Influence of Select Macro-economic Factors on Investments in Indian Mutual Funds Market

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Abstract
The Indian financial market is growing fast by channelizing house hold savings through various investment avenues, among which mutual funds become more popular in recent times. The growth of the mutual fund market depends on the investment environment of the country. There are several macroeconomic factors influences the investment environment, which in turn helpful for assessing the market risk and investment desirability. The present paper aim to study the influence of select macro-economic factors on investment in Indian mutual funds market. The data pertaining to the select macroeconomic variables gathered from secondary sources for a period of 28 years (1990-91 to 2017- 18). The causal relationship between select macro-economic variables and their influence on the Mutual funds market has been analyzed by using descriptive statistics with suitable test statistics, correlation matrix, Augmented Dickey-Fuller (ADF) test, and Granger causality test. The study results conclude that the select macroeconomic variables do not have any significant influence on investments in Indian Mutual funds market for valid market predictions and worthwhile investment decisions.
Keywords: Macroeconomic variables, S & P CNX Nifty, correlation matrix, Augmented Dickey-Fuller (ADF), Granger causality.

1. Introduction:

The Indian financial market today is one of the fastest growing markets of the world. Mutual funds in India have emerged as a critical institutional link among various financial segments like savings, capital markets and the corporate sector. In addition, mutual funds have given a new direction to the flow of personal savings and enabled small and medium investors in remote rural and semi-urban areas to reap the benefits of stock market investments. With the growing complexity of the securities market, busy individual investors seek the avenue of mutual funds to achieve above–average returns on their investments. Mutual funds are, therefore, the investment vehicle for all sections of investors - small, medium and large, 'risk-averse' and 'risk taking' individuals as well as institutions and become more popular in recent times. The development of Indian mutual fund market depends on the investment environment of the country. There are some key macroeconomic factors which influences the mutual fund market in the country.

Statement of the Problem

The economic progress of a country to a greater extent depends on the growth of its financial sector. Financial market plays a vital role in the financial sector by channelizing the investments to create a healthy investment environment. While making investments in mutual funds, it is worthwhile to understand the investment environment of the country. The key macroeconomic indicators of an economy can demonstrates the prevailing status of investment environment in a country. In fact, the influence of macroeconomic factors have a direct bearing on the investment environment, which in turn affects the investments in mutual funds as well as stock market of the country. Hence, a thorough analysis on the influence of macroeconomic factors on investment in mutual fund market can be helpful to predict the market movements and to judge the investment desirability. In this context, great deal of interest generated among academician, researchers, investors, investment advisers, regulating authorities and government bodies to identify influence of macroeconomic factors on the investment market. Based on the aforesaid milieu, the investigator attempted to identify the influence of key macroeconomic variables on mutual funds market in order to derive valid predictions.

2. Review of literature

The review of earlier studies noticed that there are several research work undertaken to study the relationship between investment market and key macro- economic factors like inflation, exchange rate, and interest rate, political events etc. Nonetheless, the present study reviewed various literatures pertaining to investments in mutual funds from different angles. Some of the relevant studies are presented below.

The research studies conducted by Bogle (1992), Ippolito (1992), Ramasamy and Young (2003), Sikdar and Singh (1996), Wilcox (2003) and Singh and Chander (2004) were considered past performance of mutual funds as a criteria for investors to make investment in mutual funds.

G. Dinesh Kumar and Mihir Dash (2008) made an attempt to study the macroeconomic variables effect on return (NAV) of sleeted mutual fund schemes. The study results found that among 35.29% of sample scheme the return and variance of return were not affected by macroeconomic variables. The study applied Granger Casualty model to identify macroeconomic variables which affect the NAV significantly.

The research study conducted by Mohammadreza Monjazeb and Esmaeel Ramazanpour (2013) found that exchange rate and inflation have a positive effect of on the mutual fund return. However, the study results concluded that in the long run macroeconomic factor will not affect the returns of mutual funds.

