

STUDY OF INVESTOR TENDENCIES THROUGH NET NEW CASH FLOWS TO MUTUAL FUNDS

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ABSTRACT

Credit plays an important role not just for money creation but also satisfies the regular needs of individuals. But this credit limit when goes unchecked and can create problems for an economy. In United States, the credit extension went out of control and led to the financial crisis of 2008. However, the financial crisis affected investment tendencies of different class of investors through fluctuations in net new cash flow to the equity and bond funds. The two main factors that determine the investor tendencies are risk and return. We investigate the impact of financial crisis in the US on financial markets in India by regressing S & P index on Sensex. We find that financial markets in India are affected by the crisis, however not to a greater extent.

KEYWORDS: *Credit, financial markets, employment generation, investment*

INTRODUCTION

Banks play a major role in an economy. The money deposited in banks changes hands through the multiplier effect. Adequate supply of credit in an economy not only ensures sufficient supply of money in addition to providing a stimulus for economic growth and development. For instance, credit is mainly used to start or expand businesses, which in turn is a major source of employment generation in the economy. But this credit limit when goes unchecked can be a source of serious macroeconomic problems. In the United States, the amount of money given to the individuals as credit went out of control which led to the financial crisis of 2008.

Mortgage brokers, who were the middle men, determined access to credit, passed on the responsibility for those loans on to others in the form of mortgage backed assets (after taking a fee for themselves originating the loan). Exotic and

risky mortgages became commonplace and the brokers who approved these loans absolved themselves of responsibility by packaging these bad mortgages with other mortgages and reselling them as “investments.”

Thousands of people took out loans larger than they could afford in the hope that they could either flip the house for profit or refinance later at a lower rate and with more equity in their home – which they would then leverage to purchase another “investment” house.

CREATION OF A HOUSING BUBBLE

House prices in the United States rose dramatically from 1998 until late 2005, with rate of increase of prices much greater than the rate of increase of average wages. Further support for a bubble comes from the ratio of housing prices to renting costs which rocketed upwards around 1999. The increase in housing prices was mainly due to increases in

demand during this period. One major reason for the housing bubble was INVESTOR SENTIMENT which increased the investors demand for houses & in turn housing prices. *Investor sentiment* corresponds to erroneous beliefs that investors have against some kind of objective benchmark. One possibility for this benchmark is the true fundamental value of the underlying asset, defined as the discounted sum of future cash flows and investment risks. Accordingly, there are two possibilities for why erroneous beliefs occur: individuals correctly use wrong information, or that they wrongly use correct information.

The FEAR & GREED INDEX (developed by *CNNMoney*) is a measure of investor sentiment and is an indicator of the conditions of market demand and supply in the financial market. The Fear Greed Index runs on a scale from zero (being the cheapest) to hundred (the most expensive). The lower the level of the FGI, higher are the returns that one can expect in the future, higher the FGI, lower are the expected returns. It is based on the premise that excessive fear can result in stocks trading well below their intrinsic values, while unbridled greed can result in stocks being bid up far above what they should be worth.

LITERATURE REVIEW

Our work is an extension of Manconi et al (2012) which focuses on the role of institutional investors in propagating the crisis. This paper elaborates the transmission mechanism that explains contagion of the crisis from securitized bond market to corporate bond market. Manconi et al (2012) examine how one asset class (securitized bonds) that experienced extreme market turmoil affected the portfolio decisions of institutional investors. Together, their findings show that mutual funds with high liquidity needs that were left with exposure to the now illiquid securitized bonds played a significant role in spreading the crisis from the securitized bond market to the seemingly unrelated corporate bond market. Friewald et al (2012) highlight the rapidity and degree to which both liquidity and credit quality of several asset classes deteriorated during the crisis. Nielsen et al (2012) study of liquidity components of corporate bond spreads during 2005–2009 using a new robust illiquidity measure. Their results show that the spread contribution from illiquidity increases dramatically with the onset of the subprime crisis. Apart from these studies, Aragon and Strahan (2012) in their study on Lehman bankruptcy find that stocks held by these Lehman-connected funds experienced greater declines in market liquidity following bankruptcy than other stocks.

OBJECTIVE OF OUR STUDY

Motivated by existing literature, the objective of our study is to determine the extent to which financial markets in India are affected by 2008 financial crisis through its effect on investment behavior. Investor sentiment plays a significant role in international market volatility and generates return predictability of a form consistent with corrections of overreaction.

METHODOLOGY

To analyse changes in investment behavior, we introduce two variables- net new cash flow to equity funds and net new cash flow to bonds. Net new cash flow to equity funds indicates fresh investment in mutual funds comprising equity stocks. Similarly net new cash flow to bonds indicates amount of additional investment in mutual funds comprising less risky or even risk-free bonds in a particular time period. So we will

develop two models, one for equity funds and another for bond funds with the net new cash flow as the dependent variable.

