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Potential of microfinance as a mitigant of global systemic risks

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Abstract
While the microfinance sector in developing countries suffers from insufficient capital volume employed by microfinance institutions (MFIs) resulting in reduced access to financial markets for hundreds of millions of people, capital markets in developed world are becoming worryingly complex due to boom of structured finance, acting as a negative externality to the global financial ecosystem.
The paper studies the interrelatedness between the microfinance sector and capital markets from the point of a potential linkage between them and systemic risks arising from growing complexity of capital markets. Having found low statistical correlation between microfinance and systemic risk indices, the study proposes establishment of a microfinance funding mechanism combined with complexity reduction scheme. The proposed global cap and trade offset system enables trading of complexity quanta for microfinance funding. Being analogue to current emission trading systems, it reduces complexity of structured finance blamed for sparking last financial crisis through regulation of OTC markets and penalizes excessive trade on the one hand, while on the other propels funding to the microfinance sector characterized by simplicity, low systemic risk, high debt traceability and a development potential for underdeveloped regions.

Keywords: microfinance, complexity, structured finance, debt traceability, derivatives, risks

1. Introduction

Understanding interesectorial linkages helps positioning dynamic young sectors within the broader picture of global economic development, but also provides needy insight for regulators. Complex understanding is crucial for rapidly developing areas of finance. More so at present, when recent challenges presented to globalized economics laid bare the fragility of financial architecture and exposed unthought interconnectedness.
Microfinance industry, with its important development impact as well as structured finance sector, being crucial for functioning of global capital markets, both belong to sectors, whose role and potential linkage needs to be put carefully into wider context.
It was a surge of intermediation within structured finance which increased complexity of ever more sophisticated products leading to formation of structural features impulsing the recent financial crisis. The regulatory framework, not adequately upgraded to preserve safety, allowed new vulnerabilities to emerge such as complexity induced by OTC derivative markets (Viñals *et al.*, 2010). Complexity became detrimental to financial stability with the associated opaque financial products, coined by economists as "toxic assets", having profound implications for global systemic risk. (IMF, 2012)
Yet despite strengthening of financial buffers since then, vulnerabilities remain and the structure of intermediation remains unchanged, with key issues unresolved (IMF, 2012). Stricter regulations such as Basel 3 increasing the cost hedging instruments, intended to tame banks thought too-big-to-fail (TBTF), is alas leading to the creation of more systemically important institutions. Thus, few global banks already bestriding capital markets seem likely to increase their dominance, with the six largest investment banks controlling half of the global industry in 2014 (Economist, 2013). Consequently, there is a risk that large institutions will become more concentrated, and will grow more influential further entrenching the too-important-to-fail problem. (IMF, 2012)
On the other pole of the system exist areas of underdeveloped financial markets, and that is where microfinance experiences major challenge which is to increase sustainable capital placement to the sector. While easy access to funding may have negative implications (Marulanda *et al.*, 2010) few doubt that insufficient intelligent capital available on global scale for variety of different types of MFIs is still a missing crucial component of the present development struggle. In order to achieve a serious impact as a mass poverty alleviation tool, microfinance must first reach sufficient scale to fulfill natural demand for financial services. The "absurd gap" between the actual supply of microfinance capital and the potential demand for it, reaches 3.6 billion people who are without access to formal finance and 1.8 billion people believed to represent an unmet demand for credit (Robinson, 2001).
Notwithstanding the fact that in three decades the microfinance sector has grown into a $100 billion industry, the lack of capital funding is universally recognized as a significant barrier for its development. Ever more investors seek double bottom line[1], yet despite the size of socially responsible investment (SRI)[2], encompassing estimated tenth of all professionally managed assets with €7.5 trillion (2009), the importance of social impact – and so of

[1] Combination of financial return and social impact
[2] Socially Responsible Investment

microfinance - lacks behind among ESG[3] issues. Mere 0.02% of the European SRI flows were thus channeled to microfinance in 2009 according to Eurosif [4] and the role of microfinance stays marginal, even if crucial for the future of the sector, depending on secured funding (Eurosif, 2010).

