

MICROFINANCE ON WALL STREET

*A Study of the Market Correlations of
Microfinance Investment Vehicles During the
Current Crisis*

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Abstract

Monthly average returns of 4 Microfinance Investment Vehicles (MIVs) during the period of January 2005 to January 2012 are examined to determine whether the recent global financial crisis has resulted in a growing correlation between MIVs and fixed income and equity markets, or whether MIVs continue to be resilient to fluctuations in these markets. The Capital Asset Pricing Model (CAPM) will be used in this event study analysis to determine if market risk post-crisis is significant and positive. I utilize a variety of break dates and exclude a window of turbulence to test for the consistency of the results. These results show that MIVs became more correlated to world fixed income markets during the financial crisis, yet exited the crisis as an even stronger diversification tool than they were before the crisis.

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I. Introduction

Leading financial institutions such as Credit Suisse, Deutsche Bank, and Citigroup recently started offering their clients the opportunity to invest in the microfinance industry through Microfinance Investment Vehicles (MIVs). MIVs are simply private investment funds of which at least 50% of their non-cash assets are invested in the microfinance sector.¹ Whereas non-governmental organizations (NGOs) and International Financial Institutions (IFIs) were traditionally the main source of funding for Microfinance Institutions (MFIs), MIVs from developed countries today make up about half of the funds that flow into the microfinance sector.² These investment vehicles are attractive to investors because microfinance institutions have traditionally been fairly resilient to financial turmoil, and thus MIVs offer clients portfolio diversification.³ Recent work evaluating the effects of the current global crisis however provides mixed results regarding the resiliency of MFIs to global market economic conditions.

A study conducted by Janda and Svarovska (2009) evaluates data up to March 31, 2009 and concludes that there “is no positive correlation between the broader market and MIVs,”⁴ suggesting that microfinance assets still are “attractive from the portfolio

¹ Symbiotics Research and Advisory

² Janda & Svarovska, 1

³ Krauss and Walter

⁴ Janda & Svarovska, 26

diversification point of view.”⁵ Using data that extends further beyond the crisis and looking at a broader set of measures (asset growth, lending growth, return on equity and the write-off ratio) Di Bella (2011), finds that MFIs are becoming more correlated with global market trends. While these authors reach different conclusions surrounding the resiliency of microfinance in financial turmoil, both note that the global impacts of the crisis may have occurred later than 2008 or 2009—a conclusion also reached by other authors in related works⁶. The possibility that the full effects of the financial crisis have taken time to be revealed provides the motivation for this study.

Extending the data into 2010 and 2011, I incorporate potential longer term lagged effects and investigate whether since the most recent global financial crisis MIVs have become more correlated with market fluctuations. These results are important. If MIVs do not offer portfolio diversification and are not resilient to periods of financial turmoil, these funds will have considerably less value to Wall Street investors.

Results from this study show that MIVs became more correlated to world fixed income markets during the financial crisis. The MIVs exited the crisis however, as an even stronger diversification tool than they were before the crisis. In the following sections, I describe why MIVs are attractive to investors, why this crisis could be different than earlier crises, and how commercialization may affect MFI behavior. I then provide a short literature review, describe the methodology and data used to assess MIV fluctuations, and finally, present results and conclusions.

II. The Attraction of MIVs To Investors

⁵ Janda & Svarovska, 26

⁶ Ashta & Constantinou: Financial Crisis: Lessons from Microfinance

MIVs are attractive to investors both because they offer portfolio diversification (since microfinance is widely believed to be a more stable source of finance than the traditional sector⁷) and also because some investors have “a particular interest in the socially responsible aspect of this investment opportunity.”⁸ Microfinance has typically been viewed as a good source of diversification because it falls outside the mainstream economy. Poor borrowers who live in “remote, rural, mostly agricultural areas...often are insulated from large-scale financial trends.”⁹ Their large populations are also better able to spread risk, and close-knit relationships between borrowers in the same community are common.¹⁰ These close-knit relationships among borrowers mean that lending occurs even outside of the institution and this access to alternative sources supports high repayment rates. Also, the close relationship MFIs establish and maintain with borrowers enables the institution to monitor the ability to pay of their clients. Repayment schedules are usually weekly or bi-weekly, for example, and MFI’s can act quickly to head off repayment difficulties. It is also common that donors will try to maintain levels of financing in times of crisis “to make up for the possible retreat of private sector money.”¹¹

Microfinance borrowers, having adapted to live with scarcity, are accustomed to managing adversity, and have even been described as “flexible entrepreneurs.”¹² Because of MFIs’ continued growth and in some cases, returns on assets that outperformed those of mainstream banks during previous crises—such as the Asian financial crisis of ’97 or

⁷ Wagner & Winkler, 1

⁸ Janda & Svarovska, 27

⁹ Sen

¹⁰ Littlefield & Kneiding

¹¹ Ashta & Constantinou, 193

¹² Sen

the Latin American banking crisis of the 90's¹³—Muhammad Yunus (founder of the Grameen Bank) claims that “microfinance organizations can be an island of stability during financial crises” in the Winter 2008 Human Rights Magazine. This resilience was maintained even in the early stages of the current crisis. Worldwide MFIs tracked by the *Symbiotic 50 Benchmark* exhibited “no major changes in terms of profitability or risk during 2009”.¹⁴ MIVs are also generally regarded as low-risk investment vehicles because MFIs have such low default rates—which “tend to fall between 1% and 3%”.¹⁵ Krauss and Walter (2011) further argue that during times of economics stress consumers will “move ‘down-market’, and look to purchase cheaper, domestically produced goods,” providing additional protection from market fluctuations.¹⁶

III. Increased Vulnerability: The Potential Negative Effects of Development Trends in the Microfinance Industry and a More Far-Reaching Crisis

This crisis differs from previous crises because global markets are more integrated and because food and energy costs are rising alongside the financial crisis. In addition, changes within the microfinance sector are causing MIVs to become more correlated with global market trends (and thus, less resilient during crisis periods).