Emily chelangat kariuki (2014) found that 70.9% mutual fund's performance in Kenya influenced by five macroeconomic variables such as money supply, interest rate, inflation rate, GDP and exchange rates. Among these factors Money supply, inflation rates, interest rates, GDP were found positive influence, while the exchange rate found significant negative influence on the return of Kenyan's mutual funds.

Badrinath and Gubellini (2012) in their research study examined the performance of mutual fund under business cycle in order to identify funds which exhibit cyclical performance. The study results revealed that both mid-cap and small-cap growth equity fund can able to exhibit performance, while value funds were not able to do so.

Some researchers have studied the investor's behavior for making investment in mutual funds. Allen and Parwards (2006) investigated mutual fund investor's behavior response on merger of Australian mutual fund companies by using regression analysis. The study found that rather than mergers contribute for increase in mutual fund investment, the investors withdrew target funds immediately before and after the merger occurs. Watson and Funck (2012) examined the trading behavior of short-term seller and found that an increase in short selling with the level of cloudiness and a decrease in short selling noticed three days prior to a cloudy day.

Tony Chieh‐Tse Hou (2012) examined the return persistence and investment timing decisions in Taiwanese domestic equity mutual funds. The study results noticed that funds performed well (poorly) in the preceding year tend to continue performing well (poorly) in the subsequent year, however investor's timing performance is negatively related to fund performance. Deepak Chawla (2014) in his research study attempted to understand the mutual fund buying behavior of the retail investors to identify the various attributes that needs consider important while investing in mutual fund. The study found that Credibility of the fund and Miscellaneous features of the fund are important.

Broadly, the review of the existing literature on mutual funds and the macro-economic factors, revealed that few literatures is available by focusing some of the macro-economic factors such as consumer price index, foreign exchange rates, national income, inflation, interest rates, GDP etc. The present study deviates to certain extent by considering some other key macro-economic variables in order to analyze their influence on investments in Indian mutual market.

3. Objectives of the Study

Based on the research gap identified, the present study focused on the following objectives:

1. To identify the long run relationship of select macro-economic factors on investments in Indian mutual funds market
2. To examine the influence of select macro-economic factors on investments in Indian mutual funds market

4. Hypotheses of the Study

In order to achieve the above objectives, the investigator attempted to test empirically the causal relationship between macro-economic variables and investments in Indian mutual funds market by considering S&P CNX Nifty as bench mark index (dependent variable) and key macro-economic variables as dependent variables. The key economic variables included in the study are; RBI Bank Rate, Domestic Savings, Forex Reserves, Gross Domestic Capital Formation (GDCF), Gross Domestic Product (GDP), Broad Money (M3), Per-capita Gross National Product (GNP) and Wholesale Price Index (WPI) (as independent variables). The following Null hypotheses are developed for want of statistical analysis and inference.

H_{01}: RBI Bank Rate does not influence the investments in Indian mutual funds market

H_{02}: Domestic Savings does not influence the investments in Indian mutual funds market

H_{03}: Forex Reserves does not influence the investments in Indian mutual funds market

H_{04}: GDCF does not influence the investments in Indian mutual funds market

H_{05}: GDP does not influence the investments in Indian mutual funds market

H_{06}: Money Supply does not influence the investments in Indian mutual funds market

H_{07}: Per-capita GNP does not influence the investments in Indian mutual funds market

H_{08}: WPI does not influence the investments in Indian mutual funds market

5. Data Collection

The relevant data needed for the study have been gathered from secondary sources. The data relating to the key macroeconomic variables for a period of 28 years (1990-91 to 2017- 18) gathered from the Economic Survey and Handbook of Statistics on Indian Economy. The data pertaining to the mutual fund industry was gathered from the web sites of www.sebi.gov.in, www.amfiindia.com.