Satisfying demand requires exponentially increasing cash flows, rendering existing sources insufficient. The development community acknowledges that if microfinance is to continue to grow, there is no alternative to private funding. Public sources from development financial institutions (DFIs), historically a major source of microfinance funding, are likely to be reduced due to global slowdown and so may have reached their limits already.

The juxtaposed increasing complexity of global structured finance and at the same moment insufficient funding for microfinance from international sources within the global financial arena interspace thus present an opportunity for a linkage in an innovative arena imposed by regulator, where both non-colliding phenomena could interact for mutual benefit. Assuming low linkage with capital markets, the paper proposes market based offset mechanism, creating new markets for trade with noxious complexity with the proceedings invested into microfinance portfolios lacking productive capital. A sufficient body of experience is available thanks to almost a decade of experimentation with emission trading system frameworks and could be implemented within the financial eco-system as well, substituting contamination with complexity and emission allowances with smart microfinance funding, directed at MFIs in need of intelligent capital. Several arguments support such proposition. The most important one is a low correlation of microfinance markets with systemic risk of capital markets as shown in this study, having as a clear benefit a reduction of global level of risk, collaterally with development impact. 'Grass roots' financial services are regarded as a stable business and even if overall results provide evidence that MFI performance is driven by the surrounding macroeconomic environment (Ahlin 2009) [4], microfinance is significantly less exposed to systemic risk than emerging market commercial banks (Kraus, 2006).

This phenomenon can be attributable to several features of the sector, such common nonpublic ownership structures reducing dependence on capital markets, lower exposure of clientele and minor role of retail deposits, credit methodology based on close monitoring of the clientele on weekly basis, limited financial leverage, as well as truly local nature of the microfinance business. Also, the absence of a global secondary market for MFI investors, further entrenches the isolation of the sector and actually protects it from contagion, decreasing global systemic risks. Furthermore, MFIs, being local and smaller than banks in size of capital volume, are embedded in their regional market contexts, when compared to large financial institutions incorporated in a tangled international web, reducing the too-big-to-fail problem. As a third argument could be used the widely acknowledged development benefits of microfinance related to all millennium development goals in comparison with inequality escalating trade with derivatives. Such trade, performed by systemically fragile banking behemoths, is deemed to have played a large role in the global food price crisis 2007-2008 being implicated as a lever of inequality (Breger Bush, 2012).

The panorama displayed in this paper serves to understand the wider interplay of microfilance within the global economy, undertakes a regression analysis of systemic risk indices and performance of MFIs and presents a concluding reason for the proposed mechanism.

2. Used methods and materials

The paper builds the thesis upon analysis of a potential interconnectedness between three indicators of performance of MFIs and with systemic risk of financial markets described by three systemic risk indices, related to behaviour of international capital markets. The assumption that the microfinance markets are isolated enough not to be influenced by capital markets volatilities, leads to a formulation of the following three hypothesis on the phenomenon of low correlation of microfinance markets with international capital markets systemic risk.

H_1: Profitability of MFIs dos not correlate with systemic risk indices: VIX[5], Euro-area CISS[6], CVI[7].

H_2: Portfolio at risk of MFIs dos not correlate with systemic risk indices: VIX[8], Euro-area CISS[9], CVI[10].

H_3: Real yield[11] on gross portfolio of MFIs dos not correlate with systemic risk indices: VIX[12], Euro-area CISS[13], CVI[14].

[3] Environment, Social, Governance

[4] The European Sustainable Investment Forum

[5] VIX – CBOE Volatility Index shows the market's expectation of 30-day volatility. It is constructed using the implied volatilities of a wide range of S&P 500 index options. The VIX is a widely used measure of market risk. (CBOE, 2013)

[6] CISS alias Euro-area Composite Indicator of Systemic Stress includes 15 raw, mainly market-based financial stress measures that are split equally into five categories, namely the financial intermediaries sector, money markets, equity markets, bond markets and foreign exchange markets. The CISS thus places relatively more weight on situations in which stress prevails simultaneously in several market segments. It is unit-free and constrained to lie witin the interval (0, 1). (ECB, 2013)