According to Consultative Group to Assist the Poor (CGAP, 2009) the effects of today's crisis are likely to be more complex, deeper, and more difficult to predict than in the past.¹⁷ Globalization and the many links between international markets means that financial trouble abroad will have domestic impacts. For example, microfinance banks in

¹³ Sen

¹⁴ Symbiotics 2009 (Littlefield & Kneiding)

¹⁵ Easton 2005 (Krauss and Walter)

¹⁶ Krauss & Walter, 102

¹⁷ Littlefield & Kneiding

Eastern Europe and Central Asia “saw a steady withdrawal of deposits for several weeks following the collapse of Lehman.”¹⁸ As MFIs become more linked to domestic and international financial markets we can expect a decrease in remittances, that international investors may become more risk averse, and loss of confidence in local MFIs.

Job losses in the U.S. and in Europe mean there are fewer remittances coming from relatives abroad. This decreased source of funds combined with the rising fuel and energy costs suggest that the usual high repayment rates could be at risk. International investors are also becoming more risk averse, and are cutting back on funding to MFIs. MFIs (especially non deposit-taking MFIs) could run into liquidity problems, and the resulting limits or restriction of loans to borrowers could threaten the growth and profitability of their businesses. With less available money to lend, MFIs may increase interest costs, which could lead to problems of adverse selection and more risky borrowers.¹⁹ Cutting back on lending could also reduce the incentive for borrowers to repay since they have lower expectations of receiving further loans.²⁰ Clients will either need to withdraw more savings, cut back on nonfood expenses, or will have more difficulty with loan repayments.²¹

Littlefield and Kneiding argue “the microfinance field is, at its core, robust,”²² however they also note that microfinance institutions are drifting from their original mission, are becoming more competitive, and in some cases, are becoming too inclusive.

¹⁸ Littlefield and Kneiding, 3

¹⁹ Armendariz and Morduch, 8

²⁰ Littlefield and Kneiding, 4

²¹ Sen

²² Littlefield and Kneiding, 7

These three issues, explored in more detail below, may reduce the reasons investors find investment in MFI's attractive.

The first concern regarding mission drift is partly attributed to the recent shift from microenterprise loans into consumer lending, or retail credit.²³ Personal loans do not contribute to any income-generating activities, and “instead opens new avenues for spending.” There is concern that this will result in increased over-indebtedness and lower repayment rates and profits.²⁴

The recent and rapid growth of microfinance institutions has resulted in increased competition in many areas. Competition may be problematic to the stability of MFIs for several reasons. The first reason is that with increased numbers of loans in their portfolio, officers are less able to focus on personal interaction with their clients, diminishing “the potential for inter-personal trust building.” This may affect the loan officer's ability to judge credit worthiness and monitor borrowers.²⁵ Shifts to monthly repayment schedules (again, due to the increase in loan portfolios) are also adversely affecting borrowers' repayment ability.²⁶ Borrowers are also more tempted to take out higher value loans at greater risk of non-payment because the possibility of future credit is not dependent on access to just one MFI. In addition, over-indebtedness is possible with borrowers using loans from one bank to cover repayments on a different loan (somewhat like a pyramid-scheme).

²³ Constantinou & Ashta, 198

²⁴ Microfinance Rides Out Turbulence (Forbes)

²⁵ Constantinou & Ashta, 198

²⁶ *ibid*

The final concern regarding the increasing vulnerability of MFIs is perhaps due to past success of poverty alleviation through MFI loans. This has led MFIs to become more inclusive and to thus, lower its lending standards and regulations.

In summary, the changing internal structure of MFIs and the indications that this crisis is supposedly different from past crises provides reason to address concern about the continued resiliency of MIVs to market trends.

IV. Literature Review

Krauss and Walter (2009) seek to establish the relationship between the microfinance industry and world economic trends by examining correlations among MFI profitability indicators, changes in the value of assets, indicators of loan portfolio quality with global market trends. Using annual MFI data from the Microfinance Bulletin spanning the period from 1998 to 2006 (before the current crisis), Krauss and Walter conclude that MFIs “display no statistically significant relationship with global market movements” and that MFIs have “useful diversification value.”²⁷ However, because data were obtained only on an annual basis from the MicroBanking Bulletin, the authors caution against too strong of an interpretation given the limited number of observations.

Gabriel Di Bella (2011) follows the methodology of Krauss and Walter (2009) and also uses MFI data obtained from the MicroBulletin Database, but extends the dataset to 2009, thus (theoretically) including the global financial crisis. He finds that the link

²⁷ Krauss and Walter, (2009), 105

between the microfinance industry and international capital markets is growing stronger.²⁸

In a study similar to that of this paper, Janda and Svarovska evaluate the microfinance industry from an investor's point of view with a focus on MIVs rather than MFIs, as previously evaluated by Krauss and Walter and Di Bella. Evaluating MIVs instead of MFIs allows for a more thorough analysis since data for MIVs are reported monthly or bi-monthly compared to only annual data for MFI's (through their financial reports). Janda and Svarovska focus on funds that

- a) appeal to investors not familiar with the microfinance field,
- b) hold more than half of their assets in the microfinance sector, and
- c) have at least 3 years of data.

The data extend into more recent periods, spanning the period from January 2006 until March 2009. Using a break date of October 2007, Janda and Svarovska compare MIV correlations with market indexes before the crisis with correlations after the crisis using the Chow Test to determine whether returns are significantly different across the two periods. The authors also use three performance measures—Jensen's alpha, the Sharpe ratio, and the Treynor ratio—to provide additional support for their conclusion that MIVs continue to be a good diversification tool for investors.

The analysis in this paper extends the previous analysis by examining the time period following March 2009 (until January 2012), thereby capturing any prolonged effects of the global financial crisis in emerging markets. Janda and Svarovska note a weakness in their analysis is that the financial crisis could have repercussions on the least

²⁸ Di Bella (2011), 31

developed economies into 2009 and 2010, beyond the data they used.²⁹ Similar to their study, this study will be from an investor's point of view and will focus on MIVs as opposed to equity from MFIs.

