

An Investigation into the Effects of Monetary Intervention on Financial Markets

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Abstract:- The principles that govern the financial markets and goods market are somewhat identical. Based on demand supply, constant exchanges take place in both the markets. In a way which we view and understand the goods market, the same approach is being used for understanding financial markets wherein the securities listed on secondary market are existing goods or existing supply and the issue of new securities in form of IPOs are new goods which shall increase the overall supply of financial goods in the secondary market. Now, changes in monetary policy of the Central bank can determine the supply of money which can determine the velocity or volume of money that revolves into financial markets and may impact the overall prices of existing financial goods and such phenomena can influence entry of new financial goods in the form of IPO'S. We try to study the impact of changes in monetary policy of the Central Bank on financial markets and how the economic outcome created by changes in monetary stance influences entry of new financial goods or issue of new securities (IPOS).

I. INTRODUCTION

Financial economics has come a long way since it's Nobel origins from the efficient market hypothesis, to a system which is characterized with uncertainty, being unstable, unpredictable, Economists and statisticians have developed sophisticated models with its more simple character of random walks and Price movements being normally distributed to.

Them being modified upon empirical evidence suggesting that price movements aren't normally distributed, therefore we now have financial models with long-tailed distributions and volatility clustering have been introduced to overcome problems with the realism of the above "classical" financial models; while jump diffusion models allow for (option) pricing incorporating "jumps" in the spot price. Risk managers, similarly, complement (or substitute) the standard value at risk models with historical simulations, mixture models, principal component analysis.

These new incorporations have been remarkably useful, further our precision of predictions have reach new heights with the introduction of advanced techniques from statistical mechanics but what we have gained in precision seems to have been lost in wholesomeness, we can predict to a certain degree what the price and return of an asset will be in future time, yet since that prediction is based on the information incorporated into the models, the models run on a static basis until new information are available which results in the fact that a downturn of the market will only be signaled after considerable value has already been lost.

This further results in the fact that huge amounts of important financial capital is lost, investors have to suffer huge losses in many cases and finally the policy conclusion of the central bank or the government often gets misplaced due to the inadequate understanding of how financial markets work.

The widely accepted empirical evidences from our field demonstrates that price movements are not random, it implies that there is a certain causal relationship between different phenomenons on the market that shape market outcome, although it merely does not suffice to say that the apple falls on the ground, it must be shown how and why the apple falls on the ground, thus it is our fundamental role as economists to understand and demonstrate how market outcomes come to be so that we can inform both the Government's policy and practical market participants in a better manner.

This is the central question we seek to address through our paper. We argue in our paper for an analytical apparatus which not only demonstrates how certain financial market outcomes take place but also establishes its equivalence to the goods Market to gain a more holistic understanding of how the economy works.

II. INTRODUCTORY THEORETICAL EXPOSITION

Our choice of financial instrument will be shares of public or private corporations, We look at them as goods, we differentiate between segments of its markets, The primary market where new IPOs are first issued is viewed as new goods, where as the secondary markets and it's shares will be looked at goods already produced or exist in the market, which just exchange hands(Through electronic transfer). We draw a paralence of the financial markets as the goods Market, where again we differentiate between goods already produced, i.e goods produced and being sold on the markets, and new goods which are produced when higher demand occurs.

This way of characterization is beneficial for our study as it allows us to draw and highlight the equivalence relationship which exists between both the markets and the principles in which it operates.The reality of such characterization is left to the reader, although we would argue that shares are goods in the same way as any other tangible goods sold on the Market.

III. WHY SHARES ARE ALSO GOODS

The function of any good is in relation to the need it satisfies, as long as there is a need, the object which satisfies the need is a good.

A box of pencils is good only because there is demand for pencil, which is dependent on the need for it, if suppose tomorrow there is a ban on the use of writing on paper or anything else except on digital platforms, The good nature of pencil will be lost because no one would be needing it anymore to write, in a similar sense, Financial shares serve a purpose, a need to its investors, The investors has a certain amount of cash balance that he/she has the choice to either spend on consumption or save, when the economic agent decides to save his income, he prefers future consumption over present consumption and he uses the instrument/object shares to store his value or he may want to earn higher profits, Whichever maybe the case, The object shares serves a function of satisfaction of a need and thus becomes a good.

IV. FINANCIAL MARKETS : The Theory behind price movements

We would be using the quantity theory of money approach with its transmission mechanism for our investigation. We start our investigation of the financial markets in a state of Equilibrium', which implies that there is constant exchanges going on in both the financial markets and the goods Market, based on the demand and supply of the goods (Normal economic goods in goods Market and shares in financial markets).