[7] CVI alias Corporate Volatility Index was launched by Risk Management Institute (RMI) at the National University of Singapore. This is a new suite of indices produced by RMI's Credit Research Initiative. RMI Probabilities of Default (RMI PDs) of individual firms are used in the CVI to produce bottom-up measures of credit risk in economies, regions and portfolios of special interest. The CVI selected is a Value-weighted CVI (CVIvw) aggregated with each firm weighted by its market-capitalization so that the size of each firm is taken into account, based on S&P 500 index. (RMI, 2013)

[8] VIX – CBOE Volatility Index shows the market's expectation of 30-day volatility. It is constructed using the implied volatilities of a wide range of S&P 500 index options. The VIX is a widely used measure of market risk. (CBOE, 2013)

[9] CISS alias Euro-area Composite Indicator of Systemic Stress includes 15 raw, mainly market-based financial stress measures that are split equally into five categories, namely the financial intermediaries sector, money markets, equity markets, bond markets and foreign exchange markets. The CISS thus places relatively more weight on situations in which stress prevails simultaneously in several market segments. It is unit-free and constrained to lie witin the interval (0, 1). (ECB, 2013)

[10] CVI alias Corporate Volatility Index was launched by Risk Management Institute (RMI) at the National University of Singapore. This is a new suite of indices produced by RMI's Credit Research Initiative. RMI Probabilities of Default (RMI PDs) of individual firms are used in the CVI to produce bottom-up measures of credit risk in economies, regions and portfolios of special interest. The CVI selected is a Value-weighted CVI (CVIvw) aggregated with each firm weighted by its market-capitalization so that the size of each firm is taken into account, based on S&P 500 index. (RMI, 2013)

[11] Real Yield on Gross Portfolio is inflation adjusted Nominal Yield on Gross Portfolio. Nominal Yield on Gross Portfolio is composed by sum of Interest and Fees on Loan Portfolio, divided by Gross Loan Portfolio.

[12] VIX – CBOE Volatility Index shows the market's expectation of 30-day volatility. It is constructed using the implied volatilities of a wide range of S&P 500 index options. The VIX is a widely used measure of market risk. (CBOE, 2013)

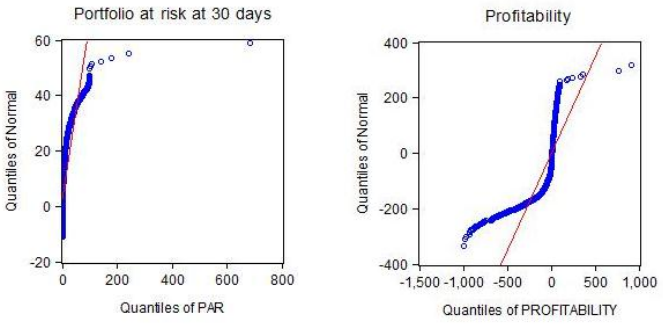
Not-existing / low correlation analyzed through OLS simple regression analysis confirms the insulation of the sector and thus confirms a potential for a creation of mechanism reducing systemic risks through funding of MFIs, supporting the thesis on mitigation potential of volatilities of structured finance through their anchoring in local microfinance portfolios, reducing global systemic risk. Subsequently, a need for an international framework of trade with complexity quants converting negative externalities into positive ones, is depicted.

2.1 Data Description

The dataset comprises of up to 17 years of microfinance industry data period of 1995-2012 from 2,100 MFIs covering 94 million borrowers gathered by the "Microfinance Information Exchange (MIX) Premium" database available to registered scholars, the prime source of global microfinance data at present worldwide.

Panel data is structured in regional clusters on annual basis, with MFIs grouped by MIX in respective six worlds regions. For PAR in total 10,067 annual values were available, for profitability 7,305 annual values and for profitability annual 11,323 values.

Data collection is based on microfinance industry reporting standards and aligned with International Financial Reporting Standards (IFRS).



Apart from closely monitoring the data quality of all participating MFIs, the MIX Market applies certain adjustments, including accounting for inflation and loan loss provisioning. Only data from MFIs with at least three consecutive years of financial statements in order to increase the quality of the dataset and to make it more comparable to the datasets of our benchmarks. The paper analyzes the performance of different age groups of institutions in order to assess a possible bias of a different performance of younger MFIs during the selected period.