V. Methodology

We seek to test whether MIVs' relationship to global market performance has changed since the recent global financial crisis. This correlation is key for investors considering adding an MIV to their portfolio. According to the Capital Asset Pricing Model (CAPM) the only relevant risk of a security for inclusion in a portfolio is its correlation with the overall market. All idiosyncratic risk can be diversified away.³⁰ The Capital Asset Pricing Model (CAPM) describes the relationship between risk and expected return and is frequently used to estimate "normal returns."³¹ Drawing on Markowitz's theory that "investors would optimally hold a mean-variance efficient portfolio, that is, a portfolio with the highest expected return for a given level of variance" CAPM describes the relationship between risk and expected return and is used to estimate expected returns.

The formulation of CAPM below indicates the expected return of a given asset i equals the risk-free rate (R_f) plus the asset's market risk factor (β) multiplied by the difference between the return of the benchmark market return (R_m) and the risk-free rate (R_f).

$$E(R_i) = R_f + \beta_i(E(R_m) - R_f)$$

²⁹ Janda and Svarovska (2009), 12

³⁰ Chapter 5: The Econometrics of Financial Markets

$$\beta_i = \frac{\text{Cov}(R_i, R_m)}{\text{Var}(R_m)}$$

The market risk factor, β , is the main variable of interest, since it indicates whether the movement of the MIV's returns amplifies or mitigates the movement of the returns of the market. A β of 1 for example, would mean that a 1 percent jump in the market return would result in an equivalent 1 percent jump in the return of the MIV. In other words, β is the percentage jump the MIV will make in comparison to movements in the benchmark. A β of zero implies the asset is uncorrelated with benchmark market fluctuations and neither moves with or against the market. Finally, a negative β implies that the returns on the asset move in the opposite direction of that of the market.

To test for changes in the market risk factor, β , the following regression model is estimated in 16 specifications (4 funds x 4 benchmark indices):

$$Y = \alpha_0 + \alpha_1 * \text{post} + \beta_0 x + \beta_1 x * \text{post}$$

where y is the MIV monthly average return minus the T-bill monthly average return, x is the benchmark monthly average return minus the T-bill monthly average return, α is the average return compared to the risk-free rate, and β is the correlation of the MIV index to the benchmark index and post is dummy variable that takes a value of 1 in all periods after the designated break.

With this specification, findings of a β_1 significantly different than zero would indicate a change in the relationship of the MIV to the market in the period after the

financial crisis. If β_1 is significant and negative, then the MIVs are becoming less correlated to the market post crisis. If β_1 is significant and positive, the overall effect on the β of the investor's portfolio will be larger post crisis. In addition, an α_1 significantly different than zero would indicate that monthly average returns have changed post crisis. A positive α_1 would indicate an increase in average monthly returns. Conversely, a significant and negative α_1 would indicate a decrease in average monthly returns.

I utilize a variety of break dates to test for the consistency of the results. The break dates selected are all key markers or events that could signify a crisis. These dates include: December 2007, the date the National Bureau of Economic Research defined as the beginning of the U.S. recession, September 2008, the month of the collapse of Lehman Brothers, March 2009, the bottom of the U.S. stock market, and finally June 2009 the month GM declared bankruptcy. An additional specification excludes a window of turbulence from August 2008 to August 2009. All specifications use robust regressions.

Finally, I use OLS regression analysis to isolate β in four consecutive 20-month periods. This final step will ensure that the chosen break dates are not misinforming possible changing trends over time.

VI. Data

This study tracks the returns for 4 microfinance funds from Jan. 2005 to Jan. 2012, a period of 85 months. The returns are calculated from the monthly net asset values (NAV) and are regressed against the returns of four benchmark market indices, two of which are equity indices, and two of which are fixed income indices. Net asset

value is simply the value of (total assets – liabilities) divided by the total number of shares. The return formulas for the MIVs and the market indices are:

$$r = (\text{NAV}_t - \text{NAV}_{t-1})/\text{NAV}_{t-1} \text{ and}$$

$$r = (\text{index}_t - \text{index}_{t-1})/\text{index}_{t-1},$$

respectively, where t refers to time (or months). All data dating back to 2005 are available through Bloomberg Financial Services and are collected on a monthly basis. In benchmarking returns relative to the global equity market, the Morgan Stanley Capital International World Index (MSCI) is used. Data for this index were downloaded from the MSCI website. The global fixed income benchmark index used is the Market iBoxx USD Overall Index (downloaded from Bloomberg). An alternative set of benchmark indices are focused only on emerging market asset classes. The indices used are the MSCI Emerging Markets Diversified Financials Index (downloaded from the MSCI website) and the emerging markets fixed income index will be represented by the J.P. Morgan Emerging Market Bond Index Plus (downloaded from Bloomberg). The emerging markets fixed income and equity indices are necessary in order to evaluate differences between MIV returns and returns from markets in which many of the MIV funds are invested in (i.e., MIVs are largely invested in MFIs in emerging markets, yet we are interested in the resiliency of the MIVs specifically, and not that of emerging markets). It is also important to distinguish between equity and fixed income. While it is standard practice to benchmark against equity markets, MIVs are mostly composed of debt, and therefore fixed income indices may be more appropriate. These are the same four benchmark indices selected by Krauss and Walter (2009), Janda and Svarvoska (2009) and Di Bella (2011).

To calculate risk premiums, the proxy for the risk-free rate chosen was the 4-week U.S. Treasury bill rate, which was obtained through the U.S. Department of the Treasury on-line Interest Rate Statistics page. The 4 MIV funds were selected from among a larger number of MIV funds listed in the Microfinance Investment Vehicles Universe Database because data for these funds are publicly available and are updated on a monthly basis. Some of these funds are updated bi-monthly, however, data for only the last day of every month were compiled in order to have consistent measures across all funds. Organizing the data such that only one data point was observed per month was done manually in Excel, as were all NAV and returns calculations.