Then we have an intervention in the financial market, let's suppose the central bank expands the money supply in the economy, through either quantitative easing, open market operations of a low rate of interest. Thus we have money supply increasing, in $MV = PY$, money i.e. M increases, as money increases the cash balances with the investors who get the money increase, and since we know through both Keynes's income and consumption hypothesis which says the increase in consumption will always be less than the increase in income and Friedman's permanent income hypothesis, which bases consumption as a function of permanent income, thus consumption will not increase with an immediate increase in cash balances, Both the well established results imply a certain part of income will be saved, This savings will then go through investors directly on the financial markets or indirectly through banks who may use it to purchase assets, this creates an additional demand for shares, but this additional demand for shares cannot be immediately full-filled through new IPOs or new shares, what's left then is the shares which are already on the secondary market, thus the money goes towards chasing of shares on the secondary market, in $MV = PY$, As M increases, Since Y is fixed in form of new shares or unsubscribed shares, $P = (M/Y)V$, with Y fixed the prices of already existing shares increases as the velocity of transactions (The number of daily transactions) on the financial markets, the price level keeps on increasing, This creates a temporary boom in the secondary market, this phenomenon is always widely witnessed every time the central bank announces any kind of easy money policy.

As time passes, The Corporations(supplies of shares) becomes aware of the booming secondary market, and if

they decide to increase their capitalization, they start the procedure of their listing on the primary market, and eventually supply additional or new shares in the primary market, this implies in $MV = PY$, $P = (M/Y)V$, Y also starts increasing, As Y starts increasing a significant portion of the money currently going towards the secondary market now goes towards chasing these new goods(new/additional shares), This gradually results in tampering of the buoyancy of the secondary markets, and the amount of decrease of price level on the secondary market depends on the amount of money which goes on the primary markets from the secondary markets, This results in the formation of a new Equilibrium' on both the financial markets.

V. RESEARCH OBJECTIVES

- To Understand the effect of Monetary and Fiscal Policy on creation of financial goods.
- Policy Suggestion for dealing with market downturns resulted from implementation of Monetary and Fiscal Policy.

A. Research Methodology:

To identify the impact of Monetary policy and Fiscal policy on BSE and NSE we will proceed with Usage of historical changes in policy rates to determine impact on Sensex and Nifty, then use increase in Sensex and rbi policy rates to map increase in no of IPOs.

To identify the impact of open market operations, We will approach the primary tools of Monetary policy, such as the rbi repo rate and use the data to establish a causal relationship with market index , sensex as a variable tracking the increases in prices due to increased money supply.

Further we will use multiple regression models such as log linear model, linear regression, based on monthly data, we would establish a time interval and track the rise of sensex points within that interval, once a casual relationship is established then we would look to establish a relationship of impact of changes in repo rate on increase in number of IPOs, through changes in market index.

Lastly we will use the monthly published data of release on ipo and then use regression or correlation between changes in policy rates and increase or decrease in number of IPOs, similarly increase or decrease in IPOs due to increase or decrease in Sensex.

B. Data Collection resources:-

<https://m.rbi.org.in/Scripts>
<https://finance.yahoo.com/quote/%5EBSESN/history?p=%5EBSESN>
https://rbidocs.rbi.org.in/rdocs/Publications/PDFs/176T_HB15092019D399D3A49EA24883892EEF1A2E2A9EDA.PDF

VI. LITERATURE REVIEW

- **Aparna Bairagi (2017)**, Markov Chain Modelling for Prediction on Future Market Price of Potatoes with Special Reference to Nagaon District: Using Markov Chain

Model, the research study forecasted the prices for a period of 15 consecutive days so as to predict the long-term behavior or prices of potatoes. The study, thereby, concludes that out of three states of probabilities for prices, which is they will either decrease or increase or remain the same, they found the long-term behavior of potato prices, with highest probability, to remain the same and unchangeable from the present price.