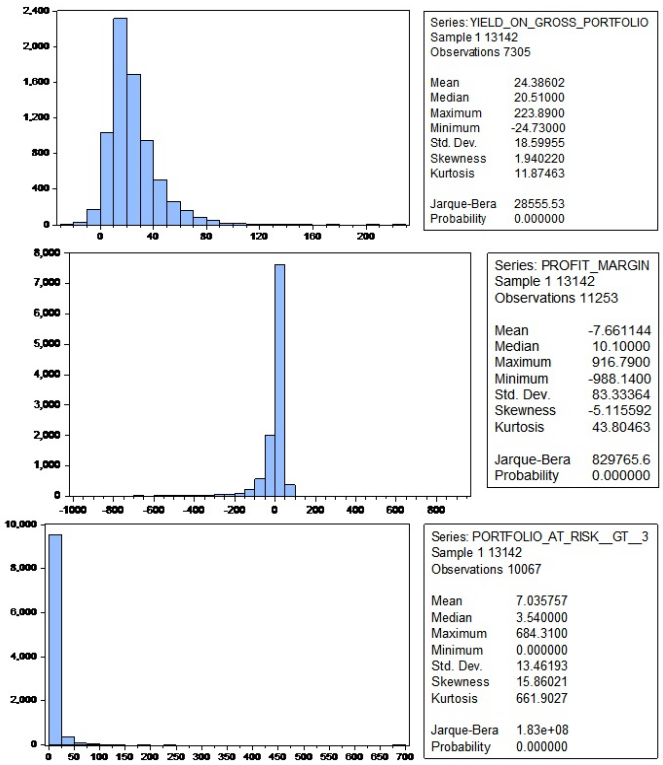


Fig 1: Measurements of three variables before adjustment

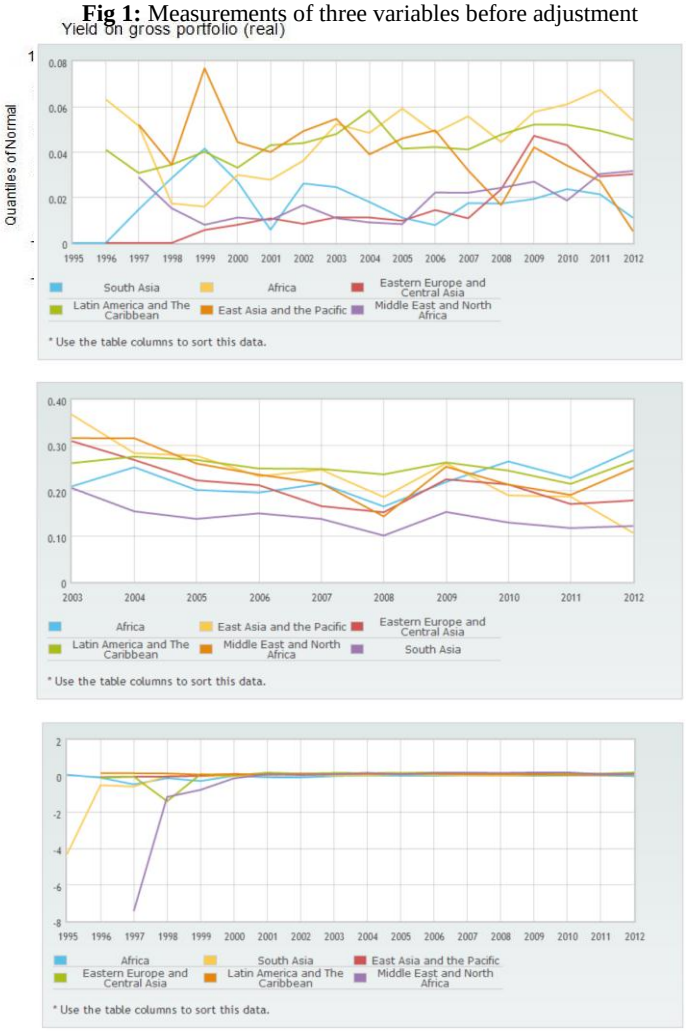


Fig 2: Samples of RYGLP, Profitability, PAR[+30]

