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Government Policies and Micro Lending in Emerging Markets

Nicholas Lash
Loyola University Chicago, nlash@luc.edu

Bala Batavia
DePaul University

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GOVERNMENT POLICIES AND MICRO LENDING IN EMERGING MARKETS

Nicolas A. LASH[*], Bala BATAVIA[**]

Abstract: *Although microfinance institutions have expanded rapidly since their inception in 1983, their growth has varied substantially among countries. This study examines the impact of government expenditures, taxes and regulations on the volume of microcredit for 92 emerging market countries for the period 2000-2011. The Index of Economic Freedom data is used as a proxy for government intervention while microcredit is represented alternatively by either the Gross Loan Portfolio Per-Capita or Penetration Index variables. While excessive government intervention could potentially encourage more lending in the informal microfinance markets, our findings suggest that, for both credit variables, the net impact is to reduce microcredit. The variables appearing to be most responsible are business regulations, taxes, and corruption. Tests using subperiods and also with a dynamic version suggest that our model is quite robust.*

Keywords: *Microfinance Institutions, Government Regulation, Emerging Markets*

JEL Classification: *G21, G28, 016*

1. INTRODUCTION

This study analyzes the impact of government macroeconomic policies and regulation on microfinance institution (MFI) lending. More precisely, this study investigates which specific components of government activity and regulations impact MFI lending and whether these effects facilitate or impede lending. As will be discussed, numerous studies have studied the impact of government policies and regulation on MFI sustainability, profitability, operating costs, and outreach.

[*] Nicholas A. Lash, Ph.D., Professor of Finance, Loyola University Chicago, 16 E. Pearson, Chicago, IL 60611, nlash@luc.edu

[**] Bala Batavia, Ph.D., Professor of Economics, DePaul University, 1 E. Jackson Blvd, Chicago, IL 60604, BBATAVIA@depaul.edu

This study, which builds upon previous research, instead looks at the impact of government policies and regulations on both the volume of micro lending as measured by the Gross Loan Portfolio Per-Capita (GLP), and also MFI market penetration, i.e., the number of microfinance borrowers per-capita, as estimated by the Penetration Index (PI). Given the importance of MFIs in funding small and medium size enterprises, it is essential for policymakers to know which areas of government activity and regulation nurture, and which deter, micro lending. The analysis is complicated by the possibility that while restrictive regulations might reduce MFI activity, they might also encourage a shift to informal markets – the domain of MFIs.

Our paper is organized as follows: Section 2 discusses the importance of small and medium-sized enterprises, Section 3 introduces our model, Section 4 presents and analyzes our empirical results.

2. MICROFINANCE'S CONTRIBUTION TO SMALL AND MEDIUM-SIZED ENTERPRISES

2.1. The importance of small and medium-sized enterprises (SMEs)

Throughout the globe, small business plays an important role by providing employment and stimulating innovation. In their study of developing countries, Ayyagari et al. (2014) find that small firms create most new jobs and have the highest employment growth. Moreover, while SMEs are sparse among transition countries, in the remaining developing countries, they account for most of the private sector and almost half of total employment. (Ayyagari et al (2007).

Small business entrepreneurship may also foster innovation that Schumpeter (1934) believed was the major engine of economic growth and development. Innovation is increasingly viewed as a major contributor to economic performance, be it at the local or national level (Cumming et al., 2009). Beaugrand (2004, p. 12) asserts that "poor countries should stop concentrating on their traditional activities and… embrace a dynamic approach to economic growth. Development is foremost a process of transformation, or evolution." He posits that in third world countries innovation is most likely to stem from individual, homegrown small businesses. In such countries, Armendariz and Morduch (2005), de Soto (2000), and Paulson and

Townsend (2004) have found considerable interest in small business. Much of small business entrepreneurship takes place in the informal, non-banking, sector.

2.2. Microfinance Institutions (MFIs) and Small Business Entrepreneurships

Development and expansion of the financial sector, which reduce transactions costs by providing reliable and accessible information, have been found to contribute significantly in raising a country's income level while reducing income inequality (Beck et al., 2007). However, de Soto (2000), Armendariz and Morduch (2005), and Paulson and Townsend (2004) found that funding constraints severely limited small firm creation and expansion. Small firms typically require micro-loans (usually ranging from $ 50 to $ 1,000 in emerging markets) to start and expand firms. Unable to secure funding elsewhere, they rely heavily on family and friends. In the U.S., it is estimated that two-thirds of their funding comes from these sources (Paulson and Townsend, 2004). Because of the high risk of unsecured loans and high operating costs of underwriting small loans particularly to those in rural areas, mainstream lending institutions, such as commercial banks, have typically avoided small loans to small firms.