The investment behavior of individuals depends mainly on two factors - risk and return. Expected returns are captured through the average stock price index, since the average current stock price is inversely related to expected returns for that stock (for a fixed expected price). This in turn implies that market sentiment, which is evident from the average stock price index helps us determine the trend of expected returns on equity. Further, risk in investment is captured through the volatility index which showcases variation in the average stock price index. Along with these two basic explanatory variables we have introduced the average home price index in the model. The idea is to capture direct effect of the housing bubble and its subsequent impacts on financial markets (especially equity and bond markets i.e. market for risky and riskless securities) via changes in investment behavior.

We have introduced a dummy variable capturing effects specific to a particular year. We also include interaction terms between time dummies and explanatory variables allowing for differential effect of these variables by time. Thus, our time dummy variable equals 1 for all observations from January 2008 to June 2009 (financial crisis period) and zero otherwise.

The model also contains one-period-lag of the dependent variable among the explanatory variables. Thus we have estimated an *autoregressive (dynamic) model* (Note that the sample period is adjusted to start at observation 2. This is because the first observation is “lost” when the lagged variable is added. So the estimation now uses N-1 observations).

We have run a time series regression for the period 2004-11 (8 years, including the crisis period 2008-09) using monthly data (so the number of observations is $12 \times 8 = 96$, but after introduction of lagged variable number of observations are left to be 95).

VARIABLES

The two dependent variables are as follows: Net New Cash Flow to Mutual Funds in Bond Funds and Net New Cash Flow to Mutual Funds in Equity Funds.

The data source for the two explanatory variables is the Investment Company Institute, 2012 Investment Company Factbook. Data for net new cash flow to equity funds is monthly data in billions of dollars. Data for net new cash flow to bond funds is also monthly data expressed as percentage of net new cash flow going to total net assets.

The explanatory variables are as follows: Volatility index : CBOE Volatility Index; Home price index: S & P Case-Shiller 20-City Home Price Index ; Stock price index : S & P 500 Stock Price Index (SP500) .

The data source for these variables is Federal Reserve economic data from Federal Reserve Board, Federal Reserve Bank of St. Louis. Daily data for Volatility Index and S&P500 is available, and have been averaged to obtain monthly estimates. The Case-Shiller Index is monthly data and is in form of index with January 2000 as the base year (January 2000 = 100). For graphs depicting trends in dependent and independent variables in appendix.

TREND ANALYSIS

If we analyze trends in the two stock price indices, we see interesting trends. S&P500 averaged in the range of 1100 points in the beginning of 2004 and in the boom period it

crossed 1500 points by end of 2007, i.e., a 36 percent increase in the index was observed over this four year period. After the crisis hit the US economy, the index reduced 50 percent reaching 750 points by the first quarter of 2009. It increased thereafter to 1100 points in 2010 and 1200 points in 2011.

For SENSEX however we see a different trend. The SENSEX was lowest at 5000 points in January 2004 reaching an unexpected high of 20,000 points by December 2007 which is a 300 percent increase over this period of four years. Thereafter, due to negative market sentiment developed by news of the crisis in US, the index dropped sharply to 8891 points in February 2009 but gained momentum crossing 15000 points mark by mid-2009. Thus (i) decline in the Indian stock price index was short-lived (ii) despite the decrease in index value it was well above the 2004 level unlike US. Please see graphs for SENSEX and S&P500 in appendix.

Model

B = Net cash flow to bond funds; E = Net cash flow to equity funds; V = Volatility index; C = Case-Shiller index; S = Stock price index

$B_{lag} = B_{t-1}$ where t is the month with January 2004 being t=0

$E_{lag} = E_{t-1}$ where t is the month with January 2004 being t=0

D = dummy for crisis period i.e. D = 1 for all months from January 2008 to June 2009

= 0 otherwise

Estimated Equation

$$B = a_1 + a_2.V + a_3.C + a_4.S + a_5.D.V + a_6.D.C + a_7.D.S + a_8.B_{lag} + a_9.D + e_1$$

$$E = b_1 + b_2.V + b_3.C + b_4.S + b_5.D.V + b_6.D.C + b_7.D.S + b_8.E_{lag} + b_9.D + e_2$$

where a₁- a₉, b₁-b₉ are the estimated coefficients and e₁, e₂ denotes the error terms respectively.