[13] CISS alias Euro-area Composite Indicator of Systemic Stress includes 15 raw, mainly market-based financial stress measures that are split equally into five categories, namely the financial intermediaries sector, money markets, equity markets, bond markets and foreign exchange markets. The CISS thus places relatively more weight on situations in which stress prevails simultaneously in several market segments. It is unit-free and constrained to lie witin the interval (0, 1). (ECB, 2013)

[14] CVI alias Corporate Volatility Index was launched by Risk Management Institute (RMI) at the National University of Singapore. This is a new suite of indices produced by RMI's Credit Research Initiative. RMI Probabilities of Default (RMI PDs) of individual firms are used in the CVI to produce bottom-up measures of credit risk in economies, regions and portfolios of special interest. The CVI selected is a Value-weighted CVI (CVIvw) aggregated with each firm weighted by its market-capitalization so that the size of each firm is taken into account, based on S&P 500 index. (RMI, 2013)

Annual data on the performance of systemic risk indices was obtained through publicly accessible resources of Chicago Board of Exchange, ECB and University of Singapore.

2.2 Variables

a) Dependent variable

We will test our hypothesis on one dependent variable, which is an annual change of profitability of MFIs, expressed in percent per year. We use profitability in order to proxy performance of MFIs, calculated as Net Operating Income/ Financial Revenue (MIX, 2013).

b) Independent variable

We will test our hypotheses on one independent variable, which represents global capital market conditions depicted by the annual average percentage change of three indices, the VIX (1995-2012), the CVI (1996-2012) period and the Euro-Area CISS (1999-2012).

c) Dummy variables

We also include a regional specific control contextual control variables, such as the relevant regional dummies to capture differences across geographical regions (Latin America and the Caribbean, Eastern Europe and Central Asia, Eastern Asia and the Pacific, South Asia, and Middle East and North Africa, Subsaharan Africa).

2.3 Estimation method

To determine which type of performance is associated with MFIs receiving international investments, we use ordinary least square method, in an unbalanced panel data model with fixed effects.

$$y_{it} = \alpha + \beta_x X_{it} + L_{it} + \varepsilon_{it}$$

α be the intercept of the regression line and the Y axis
y_{it} be a year-t outcome of regional microfinance market *i*
X_{it} be a set of capital market index variables describing market *i* at time *t*
L_{it} be a set of regional-specific control (dummy) variables at time *t*
ε_{it} be a residual value

2.3.1 Robustness of results.

In order to control for the robustness of the results reported, all regressions were subjected to tests for heteroscedasticity through Breusch-Pagan test and autocorrelation Coefficients-Covariance method in Eviews.

2.4 Interpretation of results

In 8 of 9 cases we could not confirm a statistically significant correlation between the motions of capital markets expressed by capital market indices and the volatilities of several indicators of microfinance institutions performance. The only exception was profitability of the microfinance institutions correlated with CVI index, however the profitability did not seem to be correlated with other indices. The results confirm the thesis that microfinance, shows low or no signs of impact of capital market influence, and there its affection by global systemic risks maybe very low.

Dependent Variable: PROFIT_MARGIN
Method: Least Squares
Date: 07/18/13 Time: 12:18
Sample (adjusted): 2 103
Included observations: 102 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-10.51440	9.082921	-1.157601	0.2498
VIX_GROWTH	16.51012	18.75237	0.880428	0.3807

R-squared	0.007692	Mean dependent var	-8.511176
Adjusted R-squared	-0.002231	S.D. dependent var	88.70932
S.E. of regression	88.80823	Akaike info criterion	11.83025
Sum squared resid	788690.2	Schwarz criterion	11.88172
Log likelihood	-601.3427	Hannan-Quinn criter.	11.85109
F-statistic	0.775154	Durbin-Watson stat	1.730807
Prob(F-statistic)	0.380738		

Dependent Variable: PAR
Method: Least Squares
Date: 07/18/13 Time: 12:43
Sample: 1 101
Included observations: 100

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.083539	0.190419	16.19344	0.0000
VIX_GROWTH	-0.087138	0.394967	-0.220620	0.8258