To meet this demand, beginning with 1983, microfinance institutions (MFIs) were established when Muhammad Yunus and Grameen Bank in Bangladesh lent the equivalent of $ 27 of their own money to a group of 42 women from villages. A startling result was the 100% repayment rate which triggered the global adoption of Grameen's practice of group lending or joint liability. Group lending has been credited for severely reducing both adverse selection and moral hazard risk thereby leading to lower risk premiums and loan rates. This success has led to an explosion of micro-lending. "If the growth of microfinance has demonstrated nothing else, large numbers of low-income borrowers can be served while achieving a remarkably high level of repayment. Billions of dollars in loans to more than two hundred million borrowers are outstanding, and data from top lenders show that that only 2-3 % of those are delinquent in recent years." (Cull et al 2014 p.2). Yet, despite this rapid growth of microfinance, Crabb (2008) cites estimates that there are at least 1 billion potential customers that have yet to be served.

The rapid growth of the MFI sector reflects the existence of the large role played by bottom-up, informal finance in the third world. For example, de Soto

(1989) found that in Peru 48 % of the economically active population, 60 % of all work hours, and 38.9 % of GDP emanated from the informal sector. Research in Latin America, Asia, and Africa also point to a very large informal sector (Woller and Woodworth 2001). Moreover, Vanroose (2008) has observed that MFI expansion has been much more extensive in some countries than others. Honohan (2004) finds that microfinance development in the last couple of decades has been concentrated in a few large institutions in a few countries.

3. THE IMPACT OF GOVERNMENT POLICY AND REGULATIONS ON MFI LENDING

3.1. Government policy in microfinance

MFIs' rapid expansion has turned increasing attention to appropriate government policy and regulations. In particular, there has been rising interest in increasing MFI regulations and supervision. Governments have attempted for some time to support financial enterprises and reduce poverty through development banks, directing lending requirements for commercial banks and grants to NGOs, but generally without much success. "These efforts failed due, in large part, to low repayment rates, politically-motivated loan write-offs, and capture of subsidized credit by wealthy farmers." (Hubka and Zaidi (2005: 7). For example, in his study of Asian MFIs, McGuire (1999:721) observed that "India, Indonesia, Pakistan, Sri Lanka and Thailand all have unsustainable and / or unsuccessful mass programs, operated either through banks or by government agencies." In fact, Bird et al (2011) have found that government programs and regulations in Thailand have basically eliminated all private MFIs.

In addition, not only were development banks unsuccessful in attaining their objectives, but their activities also increased income inequality and hindered the development of rural financial markets. (Gonzales-Vega 1977; Adams et al 1984) In the same vein, government-sponsored MFIs likely would enjoy subsidized funding that would result in a competitive advantage that could crowd out other MFIs. Governments can also provide direct support to private MFIs but there would be the potential danger that such support could have political strings attached. Consequently, Hubka and Zaidi (2005:1) suggest that "ideally

governments should exit the microfinance sector." Otherwise, they suggest that government-sponsored MFIs disclose their budgets and also lend only at market rates. They further recommend significant reductions or even elimination of prudential regulations for credit-only MFIs. The authors instead call upon governments to focus on providing constructive environments characterized by macroeconomic stability and developed infrastructure that reduce information and transactions costs, particularly in rural areas. Schreiner and Colombet (2001 and Yaron and McDonald (1997) also find infrastructure to be important for MFIs. Hubka and Zaidi further advocate the improvement of property rights including registration of assets especially for the poor.

3.2. Regulations

Traditionally, MFIs have been subject to less regulation than institutions in the formal banking sector. Yet, given the rapid growth of microfinance and also the expansion of some MFIs into deposit taking, there has been an increased call for more regulations (Cull et al 2011). Currently, many MFIs face both prudential and non-prudential regulation. Prudential regulations and supervision are imposed to promote safety for depositors but are irrelevant for the large majority of credit-only MFIs. These regulations are also designed to protect the financial system as a whole, but while they may be critical for large financial institutions, they are far less applicable for the majority of MFIs, who, because of their modest size, pose little systemic risk. Consequently, Hubka and Zaidi (2005), Hartarska and Nadolnyak (2007) among others, advocate the elimination of prudential regulations for MFIs.

Non-prudential regulations already exist for many MFIs that, in addition to entry regulation also govern their operations and include issues such as consumer protection, fraud prevention, credit information services, interest rate limits, accounting requirements and foreign ownership limitations (Christen et al. 2000). Whatever their benefits, regulations, particularly prudential regulations, can result in very high costs especially for MFIs. In the US, regulatory costs are estimated around 12%-13% of the banks' non-interest expenses (Thornton 1993; Elliehausen 1998).

As Cull et al (2011) suggest, the costs could be significantly higher for MFIs who lack the size to exploit economies of scale. For inexperienced MFIs, the

startup costs can be even higher. Christen and Rosenberg (2003) estimate the cost for MFIs at 5 % of the assets in the first year and 1 % or more afterwards. In addition, regulations require compliance which, in turn, require skilled, and therefore, expensive labour. Given that Morduch (2000) estimates that only 1 % of MFIs are financially self-sufficient, the impact of any such cost increase could have major adverse effects.

