. The problem with this kind of data is that

they are not easy to obtain. Consequently, effort should be put in order to construct and assemble such datasets. This would make additional analyses possible. The present one demonstrated that it is worthwhile to undertake such analyses and that there are macro-factors that account for the cross-country and regional differences in microfinance outreach.

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Résumé

Cet article identifie les facteurs qui permettent d'expliquer pourquoi la microfinance touche plus de personnes dans certains pays que dans d'autres. Une analyse cross-country est appliquée sur une base de données originale reprenant 115 pays différents. Les résultats montrent que le secteur de la microfinance est le plus développé au sein des plus riches des pays en voie de développement. De plus, l'article met en avant l'importance de l'aide internationale : la microfinance touchant plus de personnes dans les pays recevant le plus d'aides. La densité de population joue elle-aussi un rôle significatif, ce qui pourrait expliquer au moins partiellement le sous-développement du secteur dans le monde rural. Enfin, le niveau d'industrialisation et le taux d'inflation ne jouent aucun rôle majeur. En revanche, des facteurs régionaux semblent significatifs.