The 4 selected microfinance funds are of interest to this study because they are “characterized by a high level of commercialization,” or in other words, are ones that “commercially oriented investors not familiar with the microfinance field may consider.”³² The results of this paper will be most useful to investors in developed markets who wish to diversify their portfolios, and therefore it is important to select investments in which we can expect these investors will choose to invest.³³ The funds are managed by top financial institutions such as Credit Suisse and Rothschild, and are very well known across developed-world investors; for example the Dexia Micro Credit Fund is the world’s largest commercial microfinance investment fund. The funds include the ResponsAbility Global Microfinance Fund, the Dual Return-Vision Microfinance Fund, the Dexia Micro Credit Fund, and the Edmond de Rothschild- St. Honore Microfinance Fund.

³² Janda & Svarovska, 5

³³ Janda & Svarovska, 28

VII. Results

Results of the different specifications are presented in tables 1-6. The first four tables differ by the chosen break point. For each of these tables, column 3 provides the estimated market risk, or β , of the particular MIV. Column 4 presents estimates of post break differential level of market risk. The overall post-crisis market risk is thus $(\beta + \beta^*_{\text{post}})$. Similarly, column 1 presents estimates of α , or the monthly average returns before the break, and column 2 presents the estimate of the post break differential average market return. The overall post crisis average monthly return is $(\alpha + \alpha_1)$.

Using the break date of December 2007, or the date the National Bureau of Economic Research (NBER) first defines the United States to be in recession, β^*_{post} is negative and significant for MIV of ResponsAbility when regressed against the overall market return, iBoxx. This indicates that after the break ResponsAbility is becoming less correlated with global fixed income markets. $\beta + \beta^*_{\text{post}}$ however, sum nearly to zero, indicating adding this fund to an investor's portfolio that had any correlation with the overall market would reduce the overall portfolio β . In the regression for Dexia the estimate of β^*_{post} value is also negative and significantly different than zero. Results are inconsistent however, with Dual-Return, where there are positive and significant β^*_{post} values for iBoxx, MSCI World, and MSCI Emerging benchmarks, however only 3 data points are available before the break date, and therefore caution should be used when interpreting these results. The estimates of α_1 , i.e., the post crisis alpha, for all funds are positive and significant, meaning that the monthly average returns for the selected MIVs are outperforming that of their benchmark indices after December 2007. Although this represents an improvement for investors, when added to the negative and significant α 's

from the pre-crisis period, monthly average returns sum nearly to zero in all cases.

The next break date is the collapse of Lehman Brothers, or September 2008. J.P. Morgan has 9 months of data before this break date, which will serve as a sufficient amount for purposes of analysis and estimates using this as the market index are included for this and later break points. Negative and significant results for $\beta + \beta^*_{\text{post}}$ are again present for ResponsAbility and Dexia when regressed against iBoxx. Again, $\beta + \beta^*_{\text{post}}$ sum nearly to zero for both cases. Now that there are 12 months of data for Dual-Return we are seeing not as large (however still positive and significant) β^*_{post} values. This provides some support that Dual-Return is becoming more correlated to both global fixed income markets and equity markets. These β^*_{post} values will have a significant impact on the portfolios of investors as a whole, since β for emerging and global equity markets is positive (meaning they will not cancel out) and because β^*_{post} for iBoxx is much larger than β , such that the overall β will be positive and close to 1. No significant results are seen with St. Honore for β^*_{post} sum, meaning that after the break date, the correlation of St. Honore with its benchmarks is not significantly different from its earlier level. The estimate of α_1 for all funds (and for all benchmarks except for St. Honore against the fixed income markets) with the exception of Dual-Return are positive and significant, although again seem to sum nearly to zero. Estimates for α_1 for Dual-Return are not significant, meaning they are not significantly different from zero before or after the break date.

The next break date is the bottom of the stock market, or March 2009. Using this break-date, different results begin to emerge. Estimates for β^*_{post} for ResponsAbility (when regressed against world and emerging market equity benchmarks) is positive and

significant, meaning ResponsAbility is becoming more correlated with equity markets post-crisis. The overall effect however is negligible, since $\beta + \beta^*_{\text{post}}$ sum nearly to zero. Dexia too experiences a positive and significant β^*_{post} value when regressed against iBoxx, indicating that Dexia is becoming more correlated to the world fixed income market. Yet again, the overall effect is negligible, since $\beta + \beta^*_{\text{post}}$ sum nearly to zero. When now reviewing 18 months of Dual-Return data, significance for the β^*_{post} values for all benchmarks disappears. This indicates that the few months of data before the previous two break dates were anomalies to the overall stability of this fund. All significant α_1 values are positive. Nonetheless, all nearly sum to zero. Using this break date, the correlation between MIVs and fixed income and equity benchmarks are in some cases increasing, however MIVs are still good for diversification purposes since the overall β hovers around zero.

The last break date to be analyzed is when GM files for bankruptcy, or June 2009. Here, no β^*_{post} values for any of the funds are significant. This indicates that MIVs are not showing a correlation to its benchmarks (post crisis) that are significantly different from zero.

To deal with the possibility that funds may be acting differently during the crisis, but return to their normal, low-correlated properties once the storm has passed, I remove a window of turbulence from August 2008 to August 2009 to see if different results emerge. The window of turbulence was selected by tracking the volatility of the four funds over time on a line graph (see graph 1 in appendix). The period with most volatility therefore, was removed. Dual Return, with only 11 data points before the window of turbulence begins, is excluded from the analysis. For comparison sake, the

window of turbulence analysis limits the sample across the three funds compared; ResponsAbility, Dexia and St. Honore all have 33 data points before the window of turbulence begins and 29 points after the window closes. Both ResponsAbility and Dexia are showing negative and significant β^* post values when regressed against the world fixed income markets. This indicates that these funds are becoming less correlated with the world fixed income market, however the overall β in both cases sums nearly to zero. Other than these two cases, we are not seeing significant results in the post period, indicating that MIVs are not becoming more correlated to markets after the crisis to a degree to raise concern among investors. Estimates for α_1 are positive and significant in all cases with the exception of St. Honore with J.P. Morgan and iBoxx, indicating that monthly average returns are getting better after the crisis and are outperforming the benchmark indices. However, α and α_1 are very small and sum nearly to zero in all cases.