- **Mehwish Naseer and Yasir bin Tariq, 2015:** The research study provides insights and analysis on Efficient Market Hypothesis and focuses on probable causes and evidences of exceptions. The study examines the stock market efficiency of Karachi Stock Exchange.
- **Neeraj Gupta, Ashwin Edam, 2014:** The research study uses stock price of certain selected companies from NSE and uses runs test to find out the market efficiency.
- **Burton G Malkiel, 2013:** The research paper closely identifies the relationship between predictability and efficiency and provides insights about the criticism on efficiency market hypothesis. The research, thereby concludes that stock markets are more efficient and less predictable.
- **Paul Samuelson and Eugene F. Fama (1960)** The research paper explains how the efficient markets hypothesis (EMH) maintains the market prices fully reflect all available information. Developed independently by Paul A. Samuelson and Eugene F. Fama in the 1960s, this idea has been applied extensively to theoretical models and empirical studies of financial securities prices, generating considerable controversy as well as fundamental insights into the price-discovery process. The most enduring critique comes from psychologists and behavioural economists who argue that the EMH is based on counterfactual assumptions regarding human behaviour, that is, rationality.
- **ROHIT C. AKIWATKAR (2014)** The research paper talks about how the monetary policy variable such as broad money, FII growth and intermediate target (inflation rate) have a influence on Indian Stock market by using econometric method of analysis using vector error correction model on the data and analyzing their impulse response functions, graphs and forecast variance decomposition. And whole research was based on theories such as the quantity theory of money, transmission mechanism of money, rational expectations theory, efficient market hypothesis and theory of money neutrality
- **Jordi Gali and Luca Gambetti (2014)** In their research they examined the effect of exogenous monetary policy shocks on Stock Prices using a vector autoregressive model with time-varying parameters, and they found out that quarterly US Stock prices increase persistently in response to an exogenous tightening of monetary policy.
- **Martin Širůček (2011)** In his research he examined the effect of M2 on the US stock market indices Dow Jones Industrial Average and there is any effect on American stock market using Pearson correlation index, Dickey-Fuller stationary test and test of Granger causality, which focused on relationship between money supply (M2) and stock prices (DJIA index).
- **Darrat, A. F., and Zhong, M. (2000),** The literature examined whether or not the stock prices in both Chinese markets follow a random walk use the variance ratio test of Lo and MacKinlay (1988) and a model comparison method. In this study, the daily data of the A-share closing index prices of the Shanghai exchange from December 20, 1991 to October 19, 1998 and the Shenzhen exchange from April 4, 1991 to October 19, 1998 was taken under study for its investigation of the market behaviour. The results from variance ratio and model-comparison tests show that
 - A-share indices on both Chinese stock markets do not follow a random walk. The results also showed that prices of Share indices exhibit positive autocorrelation implying the potential for predictability and also suggested that the inefficiency probably arise from thin trading and asymmetric information.
- **Moustafa (2004),** his Study examined the behaviour of prices in the United Arab Emirates (UAE) stock market. The data of daily prices of 43 stocks included in the UAE market index for the period October 2, 2001 to September 1, 2003. The study found that the returns of the 43 stocks do not follow normal distribution. However, the returns of 40 stocks out of the 43 are random at 5 per cent level of significance, the results shown by runs tests. Although the UAE stock market is newly developed and it is still very small, also suffering from infrequent trading.
- **Gupta and Kundu (2006)** his study examined the impact of union budgets on Sensex of stocks from 1991 to 2005. The study found that investors can earn super profits during the short-term and medium-term periods around the budget (up to 15 days). Also suffered from abnormal losses if the expectations of investors are not fulfilled from the budget.
- **Jayadev (1996),** The study examined the performance growth oriented mutual funds. Study used two mutual funds namely MasterGain 1991 of Unit Trust of India and Magnum Express of SBI Mutual Funds. The study period spanned was from June 1992 to March 1994. The study is concluded that both the mutual funds do not perform better than their benchmark indicators. It also concluded that Magnum express is found to be highly diversified while Mastergain is low diversified. The Study revealed that, the fund managers of both the funds are found to be poor in market timing and selectivity.

VII. RESULTS AND ANALYSIS

A. Regression Analysis: - Method used - Linear probability model Regression 1

Dependent Variable :- Log(Broad Money M3)				
Method :- Least squares				
Variable	Coefficien t	Std. Error	t-Statisti cs	Prob.
C	19.60417	0.272559	71.92636	0.000
Log(Cash Reserve Ratio)	-1.163807	0.168656	-6.900496	0.0000
Log(Repo Rate)	-3.593426	0.310434	-11.57550	0.0000
Log (Reverse Repo Rate)	2.656974	0.247630	10.72961	0.0000
R –Squared	0.678063			
Adjusted R- Squared	0.674305			

Table No : 1

In the Above LPM MODEL,

Dependent variable is Broad Money M3

Independent Variables are Cash reserve ratio, repo rate, reverse repo rate From Taking the Above data into Consideration. The adjusted R squared value, which is a goodness of fit statistic, as it explains the variation of dependent variable from its mean value explained by the independent variables. The value is 0.67, or 67.43%, It implies that over 67% of the variation of values of dependent variable are explained by the independent variables chosen in the study.