R-squared	0.000496	Mean dependent var	3.073600
Adjusted R-squared	-0.009703	S.D. dependent var	1.841219
S.E. of regression	1.850130	Akaike info criterion	4.088186
Sum squared resid	335.4521	Schwarz criterion	4.140289
Log likelihood	-202.4093	Hannan-Quinn criter.	4.109273
F-statistic	0.048673	Durbin-Watson stat	0.437264
Prob(F-statistic)	0.825847		

Dependent Variable: RYGLP
Method: Least Squares
Date: 07/18/13 Time: 11:35
Sample: 1 60
Included observations: 60

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	24.30950	2.107089	11.53701	0.0000
VIX	-0.117682	0.091312	-1.288798	0.2026

R-squared	0.027841	Mean dependent var	21.75950
Adjusted R-squared	0.011079	S.D. dependent var	5.643902
S.E. of regression	5.612549	Akaike info criterion	6.320652
Sum squared resid	1827.041	Schwarz criterion	6.390464
Log likelihood	-187.6196	Hannan-Quinn criter.	6.347959
F-statistic	1.661000	Durbin-Watson stat	0.790854
Prob(F-statistic)	0.202585		

Fig 1: Correlation between profitability, PAR^{+30} and RYGLP of MFIs and VIX

Dependent Variable: PROFIT_MARGIN
Method: Least Squares
Date: 07/18/13 Time: 12:51
Sample (adjusted): 3 103
Included observations: 97 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	371.5019	668.6396	0.555609	0.5798
CVI	-0.000513	0.000913	-0.562016	0.5754

R-squared	0.003314	Mean dependent var	-4.256392
Adjusted R-squared	-0.007178	S.D. dependent var	79.82682
S.E. of regression	80.11279	Akaike info criterion	11.62515
Sum squared resid	609715.6	Schwarz criterion	11.67824
Log likelihood	-561.8198	Hannan-Quinn criter.	11.64662
F-statistic	0.315862	Durbin-Watson stat	1.741884
Prob(F-statistic)	0.575429		

Dependent Variable: PAR
Method: Least Squares
Date: 07/18/13 Time: 11:24
Sample: 1 96
Included observations: 96

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.885306	0.332357	8.681357	0.0000
CVI	0.010467	0.013977	0.748852	0.4558

R-squared	0.005930	Mean dependent var	3.092917
Adjusted R-squared	-0.004645	S.D. dependent var	1.791825
S.E. of regression	1.795982	Akaike info criterion	4.029594
Sum squared resid	303.2018	Schwarz criterion	4.083018
Log likelihood	-191.4205	Hannan-Quinn criter.	4.051189
F-statistic	0.560779	Durbin-Watson stat	0.421632
Prob(F-statistic)	0.455816		

Dependent Variable: RYGLP
Method: Least Squares
Date: 07/18/13 Time: 11:35
Sample: 1 60
Included observations: 60

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	24.30950	2.107089	11.53701	0.0000
VIX	-0.117682	0.091312	-1.288798	0.2026

R-squared	0.027841	Mean dependent var	21.75950
Adjusted R-squared	0.011079	S.D. dependent var	5.643902
S.E. of regression	5.612549	Akaike info criterion	6.320652
Sum squared resid	1827.041	Schwarz criterion	6.390464
Log likelihood	-187.6196	Hannan-Quinn criter.	6.347959
F-statistic	1.661000	Durbin-Watson stat	0.790854
Prob(F-statistic)	0.202585		

Fig 2: Correlation between profitability, PAR^{+30} and RYGLP of MFIs and CVI

Dependent Variable: PROFIT_MARGIN
Method: Least Squares
Date: 07/18/13 Time: 12:29
Sample: 1 78
Included observations: 78

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.215235	1.564318	4.612384	0.0000
EASSTC	13.99411	6.770850	2.066817	0.0422

R-squared	0.053216	Mean dependent var	9.772821
Adjusted R-squared	0.040758	S.D. dependent var	8.629489
S.E. of regression	8.451798	Akaike info criterion	7.131942
Sum squared resid	5428.900	Schwarz criterion	7.192370
Log likelihood	-276.1457	Hannan-Quinn criter.	7.156133
F-statistic	4.271734	Durbin-Watson stat	1.058797
Prob(F-statistic)	0.042157		