MFIs react by raising loan rates to pass onto borrowers some of the high costs of regulations (Ahlin et al 2010). Given the capital scarcity in many third world countries, higher rates might still be affordable for borrowers and are highly likely to be lower than those of alternative credit sources, such as money lenders. Cull et al (2006) found that up to a point MFIs charging higher loan rates had higher profits. Yet, government-imposed interest rate ceilings combined with high regulatory costs could adversely affect MFIs. Moreover, MFIs have been found to react to interest rate ceilings by increasing loan size thereby lending more to better-off customers at the expense of low-income borrowers including women (Cull et al, 2011; Cull et al 2009). Thus, interest rate ceilings that are imposed to benefit the poorest of borrowers actually have the opposite effect. Interest rate ceilings can also shrink the total amount of micro loans.

Sometimes, regulations also include directed lending, or policy loans, but this could result in lower MFI profits and, as discussed previously in the example of development banks, it causes resource misallocation. There are yet other problems posed by regulations. It has been found that corruption is associated with the degree of regulation (Holcombe and Boudreaux 2015, Lash and Batavia 2013; Elliot 1997). Bribes are sometimes a useful means of avoiding onerous regulations. Numerous studies, such as Manzetti and Blake (1996), found that extensive government control and regulation provide an environment ripe for corruption. Hartarska and Nadolnyak (2007) point to the danger of regulatory capture whereby regulated MFIs may support government measures to keep out potential competitors. For example, in the U.S., community banks were alleged to have lobbied successfully previously to limit branching for precisely this reason.

However, another way that regulations can impede microfinance is by making it more difficult for MFIs and small businesses alike to open a business. The World Bank, in its annual series of Doing Business analyses the impact of government laws and regulations on the establishment, management and termination of businesses.

Such constraints have been found to impede entrepreneurship (Fonseca et al 2001) and so could reduce the demand for MFI loans.

4. GOVERNMENT INFLUENCES ON MICROCREDIT IN EMERGING MARKETS

4.1. The Gross Loan Portfolio Per-capita (GLP) and Penetration Index (PI) variables

Despite the trend by MFIs to increasingly provide more deposit and insurance services, lending still dominates MFI lending and so is the focus of this study. One direct measure is Gross Loan Portfolio Per-capita (GLP), where GLP is defined as "outstanding principal for all loans, including current, delinquent and restructured loans, but not loans that have been written off" (Mix Market 2013). Another measure is the Penetration Index (PI) which is the ratio of borrowers to the size of the population. Krauss et al (2012) point out that the PI is frequently considered as one of core performance indicators for the state of the microfinance industry though a standard definition has yet to be adopted.

The GLP variable directly measures the amount of funding made available whereas the PI may be a better measure of outreach. Krauss et al (2012) point out that the PI may sometimes overstate MFI lending because some borrowers who borrow from more than one institution may be double counted. Unlike the PI, GLP incorporates average loan size. In our tests, we will use both GLP and PI as dependent variables to measure MFI lending. The correlation between these somewhat similar measures is 0.694.

4.2. GLP AND PI: Regional Distribution of MFI Lending

As cited earlier, MFI lending varies substantially throughout the world (Table 1). We divided the 92 economies into the following five groups: Latin America, Asia and the Pacific, Eastern Europe and Central Asia, North Africa and the Middle East, and Sub-Saharan Africa. While microcredit has an important role to play in all economies, we narrow our focus to emerging economies where the attack on poverty is most critical. Hence, in our sample we do not include wealthy, advanced countries (i.e. Western Europe is excluded altogether).

Table 1 shows that both the Eastern Europe and Central Asia region and the Latin America region have over six times the average GLP of both the North Africa and the Middle East region and the Sub-Saharan Africa region. In the Middle East and North Africa, the Arab Spring of 2010 has caused severe disruptions to MFIs in terms of staffing, lending and loan collection (Djre et al, 2011). Sub-Saharan Africa's relatively small amount of loans may be attributable to it having the lowest per capita income of all the regions. Table 1 also shows that North Africa and the Middle East, along with Sub-Saharan Africa, have standard deviations that are only about one-sixth of the other three regions. This suggests that, in terms of loan size per capita, the countries of these two regions are decidedly more homogenous in MFI lending, as measured by GLP, than the other three regions.

Table 1 *Distribution of Gross Loan Portfolios Per-capita (GLP) by Region, 2000-2011*

Regions	Average Gross Loan Portfolios per capita GLP	Standard deviation
Latin America	30.06	30.6
Asia and the Pacific	16.17	34.97
Eastern Europe and Central Asia	34.97	37.39
North Africa and Middle East	4.64	5.39
Sub-Saharan Africa	4.26	5.73

Source: Mix Market

Table 2 presents the PI which uses the per capita numbers of borrowers' to measure MFI activity. The ranking changes somewhat but the Asian and Latin American regions continue to rank high while Sub-Saharan Africa remains at the bottom. Asia clearly dominates the other four regions in outreach with over 85 % of its loans to women and over 75 % to rural borrowers (Microfinance Information Exchange 2013). In sharp contrast, the Eastern Europe and Central Asia region is the only region with less than 50 % women borrowers. Furthemore, the loans of both North Africa and the Middle East (34 %) and Latin America (27 %), have far fewer loans to rural borrowers than the other three regions (Djre et al, 2011). As measured by the standard deviation, Sub-Saharan Africa and North Africa and the Middle East again have the greatest homogeneity.