At this point of the analysis, it seems as if MIVs continue to be a good diversification tool, and in some cases have even become less correlated to fixed income markets after the crisis. These results are consistent amongst all break points and also when a window of turbulence is removed. It is also apparent that MIVs are generating a higher monthly average return—and in most cases outperforming the returns of the benchmarks—after the crisis. Dual-Return proves to be the only exception to these overall trends. Because the latest break date in which positive and significant results for Dual-Return are observed—the break date being that of the collapse of Lehman—has only 12 months of data (or 12 observations) preceding it, I decide to exclude Dual-Return from the analysis. The other three funds that have approximately four years of data before

the last break date and show consistent results with one another, suggesting that perhaps Dual-Return is not reflective of MIVs and is an anomaly.

A new interpretation of results emerges however after running simple OLS regressions for ResponsAbility, Dexia, and St. Honore over four consecutive 20-month periods (Table F). Focusing on the β values in each period, it becomes evident that trends are inconsistent during the second period, or from September 2006 to May 2008. When ResponsAbility, Dexia, and St. Honore are regressed against the world fixed income benchmark (iBoxx), β values are large (.625, .627, and .872 respectively) and are also significant at the 1% level. The first period of analysis, or January 2005 to August 2006 reveals moderately low correlation for iBoxx (around 20%) and in the second and third periods, or from June 2008 to January 2010 and from February 2010 to January 2012, β values are nearly zero and in some cases negative. This suggests that MIVs did in fact become more correlated to world fixed income markets during the financial crisis. They did however, become an even better diversification tool immediately following the crisis (as observed in the third period). MIVs since the financial crisis have a nearly zero correlation with the four observed benchmark indices.

VIII. Conclusions

MIVs do not seem to provide diversification value throughout the current crisis, as argued by Janda and Svarvosksa, and (if acting as a proxy for the microfinance industry) are becoming more vulnerable to financial turmoil as suggested by Di Bella. During the financial crisis the extent to which MIVs follow trends in global fixed income markets, i.e., the market beta, increases approximately three-fold compared to what was

observed before the crisis. After the crisis, however (i.e. after May 2008), β values are nearly zero and in some cases negative. Results from the four-period OLS regression analysis suggest that an event study analysis was an inappropriate method for detecting the short-term and drastic jumps in β values during the financial crisis. The event study did not reveal the increasing correlation because an event study assumes the “before” period tells a consistent story, which is distinct from the consistent story observed in the “after” period. In reality however, the story of MIVs throughout the financial crisis can be better explained in a series of three periods.

MIVs originally displayed low correlation to global fixed income markets (a β value of approximately 0.2). During the crisis MIVs became very correlated (β values from 0.63 to 0.82) to global fixed income markets. Shortly following the crisis β values hovered around zero. MIVs therefore came out of the crisis as an even stronger diversification tool.

Although previous studies in related literature have used an event study analysis approach, results from this paper suggest that event study analyses—which typically track data over a span of five years—are not the best methodological approach to detect short-term and drastic changes. Because the β values were averaged across only 2 periods (as opposed to four) and because an event study analysis assumes a “before and after” story, we were unable to see the full story through this approach.

In conclusion, MIVs will appeal to investors seeking diversification in the long run. MIVs displayed great resiliency (and became even less correlated to global fixed income markets post crisis), reinforcing the idea that micro-borrowers are “flexible

entrepreneurs.” It is likely that micro-borrowers were able to successfully shift their business models in order to adapt to the changing economic climate.

IX. Tables

Table 1: Robust results for break date 12/07: NBER defines U.S. as in a recession					
		I	II	III	IV
MIV	Benchmark	α	α^* post	β	β^* post
ResponsAbility	J.P Morgan				
	iBoxx	-0.02768***	0.02635***	0.2458***	-0.2257***
	MSCI World	-0.0346***	0.0335***	0.03773	-0.0269
	MSCI Emerging	-0.03567***	0.03443***	0.0086	-0.004
Dual-Return	J.P Morgan				
	iBoxx	-0.04367***	0.03844***	-1.256***	2.074***
	MSCI World	-0.02834***	0.02896***	-0.4406***	0.8437***
	MSCI Emerging	-0.01162***	0.01045**	-0.1584***	0.4457***
Dexia	J.P Morgan				
	iBoxx	-0.0269***	0.0248***	0.2622***	-0.2076***
	MSCI World	-0.0334***	0.03155***	0.0725	-0.04814
	MSCI Emerging	-0.0352***	0.03329***	0.02634	-0.0098
St. Honore	J.P Morgan				
	iBoxx	-0.0337***	0.02934***	0.02621	0.25168
	MSCI World	-0.03415***	0.0318***	0.0148	0.1151
	MSCI Emerging	-0.03403***	0.0309***	0.0342	0.02577

J.P. Morgan data were not included because data for this index begin Jan. '08, which after the break date begins. In all tables * indicates statistical significance at the 1% level, ** indicates statistical significance at the 5% level, and * indicates statistical significance at the 10% level.*