Dependent Variable: PAR
Method: Least Squares
Date: 07/18/13 Time: 11:21
Sample: 1 78
Included observations: 78

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.843324	0.320141	8.881472	0.0000
EASSTC	1.783234	1.385669	1.286912	0.2020

R-squared	0.021327	Mean dependent var	3.169231
Adjusted R-squared	0.008449	S.D. dependent var	1.737033
S.E. of regression	1.729679	Akaike info criterion	3.959055
Sum squared resid	227.3759	Schwarz criterion	4.019483
Log likelihood	-152.4031	Hannan-Quinn criter.	3.983246
F-statistic	1.656141	Durbin-Watson stat	0.373993
Prob(F-statistic)	0.202031		

Dependent Variable: RYGLP
Method: Least Squares
Date: 07/18/13 Time: 11:34
Sample: 1 60
Included observations: 60

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	23.24798	1.230852	18.88772	0.0000
EASSTC	-7.147912	4.789931	-1.492279	0.1410

R-squared	0.036975	Mean dependent var	21.75950
Adjusted R-squared	0.020371	S.D. dependent var	5.643902
S.E. of regression	5.586119	Akaike info criterion	6.311212
Sum squared resid	1809.874	Schwarz criterion	6.381023
Log likelihood	-187.3364	Hannan-Quinn criter.	6.338519
F-statistic	2.226896	Durbin-Watson stat	0.855460
Prob(F-statistic)	0.141046		

Fig 3: Correlations between profitability, PAR^{+30}, RYGLP of MFIs and EASSTC

3. Microfinance and systemic risk arising from capital markets

Financial firms play a key role in the economy, providing link between demand and supply of productive capital. Without such intermediation, it is difficult for illiquid companies to fuel their expansion with leveraged capital. Systemic risk can be thought of as widespread failures of financial institutions or freezing up of capital markets that cansubstantially reduce the supply of such critical intermediation (Acharya *et al.*, 2009) [8] While failures of financial intermediaries thus pose an externality on the rest of the economy, current financial regulations, are designed to limit each institution's risk in isolation, without focusing on systemic risk despite the fact that systemic risk is often the rationale of such regulation. (Acharya *et al.*, 2009) [8]. Risks are thus properly dealt on individual basis, without taking into account risks of higher order, macroeconomic shocks.

Several studies on correlation between microfinance and macroeconomic environment including systemic risk were undertaken in the past, although the topic seems not to be thoroughly examined, given the growing importance of microfinance worldwide. The outcome is a mix of results pointing in varying degree at rather non-existing or low effect of global environment at MFIs, confirming the thesis of isolation of the sector.

Study of 639 MFIs in 88 countries in the period 1999-2005 performed by Gonzalez in 2007, show no relationship between changes in GNI per capita and asset quality of MFIs, especially Portfolio at risk over 90 days (PAR-90), Loan Loss Rate (LLR) and Write-off Ratio (WOR). Krauss and Walter undertook in 2006 and in post-crisis 2009 a different econometric analysis, finding no correlation between major market risk of MFIs and emerging market institutions (EMIs) indicating detachment of MFIs from domestic economies as well as global capital markets. Comparing global market risk of MFIs with emerging market commercial banks, MFIs consistently showed significantly less sensitivity for all parameters analyzed. The results suggested that MFIs may be useful diversification aims for international investment portfolios, diversifying away from country risk exposures (Krauss *et al.* 2008) [3].

Ahlin, Lin and Maio in 2009 [4] studied performance of 373 MFIs within context of several macroeconomic and macro-institutional features. The results of the analysis show no strong evidence on the development of the financial sector affecting of microfinance, albeit economic growth and volume of remittances are positively associated with selfsufficiency of MFIs.

Until the global financial crisis in late 2007, available data suggested a weak relationship between performance indicators in the microfinance industry and international capital market developments, and even domestic macroeconomic conditions (Krauss and Walter, 2006, 2009; Gonzalez, 2007; Ahlin, Lin and Maio, 2010; Di Bella 2009), presenting an attractive feature of microfinance as an asset class for fund managers interested in risk diversification. The lack of strong correlation was attributed to the apparent insulation of MFI clients to developments in formal domestic and international markets, and the lower financial leverage of MFIs in comparison with other types of financial institutions (Di Bella 2009). Study of Di Bella (IMF, 2011) [1] suggests weak evidence linking lending rates (spreads) with domestic economic conditions, eventhough the empirical findings suggest that correlations between microfinance's performance and both domestic and international economic conditions are stronger than previously found.