Table 2 *Distribution of Penetration Index (PI) by region in the period 2000-2011*

Regions	Average Penetration Index*100 PI	Standard deviation
Latin America	2.200	2.204

Regions	Average Penetration Index*100 PI	Standard deviation
Asia and the Pacific	4.190	4.358
Eastern Europe and Central Asia	1.763	2.396
North Africa and Middle East	1.79	1.216
Sub-Saharan Africa	0.841	0.749

Source: Mix Market

4.3. GLP AND PI: Per capita income distribution of MFI Lending

We also divided the 92 economies into three income groups: upper-middle, lower-middle and low-Income. We excluded the high-income group for the same reason we omitted Western Europe, namelythat our focus is on emerging economies. The economies are divided according to 2012 per capita gross national income. As defined by the World Bank, the groups are: low-income ($ 1,035 or less). lower-middle income ($ 1,036-$ 4,085); uppermiddle income ($ 4,086-$12,615) and highincome ($ 12,616 or more). Among the income groups, Table 3 shows that the lower-middle Income group has approximately three times the GLP of both the upper-middle income and low-income groups. Conceivably, this may reflect that the upper-middle income group, because of its relatively high income, has relatively better developed financial systems so that the need for informal finance is less critical. As for the low-income group, there may be some threshold level of infrastructure necessary before micro lending can truly hit its stride. Yet, it may be difficult to generalize too much about individual economies in the upper-middle income group as it clearly has the largest standard deviation.

Table 3 *Distribution of per capita gross loan portfolios (GLP)*
by income in the period 2000-2011

Income Group	Average Gross Loan Portfolios Per capita GLP	Standard deviation
Upper-Middle Income	11.048	14.57
Lower-Middle Income	29.79	33.54
Low-Income	9.53	23.66

Source: World Bank, Mix Market

Table 4 suggests that for PI, the difference in income groups is less pronounced than for GLP and also that the lower the per-capita income of a region, the higher the number of borrowers. Comparing the GLP and PI measures for the different income groups shows that the low-income group has the smallest average loan size perhaps

signifying that there is less money to lend. Interestingly, whereas the low middle-income group has the largest standard deviation in terms of GLP, it has the lowest in terms of PI, thereby, reflecting a large standard deviation in loan size.

Table 4 *Distribution by Income of Penetration Index (PI)in the period 2000-2011.*

Income Group	Average Penetration Index*100 PI	Standard deviation
Upper-Middle Income	1.70	2.60
Lower-Middle Income	1.83	1.90
Low-Income	2.26	3.27

Source: World Bank, Mix Market

4.4. Independent Variables: Per capita Income and Economic Freedom Variables

As we have seen in the above section, there appears to be a relationship between per capita income and MFI lending. Per capita income has figured prominently in a number of studies on MFIs. Vanroose (2002) found that microfinance has greater outreach in regions with high per capita income. In contrast, Honohan (2004) found that higher per capita income was associated with lower microcredit penetration. Given the above evidence, we wish to investigate the impact of per capita income on MFI lending as measured by the GLP and PI measures.

In our tests for government economic intervention we also utilize nine variables from the Heritage Foundation's Index of Economic Freedom (IEF). The IEF measures the degree to which markets are free from government intervention. One of the most controversial issues in finance and economics regards the optimum level of, or freedom from, government intervention and regulation. For example, in their literature review of 198 studies employing the Economic Freedom Index of the World as an independent variable, Hall and Lawson (2l014) find that over two-thirds of these studies found positive outcomes such as faster growth and higher income levels and less than 4 % found negative outcomes such as increased income inequality.

This study leaves aside this important policy issue and focuses solely on whether, and how, government intervention influences MFIs. The IEF ranges from 100 (free) to 0 (repressed). We dropped the labour variable due to a lack of data prior to 2005. We use the following nine remaining IEF variables: business

freedom, trade freedom, fiscal freedom, government spending, monetary freedom, investment freedom, financial freedom, property rights and freedom from corruption.

Hermes and Meester (2011) have pointed out that the effect of macro variables upon MFI growth and development is not unambiguous. Accordingly, in introducing IEF variables it is important to note that their potential impact on MFI lending is not obvious. On the one hand, greater freedoms should establish an environment that would stimulate entrepreneurship and microfinance lending. On the other, less freedom while oppressing business development might divert more to a less regulated, informal sector such as the microfinance market. That is, there may be a countervailing effect.