		I	II	III	IV
MIV	Benchmark	α	α^*_{post}	β	β^*_{post}
ResponsAbility	J.P Morgan	-0.01431***	0.01545***	-0.1936	0.17704
	iBoxx	-0.0189***	0.0201***	0.4112***	-0.4281***
	MSCI World	-0.03148***	0.0326***	-0.0179	0.0141
	MSCI Emerging	-0.0315***	0.0326***	-0.02904	0.02378
Dual-Return	J.P Morgan	-0.0008	-0.0013	0.2884**	0.4498
	iBoxx	-0.0143	0.0079	-0.155	0.9999*
	MSCI World	-0.0099	0.01022	0.04819	0.3767***
	MSCI Emerging	-0.0108	0.00934	0.02425	0.2779***
Dexia	J.P Morgan	-0.01039***	0.01071***	0.05249	-0.04216
	iBoxx	-0.0183***	0.0185***	0.4321***	-0.4157***
	MSCI World	-0.02999***	0.03303***	0.0275	-0.0201
	MSCI Emerging	-0.03103***	0.03135***	-0.008	0.01372
St. Honore	J.P Morgan	-0.00866	0.00565	-0.09912	0.3295
	iBoxx	-0.0128	0.00844	0.4614**	-0.186
	MSCI World	-0.02688***	0.02479***	0.0144	0.1201
	MSCI Emerging	-0.02775***	0.02522***	-0.01516	0.07835

		I	II	III	IV
MIV	Benchmark	α	α^*_{post}	β	β^*_{post}
ResponsAbility	J.P Morgan	-0.006***	0.007***	-0.0293	0.0123
	iBoxx	-0.0232***	0.0245***	0.1358	-0.1542
	MSCI World	-0.0327***	0.0338***	-0.1439**	0.1433**
	MSCI Emerging	-0.0293***	0.0304***	-0.0756**	0.0732**

Dual-Return	J.P Morgan	0.0021	-0.0063	0.6868***	0.2353
	iBoxx	0.0005	-0.0095	0.7919***	0.1737
	MSCI World	0.0158	-0.0187	0.53***	-0.1278
	MSCI Emerging	0.0048	-0.0072	0.3244**	-0.0692
Dexia	J.P Morgan	-0.0057***	0.0057***	0.0067	0.0126
	iBoxx	-0.0222***	0.0219***	0.1698	-0.1404
	MSCI World	-0.0314***	0.0313***	-0.1134**	0.1299**
	MSCI Emerging	-0.0286***	0.0285***	-0.0554	0.0655
St. Honore	J.P Morgan	-0.0114	0.0115	0.1595	0.0689
	iBoxx	-0.0187**	0.0189	0.2806*	-0.1271
	MSCI World	-0.0235***	0.02516***	0.0852	-0.0543
	MSCI Emerging	-0.0261***	0.0286***	0.0318	-0.0473

Table 4: Robust results for break date 6/09: General Motors files for bankruptcy					
		I	II	III	IV
MIV	Benchmark	α	α^*_{post}	β	β^*_{post}
ResponsAbility	J.P Morgan	-0.0047***	0.0059***	-0.0105	-0.0011
	iBoxx	-0.0208***	0.02212***	0.1924	-0.2049
	MSCI World	-0.02596***	0.0271***	-0.0139	0.0168
	MSCI Emerging	-0.02575***	0.0269***	-0.0121	0.0116
Dual-Return	J.P Morgan	0.0032	-0.008	0.6881***	0.2778
	iBoxx	0.0005	-0.0107	0.76825***	0.2839
	MSCI World	0.0078	-0.01101	0.4159***	0.0065
	MSCI Emerging	0.00037	-0.0026	0.2785***	-0.0177
Dexia	J.P Morgan	-0.0042***	0.0042**	0.0254	-0.01375
	iBoxx	-0.01989***	0.01966***	0.2243*	-0.20108
	MSCI World	-0.02502***	0.02489***	0.01054	0.0049
	MSCI Emerging	-0.02527***	0.02518***	0.0048	0.0047
St. Honore	J.P Morgan	-0.0065	0.0066	0.233	-0.1493
	iBoxx	-0.01437*	0.01543	0.3839**	-0.4302
	MSCI World	-0.01705***	0.01794*	0.2042	-0.2401
	MSCI Emerging	-0.0219***	0.02302***	0.09662	-0.1586

Table 5: Removing a window of turbulence: 08/2008-08/2009					
		I	II	III	IV
MIV	Benchmark	α	α^*_{post}	β	β^*_{post}
ResponsAbility (33/29)	J.P Morgan	-0.0143***	0.0156***	-0.1936	0.1907
	iBoxx	-0.01646***	0.01768***	0.4952***	-0.4894***
	MSCI World	-0.0334***	0.0346***	-0.0316	0.0367

	MSCI Emerging	-0.0334***	0.0347***	-0.0445	0.04742
Dexia (33/29)	J.P Morgan	-0.0104***	0.0102***	0.05249	-0.04316
	iBoxx	-0.0164***	0.0161***	0.5036***	-0.4834***
	MSCI World	-0.0319***	0.03168***	0.01576	0.0006
	MSCI Emerging	-0.03304***	0.03283***	-0.0224	0.03303
St. Honore (33/29)	J.P Morgan	-0.0087	0.0062	-0.09912**	0.2307
	iBoxx	-0.0111	0.0096	0.4891	-0.5429
	MSCI World	-0.0258***	0.0239**	0.02756	-0.0522
	MSCI Emerging	-0.0269***	0.0252***	-0.0089	-0.02965

		I	II	III	IV
MIV	Benchmark	1/05-8/06	9/06-5/08	6/08-1/10	2/10-1/12
ResponsAbility	J.P. Morgan	n/a	-0.0022	-0.0149	0.0049
ResponsAbility	iBoxx	0.2028	0.6251	-0.0139	0.0074
ResponsAbility	MSCI World	0.0649	0.0527	-0.0047	0.0067
ResponsAbility	MSCI Emerging	0.0249	-0.0173	-0.0032	0.0049
Dexia	J.P. Morgan	n/a	0.0585	0.0232	0.0081
Dexia	iBoxx	0.2262	0.6267	0.0319	0.0205
Dexia	MSCI World	0.0809	0.0837	0.0153	0.0185
Dexia	MSCI Emerging	0.0328	0.0084	0.0134	0.0128
St. Honore	J.P. Morgan	n/a	-0.021	0.2409	0.1528
St. Honore	iBoxx	-0.3534	0.8718	0.3257	-0.0315
St. Honore	MSCI World	-0.1061	0.1478	0.2305	-0.0626
St. Honore	MSCI Emerging	-0.0011	0.0155	0.1326	-0.0805