Summing up, the results of the mentioned studies as well as this paper suggest that albeit a steady approximation of the risk profile of MFIs to risk profile of standard financial institutions is probably going on, microfinance sector can still be considered and insulated territory within global financial system, a peaceful region of global finance in the midst of stormy sea of rising systemic risk.

4. Proposal of microfinance as capital safehaven

As suggested by results of this analysis and other mentioned studies carried out in the past, it is reasonable to expect that the connectedness of the microfinance sector to global capital markets is fairly limited which is why microfinance markets are resilient to exogenous shocks and systemic contagion. Furthermore, as per widely accepted general view of development practitioners, microfinancial services enable the poor to diversify incomes, build human, social and economic assets, and improve their lives in ways that reflect the multidimensional aspects of poverty (CGAP, 2002).

Microfinance, seen on the panorama of the global financial system which is becoming worryingly incomprehensible due to increased complexity acting as a negative externality can thus be considered a relatively unsophisticated and benign part of the financial ecosystem.

Having found low correlation between microfinance and capital markets, the work proposes establishment of a microfinance funding mechanism linked to complexity reduction scheme, implementing a global cap and trade offset system trading quants of complexity, analogue to current emission trading systems. At the very heart of emissions trading lies the notion that if "factors of production are thought of as rights, it becomes easier to understand that the right to do something is also a factor of production" (Coase, 1960). The cost of exercising a production – in this case derivative trading

right should be equivalent to the loss suffered elsewhere in consequence of this action, due to increased contamination - or noxious complexity. Emission trading markets commodify negative industrial externalities, by standardizing them and setting framework for trade with them with the goal of reaching climate benefits. Governments decide on supply levels, set scarcity, propertize and apportion the earth´s ability to keep its climate stable and sell the commodity or give it away to polluters, supposing trade in the commodity will be maximally cost-effective through offsets and cap and trade[15]. Likewise, regulation of OTC markets and making derivative trading rights explicit and transferable enables the market to value and trade them, where trade becomes most efficient.

Complexity cap and trade system would one the one hand manage to reduce complexity of structured finance blamed for sparking current crisis thanks to regulation and penalization of excessive trade with toxic assets, and on the other use such proceedings to propulse funding to the microfinance sector characterized by low complexity, high debt traceability and development potential for underdeveloped regions while in parallel reducing global systemic risks. The paper thus calls for transplantion of the emission trading principles into financial markets, by defining quants of complexity, starting with regulation of OTC derivatives and putting price on related transactions, in combination with mechanism that induces income from sales complexity allowances to be channeled to microfinance sector, as a new dimension of SRI.

5. Conclusion

The purpose of the financial system is not only to direct resources from savers to borrowers, but also to allocate risks among market participants. New types of systemic risks have arisen in the recent decades, characterized by process of globalized financialization, with financial leverage tending to override equity. Albeit global systemic risks can be detrimental to individual national financial systems, yet little is being done to impose rules within global framework. Therefore, it is important to conceive new risk allocation mechanisms acting on global level yet within the financial sector, mitigating newly arised threats in an original way.

Microfinance sector harbours benign development potential which consists in its capacity to create local financial infrastructures needy for functional economies, while being insulated from global capital processes as illustrated in this paper. This breach presents an opportunity if regulators agree on regulation of global derivative markets and impose a mechanism analogue to emission trading system, putting price on negative externalities caused by ever increasing complexity with OTC derivatives. Channelling the toxicity inducing capital away and employing it in a prudent and intelligent way in microfinance institutions has doublefold, mutually reinforcing potential of reduction of risks while employing capital where needed and where enhanced economic development can be regarded as an indirect mitigant of global risks of a different form.

[15] Cap and trade program consists of allowances or tradable permits that give onetime permission to emit a metric ton of gas each year, while the authority will issue allowances equal to one year's cap. An offset is a credit for a verified emission reduction from a source outside the capand-trade program.

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