To determine the extent to which financial markets in India are affected by the financial crisis, we regress SENSEX (Stock Price Index for India) on S&P500 (Stock Price Index for US). We have used monthly average values of the two stock price indices from January 2004 to December 2011. The estimated econometric specification is:

$$\text{SENSEX} = \mu_1 + \mu_2.\text{SP500} + e$$

where μ_1 and μ_2 are estimated regression coefficients and e denotes the error term.

The estimated equation is:

$$\text{SENSEX} = 2315.603 + 8.864453.\text{SP500} + e$$

(3378.734) (2.760144)

(standard errors in parentheses)

As a robustness check, we re-run the regression dropping the intercept.

$$\text{SENSEX} = 10.73831.\text{SP500} + e$$

(.3766264)

(standard error in parentheses)

The coefficient of S & P 500 is statistically significant at all levels of significance. We thus conclude that SENSEX is determined by S&P500 index and hence Indian financial markets were affected by financial crisis in US.

CONCLUSION

We are able to assess changes in investor tendency with onset of the crisis in the Indian financial markets. The setback faced by the financial markets makes investors cautious about deciding their portfolio and affects direction of trade-off between risk and return. It is evident that when there is a downward trend in the financial market, and volatility is high, there is higher risk in equity funds *vis-à-vis* bonds which assure a certain return, so there is a shift of investments from equity funds to bonds. Moreover, individual investors generally prefer to keep their investments away from the financial market, since the span of market information available to them is narrow that makes them relatively risk averse. In the light of the econometric analysis we observe changing investment tendencies of different class of investors through fluctuations in net cash flows to equity and bond funds.

Also, for India it has been observed that the financial crisis that emerged in US did find its way in Indian economy, but the degree of severity was comparatively low. Rather, varied influences could be observed over different sectors of our economy with some of them remaining insulated to the crisis whereas some being drastically affected by it. There was some impact on the financial markets in short run but there was quick recovery, reason for which might be the artificial creation and intensification of financial market crisis for grossing the speculative gains.

On the whole, it can be concluded that the two main factors that determine investor tendencies are risk and return, explained by volatility index and the stock price index, which are found to significantly explain changes in cash flows to equity and bond funds; also the house price variation appears to have direct impact on the investor tendencies, since the Case-Shiller house price index could significantly explain the changes in cash flows to the funds.

POLICY RECOMMENDATIONS (SUGGESTIONS)

The purpose of any policy in the short run is twofold:

1. Dampen bank runs 2. Asset purchase and recapitalization.

Policies should be directed towards decreasing leverage of the financial system which can be done via regulation and through use of monetary policy. However, most tax rules favor such leverage, from tax deductibility of mortgage interest payments by households, to tax deductibility of interest payments by firms. A major task of regulators will be to monitor, and, if needed, react to increases in systemic risk.

Immediate responses to the crisis include guarantees on deposits and interbank loans, provision of liquidity to financial institutions ('lender of last resort' facilities) and forbearance on meeting regulatory requirements. An essentially private sector-based financial system, characterized by sufficient competition but with strong oversight and sufficient capital adequacy, remains the best option for developing countries. Nationalizing banks may be a short-term emergency measure to prevent banks from failing, however, it creates difficulties in long term such as moral hazard, opportunities for rent-seeking, and distorted lending, all of which compromise economic efficiency. Long term response involves reforming the international financial system.

In the Indian context, we have focused on gradual opening of financial and external sectors. Financial markets enable efficient channeling of domestic savings into productive uses and, by financing the overwhelming part of domestic investment, are supporting domestic growth. These

characteristics of India’s external and financial sector management coupled with ample foreign exchange reserves and underlying strength of the Indian economy reduced susceptibility of the Indian economy to global turbulence.