X. Graphs

Figure 1: Monthly average returns for MIVs

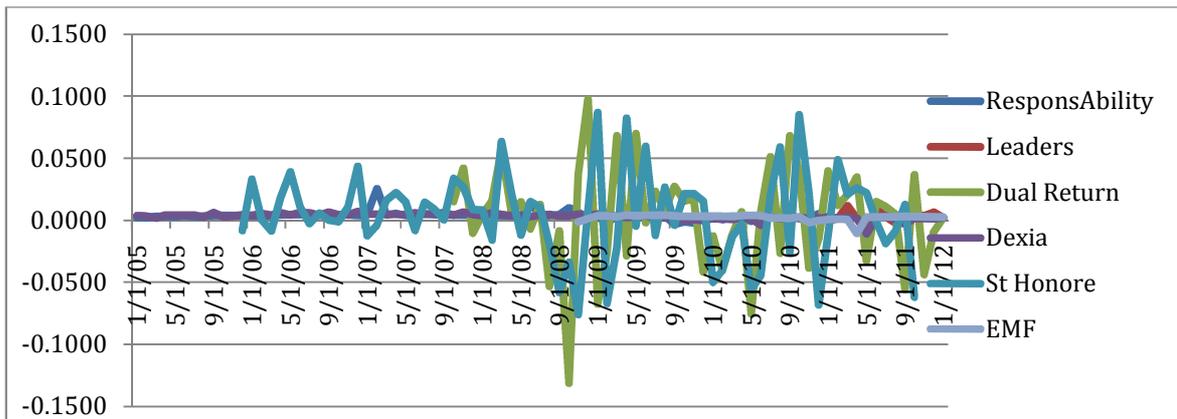


Figure 2: Monthly average returns for the benchmarks

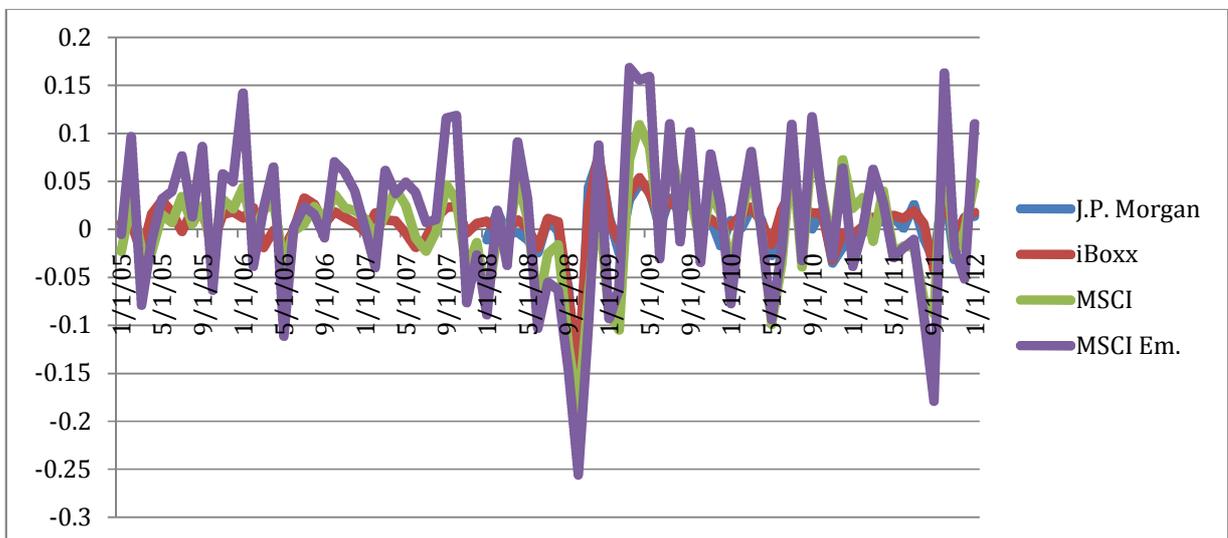


Figure 3: Monthly average returns for MIVs with MSCI World Equity

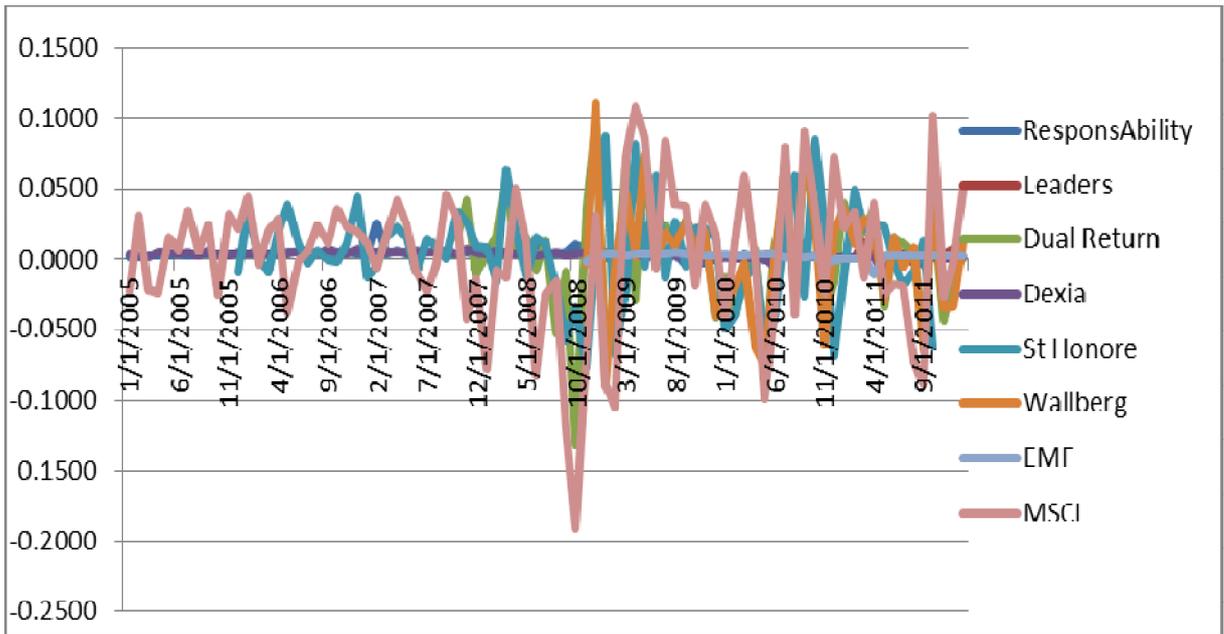