6. Data Analysis and Tools Employed

For the purpose of conducting in-depth analysis the data relating to macro-economic variables have been processed through MS-Excel to conduct the descriptive statistics and correlation matrix. Under descriptive statistics examined mean, median, maximum and minimum values; standard deviation, skewness, kurtosis, Jarque-Bera (JB) and probability were examined. The correlation matrix helped to know the relationship between the variables on which we need to apply Granger causality test. Subsequently, unit root Augmented Dickey-Fuller (ADF) test has been conducted on all the variables to test their stationarity, in order to fulfill the pre-condition of Granger causality. Finally, Granger causality test was applied to measure the causal relationship between macro-economic variables and their influence on investment of mutual funds in the market.

7. Results and Discussion

The analysis of descriptive statistics to examine the influence of macro-economic variable on investment of mutual funds revealed that the standard deviation value of forex reserves is relatively high volatility around its mean value among other selected variables. The Skewness values of all the variables is found positive. However, the Kurtosis values found that forex reserves, Broad Money, GDCF at Current Prices and S & P CNX Nifty were found positively skewed and the rest were negatively skewed. The calculated value of Jarque-Bera (JB) statistic is very high, while probability is zero and the test statistics follows a chi-square distribution with 2 degrees of freedom. The summarized results indicates that the null hypotheses are accepted.

Table 1: Descriptive Statistics - Key Macroeconomic Variables

Particulars	Bank Rate	Domestic Savings	Forex Reserves	GDCF at Current Prices	GDP at Factor Cost	Broad Money (M3)	Per Capita GNP	WPI	S&P CNX Nifty
Mean	8.75	5.26	5.27	5.26	5.26	5.27	5.26	5.27	5.27
Median	8.00	3.90	2.40	3.90	4.60	3.90	4.90	5.30	3.50
Minimum	6.00	1.00	0.20	1.10	1.30	0.90	1.70	3.40	1.20
Maximum	12.00	14.50	18.90	15.10	12.80	15.90	11.80	7.40	16.00
Standard Deviation	2.52	4.27	5.77	4.33	3.29	4.24	2.87	1.18	3.85
Kurtosis	-1.69	-0.21	0.37	0.01	-0.33	0.22	-0.36	-1.12	1.39
Skewness	0.17	1.04	1.26	1.14	0.80	1.08	0.76	0.11	1.56
Jarque-Bera (JB)	185.45	38.01	34.1	32.84	50.12	36.96	52.32	126.92	92.97
Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 2: Correlation Matrix – Key Macroeconomic Variables

Particulars	Bank Rate	Domestic Savings	Forex Reserves	GDCF at Current Prices	GDP at Factor Cost	Broad Money (M3)	Per Capita GNP	WPI	S & P CNX Nifty
RBI Bank Rate	1.0000								
Domestic Savings	-0.8146	1.0000							
Forex Reserves	-0.7775	0.9923	1.0000						
GDCF at Current Prices	-0.7908	0.9985	0.9921	1.0000					
GDP at Factor Cost	-0.8659	0.9881	0.9752	0.9843	1.0000				
Broad Money (M3)	-0.8321	0.9903	0.9886	0.9886	0.9942	1.0000			
Per Capita GNP	-0.8584	0.9840	0.9687	0.9814	0.9971	0.9880	1.0000		
WPI	-0.2082	0.4242	0.4743	0.4277	0.3615	0.4251	0.3416	1.0000	
S & P CNX Nifty	-0.6549	0.9518	0.9490	0.9565	0.9123	0.9191	0.9133	0.4171	1.0000

The results of correlation matrix revealed that all the selected variables except bank rate and WPI were

positively correlated with each other. Whereas Bank rate found with a high negative correlation and WPI with a low correlation. As high or low degree of correlation certainly does not signify or rules out causality between the variables under consideration, hence we proceed to apply for further econometric tools such as Augmented Dickey Fuller (ADF) test and Granger causality test.