1. **Business freedom** is based on the World Bank's annual reports of Doing Business and measures the ability to establish, manage and terminate a business unfettered by excessive government requirements, such as licensing and environmental, consumer safety and other regulations. In many countries, particularly those in the developing world, engaging in business requires numerous licenses and permits. A lack of such freedom could curb entrepreneurship and thus reduce the demand for funding from MFIs. However, it is also possible that too many restrictions could drive businesses underground where MFI funding would be available (e.g., Ahlin et al (2008).

2. **Trade freedom** refers primarily to the absence of tariff and nontariff barriers. There are a number of restrictions that governments impose on international trade. Crabb (2008) found that less trade freedom is associated with greater MFI sustainability.

3. **Fiscal freedom** reflects freedom from fiscal burdens both in tax rate progressivity and also tax revenue as a percent of GDP. Less fiscal freedom might curb business growth and development as pointed out in the World Bank's Doing Business 2013 and thus have a negative impact on MFI lending (Fisman and Svennson, 2007). Despite this, microfinance customers could be small enough that they could avoid some taxes. If so, a heavy tax burden in the larger, more visible organized sector could divert more activity to the microfinance market.

4. **Government spending** measures government consumption and transfers as a percentage of the economy and also government ownership of business and industries. For most governments, expenditure data includes local as well as federal government. Government spending could crowd out private markets

including those in the informal sector. Crabb's results (2008) are consistent with this view. On the other hand, some government spending could be spent on infrastructure which could improve access to rural microenterprises. Hubka and Zaidi (2005) who generally are quite critical of government intervention point out that are examples of positive effects from government microfinance such as Thailand's Bank for Agriculture and Agriculture Cooperatives. Furthermore, some government spending (e.g.: Bangladesh) has been utilized to fund MFIs (McGurie 1999).

5. **Monetary freedom** combines measures of price stability with the absence of price controls. Numerous studies, including Goldfajn and Rigobon (2000), Rhyne (2001), Vander Weele and Markovich (2001), Cull et al (2011), point out the harmful effects of inflation on financial and MFI development. In contrast, Hartarska and Nadolnyak (2007:1217) found that "MFIs seem to have developed sufficient safeguards and perform successfully in highly inflationary environments." Ahlin et al (2010) drew a similar conclusion though Vanroose (2008) did not find any statistically significant impact.

6. **Investment freedom** refers to the absence of restrictions on capital flows, particularly foreign. There are numerous impediments for foreign business such as investment codes, unequal treatment under the law, and restrictions on investment, land ownership, and earnings repatriation. MFIs could be adversely affected by curbs on foreign equity holdings.

7. **Financial freedom** measures the degree of independence from government ownership and financial regulation including selective credit controls. Such freedom could provide an environment that would encourage entrepreneurship and financial development, in both the formal and informal markets. Crabb's results (2008) are consistent with this view.This also could be a case where financial constraints in the most visible sector would divert funding to the MFI sector.

8. **Property rights** measures freedom from government influence over judicial decisions. The IEF measure includes legally and protected private property, commercial codes defining contracts, and unbiased enforcement. It also assesses the likelihood of government expropriation of private property. The importance of private property rights has been emphasized by Hayek (1944) and de Soto (2000). Buckley (1997) has pointed out that the absence or weakness of property rights has been a major impediment to enterprise activities in Africa. However, while the above would imply that a lack of property rights would adversely affect MFIs, it has been pointed out by de Soto (2000) that

unreasonably time-consuming property registration procedures can drive business underground (, possibly to the MFI market). In addition, Hermes and Meesters (2011) failed to find any significant statistical relationship between rule of law and the cost-efficiency of MFIs, while Crabb (2006) did not find a relationship between property rights and MFI sustainability.

9. **Freedom from corruption** is derived primarily from Transparency International's Corruption Perceptions Index which measures the level of corruption for various countries. The highest possible score is 100, indicating a very clean government with little corruption to 0 reflecting a highly corrupt government. Corruption can impede economic development (Lash 2000) and can also impede small and medium-sized enterprise growth (Fisman and Svennson, 2007) and thus reduce demand for MFI services. Ahlin et al (2011: 115) found evidence suggesting that corruption may impede MFIs "at least to start-up if not to subsequent growth." On the other hand, corruption may result in the countervailing effect, that is, businesses moving into the informal market thereby increasing demand for MFI services. However, neither Crabb (2008), nor Hermes and Meesters (2011) found corruption to have a statistically significant impact on MFI performance.

5. EMPIRICAL RESULTS

5.1. The Impact of Government Policies and Regulation on MFI Lending

Our study used cross-section, annual data for 92 countries for the period 2000-2011. Although this sample had a potential maximum of 1104 data points, missing data for some countries resulted in a sample size of 846 observations. Table 5 presents the descriptive statistics for all of the variables. We note that the dependent variables, GLP and PI have large coefficients of variation relative to the explanatory variables excepting GDP per-capita. The regression model will investigate to what degree this variation in microcredit can be explained by GDP per-capita and IEF's economic freedom variables.