Figure 4: Monthly average returns for responsAbility and Dexia with MSCI World Equity

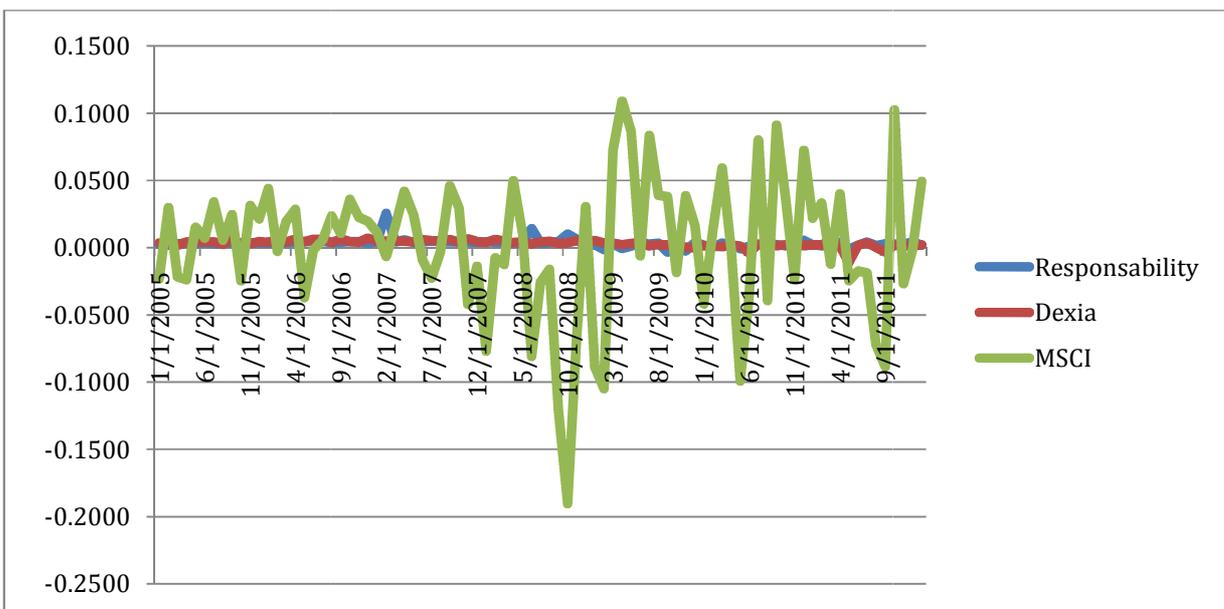
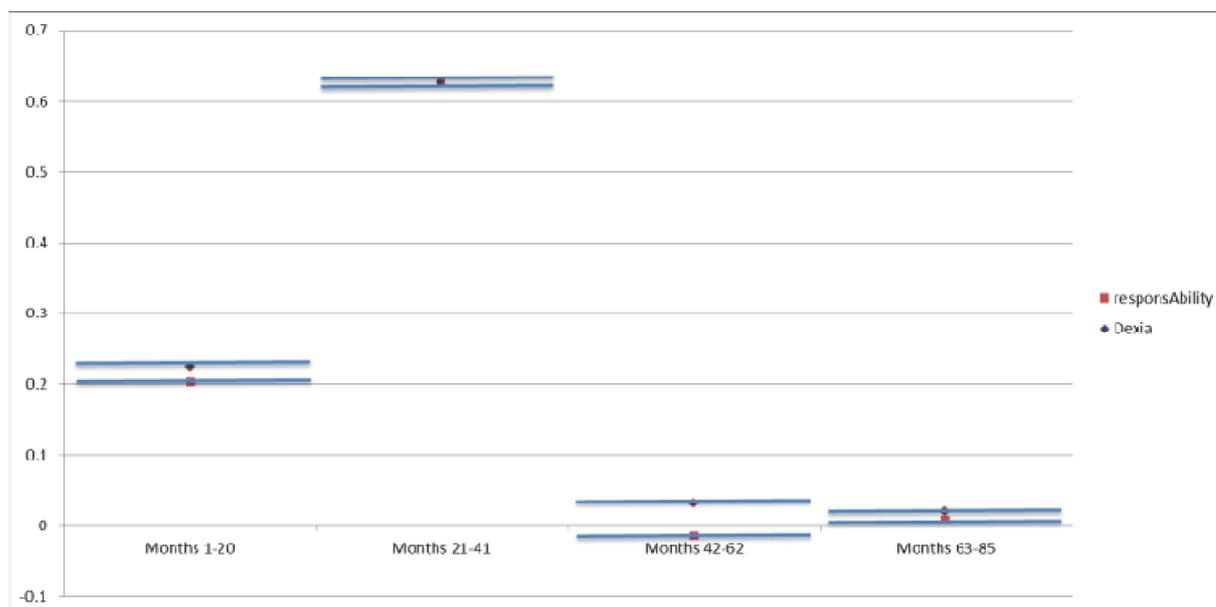


Figure 5: Graphing the beta values of responsAbility and Dexia over four 20 month periods



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