The probability Values Are Less Than 0.1 which are considered to be very good, therefore any Estimates Done in Future, their Result Will be more likely to be significant.

$$Y = \text{Broad-money M3 } Y \text{ intercept} = 19.60417$$

Coefficients (X variables)

- 1% increase in Cash Reserve Ratio causes a 1.16% decrease in Y variable.
- 1% increase in Repo rate causes 3.5% decrease in Y variable.
- 1% increase in Reserve repo rate causes an 2.65 increase in Y variable

All t stats are significant $R^2 = 0.67$

This, 67%. variation in the dependent variable is explained by the independent variable

B. Regression 2

Variable	Coefficien t	Std. Error	t-Statisti cs	Prob.
C	-5.189987	0.461829	-11.23789	0.000
Log (Broad Money M3)	0.874329	0.029105	30.04053	0.0000
Log (Monthly open market operations)	0.005181	0.004701	1.102010	0.2729
R –Squared	0.896936			
Adjusted R- Squared	0.895009			

Table No : 2

In the Above LPM MODEL,

Dependent variable is Monthly average of BSE 100

Independent Variables are Broad Money M3, Monthly open market operations From Taking the Above data into Consideration.

The adjusted R squared value, which is a goodness of fit statistic, as it explains the variation of dependent variable from its mean value explained by the independent variables.

The value is 0.89, or 89.50%, It implies that over 89% of the variation of values of dependent variable are explained by the independent variables chosen in the study, therefore any Estimates Done in the Future, their Result Will be more likely to be significant.

$$Y = \log (\text{monthly-average})$$

$$C = -5.18 = Y \text{ intercept Coefficients}$$

1% increase in Broad-money causes a 0.87% increase in monthly-average 1% increase in monthly-open causes a 0.005% increase in monthly-average

$R^2 = 0.89$ (89% variation in Dependent variable is explained by its Independent variables)

C. Regression 3

Dependent Variable :- IPO & Offer of Sales				
Method :- Least squares				
Variable	Coefficient	Std. Error	t-Statistics	Prob.
C	40.80828	4.363915	9.351300	0.000
Log(Broad Money M3)	-6.036263	0.573453	-10.52616	0.0000
Log(Monthly open market operations)	6.544943	0.591987	11.05589	0.0000
R-Squared	0.321563			
Adjusted R-Squared	0.316304			

Table No : 3

In the Above LPM MODEL,

Dependent variable is IPO & Offer of Sal

Independent Variables are Broad Money M3 and Monthly open market Operations From Taking the Above data into Consideration.

The adjusted R squared value, which is a goodness of fit statistic, as it explains the variation of dependent variable from its mean value explained by the independent variables. The value is 0.32, or 32.15%, It implies that over 32% of the variation of values of dependent variables are explained by the independent variables chosen in the study.

The probability Values Are Less Than 0.1 which are considered to be very good, therefore any Estimates Done in Future, their Result Will be more likely to be significant.

$Y = \text{IPO -and-Offer}$

$C = 40.80828$ (Y intercept)

1% increase in monthly average causes a 6.5 units increase in IPO and Offer of sales 1% increase in Broad-money causes a 6.0 units decrease in IPO and Offer of sales $R^2 = 0.32$

A 32%. Variation in Y variable is explained by explanatory variables.

VIII. EFFECTS OF MONETARY POLICY

The primary tool of Policy makers faced with the problem of a tapering economy, which is slowing down is to use Monetary policy, the intentions is based on the idea that, lowering the policy rate of the central bank will lower commercial bank's lending rate, and if its lowered to the point when MEC, marginal efficiency of capital which measures essential the rate of return on invested capital, will be greater than the interest rate, and Firm owners will increase their investments, giving employment and stimulating the economy in the process

This is the standard dominant view of the phenomenon, we in this paper have tried to show why such a thing won't be able to stimulate the economy, the increased money supply increases consumers and financial investors's money balances but this money is not spent on the real economy, but gets spent on the financial increases the valuations of existing assets and leading to the creation of new assets.

IX. CONNECTION OF REGRESSIONS TO THE THEORY

We have Used log Lin regression models, to show how changes in Monetary policy affects money supply and then changes in money supply along with open market operations led to rising valuations of existing financial assets and led to the creation of new ones. In the process demonstrating how Monetary policy becomes ineffective for stimulating the economy.

X. CONCLUSION

We asked two definite questions in our introduction in our paper, why is there a rise in financial market index and is there a different way to look and understand the financial markets than mere probabilistic models.

We have endeavored to answer both these questions in our paper and understanding the implications of our answer.

We have shown in our paper that, it is precisely due to monetary policy intended to boost the economy, that leads to increase in financial valuations through increase in money balances, we have used the framework of technical economic framework for emulations of the phenomenon, and have reached the policy conclusion that fiscal policy is better for stimulating the economy, as Monetary policy fails in achieving its set goals.

Mostly these retail investors are attracted to financial booms. With An easy monetary stance, loans are issued at lower rate and more lending is encouraged because reverse repo rate is kept low which reduces the incentive of

commercial banks keeping the money with rbi and as a result, they lend more or invest more towards assets or financial markets. Even if they lend to businesses who use that capital for buying capital goods, economic activity increases and financial markets very quickly respond to that and existing investors become more bullish and active which attracts more retail investors to get a taste of bullish run in the market.

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