Table 5 *Descriptive statistics: Annual data 2000 to 2011 for 92 countries, for GDP per-capita and Economic Freedom Variables*

Variable	N	Average	Standard Deviation	Coefficient Of Variation
Corruption	846	29.119	11.711	0.402

Variable	N	Average	Standard Deviation	Coefficient Of Variation
Business freedom	846	58.264	11.690	0.201
Trade freedom	846	66.626	13.303	0.200
Fiscal freedom	846	76.440	9.7485	0.128
Government spending	846	76.443	16.251	0.213
Monetary freedom	846	73.238	10.890	0.149
Investment freedom	846	48.203	16.162	0.335
Finance	846	47.638	15.601	0.327
Property rights	846	36.578	14.309	0.391
Per capita GDP	846	1749.70	2002.600	1.145
Per capita Gross Loan Portfolio	846	18.038	39.794	2.206
Penetration Index	846	1.5028	2.350	1.564

Sources: Annual Reports: World Bank, Heritage Foundation's Index of Economic Freedom, Mix Market

In our first test, we regressed the gross loan portfolio per capita variable (GLP) upon GDP per capita and nine components of the IEF excluding, as explained previously, the labour freedom measure. Only the monetary freedom variable, which is closely related to inflation, was found to be insignificant. This result is consistent with Vanroose's findings (2008), but at odds with those who found inflation to be harmful (Rhyne (2001), Vander Weele and Markovich (2001)) and those who found it to be beneficial (Crabb (2008) and (Hartarska and Nadolynyak (2007)).

We then ran a second set of regressions omitting the monetary freedom (inflation) variable and the results are presented in Table 6. R^2 was 0.24 and seven variables were statistically significant at the 1 % level, while corruption and investment freedom were significant at the 5 % and 10 % level respectfully. Six explanatory variables (business freedom, fiscal freedom (from taxes), financial freedom, freedom from corruption, investment freedom and trade freedom) had positive signs (higher IEF values) suggesting that less government intervention, lighter regulation, less corruption, and lower taxes provide a business-friendly environment that encourages MFI lending. Our finding for the business freedom variable supports the World Bank's (2013) thesis that regulations can discourage business development and is also consistent with Crabb's (2008) results. Our results that taxes discourage MFI lending are consistent with Fisman and Svensson (2007). Our findings that corruption impairs MFI lending conflicts with those of

Crabb (2008) and Hermes and Meesters (2011) but is consistent with those of Fisman and Svennson (2007) and also Ahlin et al (2011). In addition, our result that trade freedom has a beneficial effect on MFI lending contrasts with Crabb (2008) who found it reduced MFI sustainability.

Table 6 *Regression of per capita Gross Loan Portfolio (GLP) on per capita Income and Index of Economic Freedom Variables for 92 Countries in the period 2000-2011*

Economic freedom and GDP Variables	Coefficient	t-ratio
Business freedom	0.59	4.61
Fiscal freedom	0.68	5.16
Government	- 0.38	4.85
Financial freedom	0.43	4.35
Property rights	- 0.87	7.27
Freedom from corruption	0.35	2.28
Investment freedom	0.17	1.78
Trade freedom	0.55	5.35
Per capita GDP	00.3	4.24
Constant	-77.67	6.12

$R^2 = 0.24$

Source: Annual Reports from the World Bank, Heritage Foundation's Index of Economic Freedom, Mix Market

In our analysis, property rights, government spending and per capita GDP had negative signs, suggesting that MFI lending benefited from weak property rights, more government spending, and a lower income population. We find the negative sign of the property rights variable counter-intuitive as it contrasts with Hayek (1944) and Buckley (1997). A possible explanation might be the countervailing effect that an environment with weak property rights diverts businesses to the more informal, microfinance sector as De Soto (2000) has suggested. Our finding that more government spending encourages MFI lending may reflect governments providing MFI subsidies and building infrastructure. Spending on the road and transportation systems could allow financial institutions to reach rural communities. On the other hand, government spending may crowd out some private business activity and move such SMEs into informal markets where the MFIs operate. The negative relationship with per capita GDP is similar to Honohan's findings (Honohan, 2004:6): "The results are consistent with the idea that the presence of a market for microfinance (e.g. many poor people) and good country institutions help the microfinance industry grow."

With PI as the dependent variable we first ran a regression, removed the insignificant variables, and then ran a second regression (similar to the GLP tests. Table 7 shows that the PI results had less explanatory power than the GLP model as the R^2 dropped from 0.24 to 0.14. Moreover, only seven, rather than nine, independent variables were statistically significant. The corruption and financial freedom variables were statistically significant at the 5 % level while the five (five what? the noun is missing!), including the monetary freedom variable, insignificant in the GLP tests, were significant at the 1 % level. Thus, price stability appears to have little impact on MFI loan volume, but results in a larger number of borrowers. The low nominal interest rates that normally accompany low inflation may be more important for borrowers (i.e. small entrepreneurs and farmers) than for lending institutions. In other words, borrowers may be more susceptible to money illusion than lenders. While the signs of the coefficients for four variables were the same as those in the GLP regressions, three variables (government spending, investment freedom and trade freedom) were statistically insignificant. Otherwise, the results are consistent with those for the GLP and suggest that MFI lending is enhanced by weak poverty rights, but repressed by regulatory constraints on business and financial activity, high taxes, and corruption. These results build upon the findings of other studies which were reported in section 4.4.