APPENDIX



Fig. 1 Volatility Index



Fig. 2 Case-Shiller Home Price Index



Fig. 3 Standard and Poor’s 500 Index

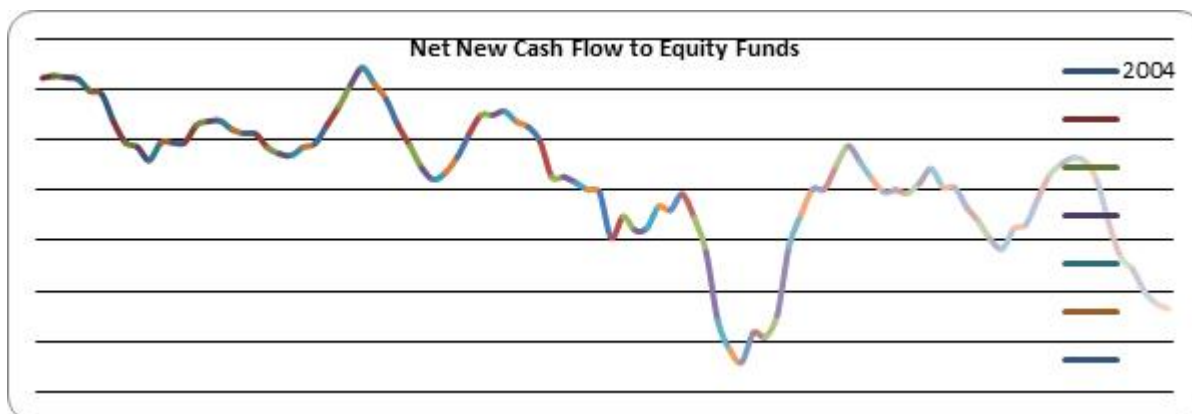


Fig. 4 Net New Cash Flow to Equity Funds

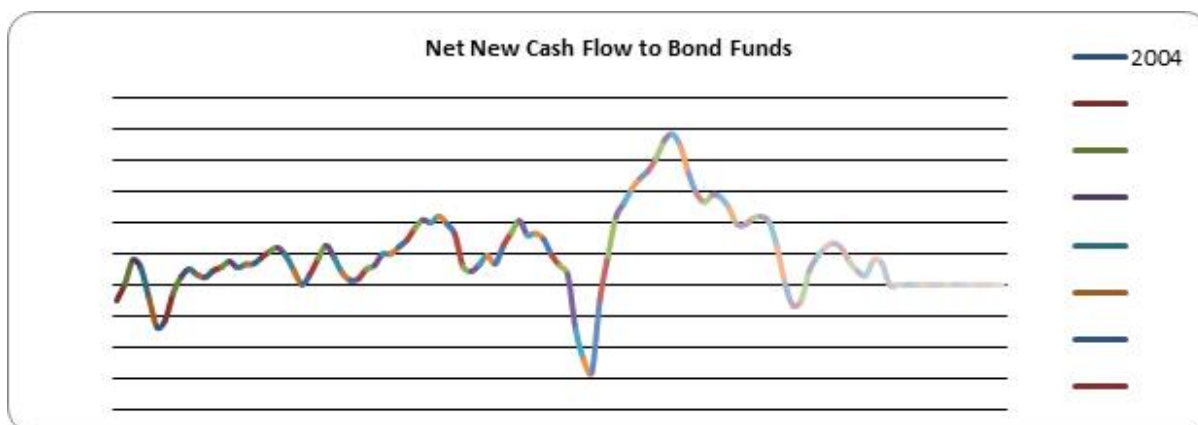


Fig. 5 Net New Cash Flow to Bond Funds

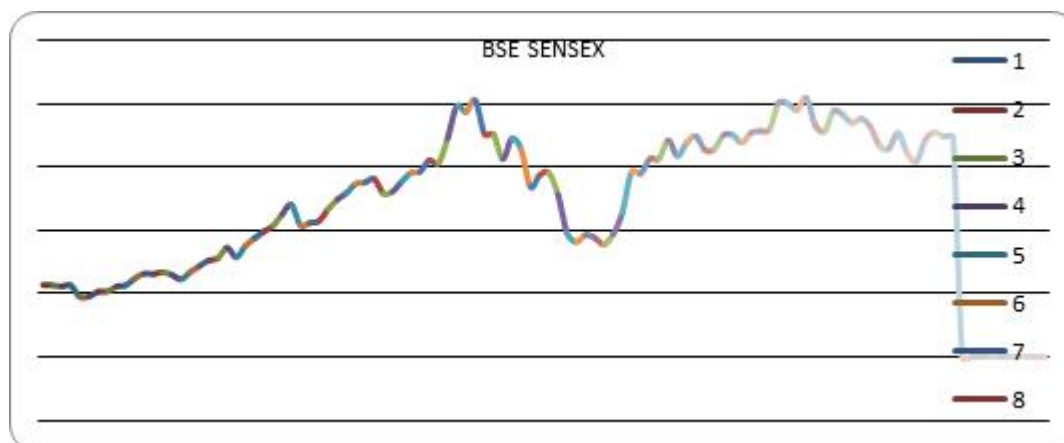


Fig. 6 BSE SENSEX

REFERENCES

1. Alberto Macnani, Massimo Massa, Ayako Yasuda, (2012) "The role of Institutional Investors in propagating the crisis of 2007-2008", Volume 104, ISSUE 2.
2. George O. Aragon and Philip E. Strahan, (2012). "Hedge funds as liquidity providers : Evidence from the Lehman bankruptcy", Journal of Financial Economics.
3. Jens Dick-Nielsen, Peter Feldhutter and David Lando, (2012). "Corporate bond liquidity before and after the onset of the subprime crisis", Journal of Financial Economics, Volume 103, Issue 3.