Table 3: Augmented Dickey Fuller Test for Key Macroeconomic Variables

Key Macroeconomic Variables	ADF Statistic
RBI Bank Rate	-0.2388
Domestic Savings	-0.8708
Forex Reserves	-0.7412
Gross Domestic Capital Formation	-0.8981
Gross Domestic Product	-1.1683
Money Supply (M3)	-1.1217
Per capita Gross National Product	-0.8691
Wholesale Price Index	0.2123
S & P CNX Nifty	-0.0872

Note: Stationarity at 5% level of significance

While analyzing the time series data it is essential to test Stationarity. Stationarity indicates that the statistical properties of a time series do not change over time. The Augmented Dickey Fuller (ADF) test is applied on the selected macro-economic variables to check their stationarity as a precondition of Granger causality and found all the variables were stationary at 5% significance level i.e., 1.645 (see Table 3). Finally, the results of Granger causality test revealed that there is no bi-directional causality found between macro-economic variables and mutual fund market (see Table 4). The real economic variables considered during the study period are not significantly influencing the investment of mutual funds.

Table 4: Granger Causality Test for Key Macroeconomic Variables

Direction of Causality (Null Hypothesis)	F-Statistic	Probability
Bank Rate does not Granger cause the investments in Indian mutual funds market	0.0269	0.9734
The investments in Indian mutual funds market does not Granger cause Bank Rate	0.0517	0.9496
Domestic Savings does not Granger cause the investments in Indian mutual funds market	0.0517	0.9496
The investments in Indian mutual funds market does not Granger cause Domestic Savings	0.2461	0.7820
Forex Reserves does not Granger cause the investments in Indian mutual funds market	0.0339	0.9667
The investments in Indian mutual funds market does not Granger cause Forex Reserves	0.1198	0.8871
GDCF does not Granger cause the investments in Indian mutual funds market	0.0453	0.9557
The investments in Indian mutual funds market does not Granger cause GDCF	0.2066	0.8135
GDP does not Granger cause the investments in Indian mutual funds market	0.0601	0.9417
The investments in Indian mutual funds market does not Granger cause GDP	0.3943	0.6746
Money Supply does not Granger cause the investments in Indian mutual funds market	0.0486	0.9526
The investments in Indian mutual funds market does not Granger cause Money Supply	0.2528	0.7768
Per-capita GNP does not Granger cause the investments in Indian mutual funds market	0.0471	0.9540
The investments in Indian mutual funds market does not Granger cause Per-capita GNP	0.2416	0.7856
WPI does not Granger cause the investments in Indian mutual funds market	0.0100	0.9900
The investments in Indian mutual funds market does not Granger cause WPI	0.0006	0.9994

Note: Stationary at 5% level of significance

From the above table 4, it is evident that the p values of all macroeconomic variables are greater than 5% significance level ($p > 0.05$) during the study period. Thus the macroeconomic variables considered during the period of study are not significantly influencing the investment in mutual funds.

Conclusion

This study examined the influence of select macro-economic variables such as, RBI Bank Rate, Domestic Savings, Forex Reserves, Gross Domestic Capital Formation, Gross Domestic Product, Money Supply (M3), Per capita Gross National Product, and Wholesale Price Index on investments in Indian mutual funds market. It is evident from the empirical results that the selected macroeconomic variables are not significantly influencing the investments in mutual funds, even to predict the market movements during study period. Thus, it is interpreted that the selected macro-economic variables neither significant bearing on the mutual fund market nor on the health of mutual fund products. Further, it can be concluded that the select macroeconomic variables do not have any significant influence on investments in Indian Mutual funds market for valid market predictions and worthwhile investment decisions. The study postulate that there are some other macro-economic factors, which might be exerting influence on the investment of mutual funds. Hence, there is a scope for further research in this area by considering some other macro-economic factors to analyze their influence on investments in Indian mutual funds market.

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