Table 7 *Regression of Penetration Index (PI) on per capita income and Index of Economic Freedom Variables for 92 Countries for the period 2000-2011*

Economic freedom and GDP Variables	Coefficient	t-ratio
Business freedom	0.03	3.40
Fiscal freedom	0.05	6.08
Monetary freedom	0.02	2.94
Financial freedom	0.02	2.51
Property rights	- 0.04	5.91
Freedom from corruption	0.02	2.28
Per capita GDP	- 0002	4.56
Constant	- 4.83	6.96

$R^2 = 0.14$

Source: Data from annual reports from the World Bank, the Heritage Foundation's IEF and Mix Market

5.2. Robustness Check

Since our model covers 11 years, including the financial crisis period of 2007-2008, we wished to investigate the stability of our model for the entire period. To do so, we employed a dynamic model to control for the influence of previous values of our dependent variables, GLP and PI. The empirical results are provided in Tables 8 and 9. For both the GLP and PI models, the results are very similar to the original tests which did not include the lagged values presented in Tables 6 and 7. All the independent variables have the same signs and same levels of statistical significance. The lagged values for both GLP and PI are significant at the 1 % level. These findings suggest that the model is robust for the period considered.

Table 8 *Regression of per capita Gross Loan Portfolio (GLP) on per capita Income, Index of Economic Freedom Variables and lagged GLP for 92 Countries for the period 2000-2011*

Economic Freedom and GDP Variables	Coefficient	t-ratio
Business freedom	0.58	4.65
Fiscal freedom	0.65	5.04
Government	- 0.31	3.97
Financial freedom	0.46	4.62
Property rights	- 0.82	6.87
Freedom from corruption	0.31	2.06
Investment freedom	0.16	1.65
Trade freedom	0.52	5.13
Per capita GDP	00.3	4.26
Lagged GLP	0.14	4.43
Constant	- 82.64	6.55

$R^2 = 0.25$

Sources: Data from annual reports from the World Bank, the Heritage Foundation's IEF and Mix Market

Table 9 *Regression of Penetration Index (PI) on per capita income, Index of Economic Freedom Variables and lagged PI for 92 Countries for the period 2000-2011*

Economic freedom and GDP Variables	Coefficient	t-ratio
Business freedom	0.03	3.38
Fiscal freedom	0.05	6.46
Monetary freedom	0.02	2.94
Financial freedom	0.01	2.44
Property rights	- 0.04	5.66
Freedom from corruption	0.02	2.23

Economic freedom and GDP Variables	Coefficient	t-ratio
Per capita GDP	- 0002	4.77
Lagged PI	0.11	3.27
Constant	- 5.07	6.26

$R^2 = 0.15$

Sources: Data from annual reports from the World Bank, the Heritage Foundation's IEF and Mix Market

5.3. Impact of the Financial Crisis

Although it had been believed that MFIs were largely sheltered from international and domestic economic shocks, the financial crisis beginning in late 2007, triggering the great recession of 2008, was severe enough to sharply reduce the growth of the microcredit throughout the world (Di Bella 2001). Hence, we further explored the impact of the financial crisis and its aftermath (2008-2011) upon our two lending models. Given the shortness of the time period, especially 2008 to 2011, our results should be interpreted with caution. Nonetheless, the results suggest only minor differences from the results of our previous tests (Tables 10-13).

Of the independent variables, GLP has 7 of 9 and PI has 6 of 7 that retain the same signs and are statistically significant at levels varying from 1 % to 10 % for both periods. There is some variability, however, in the significance levels between the two periods. For GLP (Tables 10 and 12), the exceptions to the findings of the original model are for investment which is statistically insignificant in both periods, corruption which is insignificant in the first period, and trade which becomes insignificant in the second period. Given the sharp reduction in global trade and investment during the crisis, it may not be surprising that there was a weakening of some relationships for loan volume (GLP). Tables 11 and 13 show that for PI, business freedom is insignificant in the first period. It is puzzling that corruption is significant for PI in the first period but insignificant in the second period, while for GLP the results for corruption are precisely the opposite. Perhaps some of these discrepancies may be partially explained by the shortness of the time framework. Nonetheless, our findings point overall to the robustness of our model and, given the severity of the crisis, we might have anticipated an even greater impact on our model.

Table 10 *Regression of per capita Gross Loan Portfolio (GLP) on per-capita income and Index of Economic Freedom Variables for 92 Countries for the period 2000-2007*

Economic freedom and GDP variables	Coefficient	t-ratio
Business freedom	0.19	1.76
Fiscal freedom	0.37	3.97
Government	- 0.23	3.94
Financial freedom	0.37	5.36
Property rights	- 0.49	5.84
Freedom from corruption	0.15	1.48
Investment freedom	0.05	0.70
Trade freedom	0.27	3.78
Per capita GDP	0.001	2.37
Constant	-32.31	3.42

$R^2 = 0.21$

Source: Annual Reports: World Bank, Heritage Foundation's Index of Economic Freedom, Mix Market

Table 11 *Regression of Penetration Index (PI) on per capita Income and Index of Economic Freedom Variables for 92 Countries: 2000-2007*

Economic freedom and GDP variables	Coefficient	t-ratio
Business freedom	0.01	0.10
Fiscal freedom	0.04	4.34
Monetary freedom	0.02	3.10
Financial freedom	0.01	1.99
Property rights	-0.03	3.50
Freedom from corruption	0.02	2.05
Per capita GDP	-0.000	3.52
Constant	- 3.14	3.66

$R^2 = 0.11$

Source: Annual Reports: World Bank, Heritage Foundation's Index of Economic Freedom, Mix Market

Table 12 *Regression of per capita Gross Loan Portfolio (GLP) on per capita income and the Index of Economic Freedom Variables for 92 Countries for the period 2008-2011*

Economic freedom variables	Coefficient	t-ratio
Business freedom	0.72	2.77
Fiscal freedom	0.98	2.68
Government	-0.59	3.13
Financial freedom	1.17	3.98
Property rights	-1.57	3.88
Freedom from corruption	1.23	2.10
Investment freedom	0.30	1.26
Trade freedom	0.02	0.06

Economic freedom variables	Coefficient	t-ratio
Per capita GDP	0.005	2.90
Constant	- 86.47	2.49

$R^2 = 0.28$

Source: Annual Reports: World Bank, Heritage Foundation's Index of Economic Freedom, Mix Market

Table 13 *Regression of Penetration Index (PI) on per capita income and Index of Economic Freedom Variables for 92 Countries for the period 2008-2011*

Economic freedom variables	Coefficient	t-ratio
Business freedom	0.04	3.14
Fiscal freedom	0.06	3.09
Monetary freedom	0.04	2.00
Financial freedom	0.03	2.08
Property rights	- 0.05	2.59
Freedom from corruption	0.02	0.53
Per capita GDP	- 0002	2.73
Constant	- 7.52	3.80

$R^2 = 0.18$

Source: Annual Reports: World Bank, Heritage Foundation's Index of Economic Freedom, Mix Market

6. SUMMARY AND CONCLUSIONS

Despite the rapid growth of MFIs and their extensive outreach, one billion people are still underserved (Crabb 2008). Moreover, the growth and development of MFIs globally has been very uneven. Thus, there is a very important need for governments to undertake appropriate policies and regulatory measures that support, rather than discourage, MFI development. In sharp contrast to past statist policies, microfinance emphasizes a bottom-up, market orientation. Numerous past studies cited previously found that regulation can be costly for MFIs given that the vast majority are not financially self-sufficient. Thus, much of the literature cited previously suggests that excessive regulations can impede both entrepreneurial development and micro lending. Moreover, for the majority of small, credit-only MFIs, a case may be made for the complete elimination of costly prudential regulations. Nonetheless, plausibly corruption, inflation, taxes, and some regulations could actually trigger a countervailing incentive for businesses to shift to informal markets which are the domain of MFIs.

The goal of our study has been to identify which regulations along with factors such as government spending, taxes, corruption, property rights, inflation and regulation have a significant impact on microcredit as measured both by the per capita Gross Loan Portfolio (GLP) and the Penetration Index (PI). We were further interested in determining whether these factors would reduce or expand microcredit.

Our empirical results, based on the observations for 92 countries for the 2000-2011 period, find that taxes, corruption, inflation, and regulations on business, finance, investment and trade reduce MFI micro loans. These findings suggest that the direct impact of regulatory and other government policies in impeding MFI lending swamps any countervailing indirect effect of driving businesses into the informal credit market. In our results, an exception may be that weak property rights encourage MFI lending. It is worth remarking also that when we test our model using a dynamic version, splitting the time framework in two subperiods (to account for the financial crisis), the results are very robust.

To conclude, our findings suggest that government policies can play a positive role through well-designed government expenditures, such as on improving infrastructure, maintaining price stability and implementing strong anti-corruption programs. In addition, business and financial regulations should be subject to rigorous cost-benefit analysis to remove unnecessy burdensome regulations, thus following the advice provided by the World Bank (2004: xv), namely that "good regulation does not mean zero regulation…. The optimum amount of regulation is not none, but may be less than what is currently found in many countries, and especially poor ones…" This would appear to be especially true for micro financial institutions.

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