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INTERLINKAGE BETWEEN FUND OF MUTUAL FUNDS RETURNS AND GDP IN THE INDIAN ECONOMY

M. GOWRI
DEPARTMENT OF COMMERCE
PONDICHERRY UNIVERSITY
PUDUCHERRY

MALABIKA DEO
PROFESSOR
DEPARTMENT OF COMMERCE
PONDICHERRY UNIVERSITY
PUDUCHERRY

ABSTRACT

The Mutual Fund Industry has been growing rapidly in India with enlarged pooled funds that allowed the sector to participate actively in portfolio investments. It reflects possible growth prospect which gained much attention from the investors. The present study intends to examine the existence of a causal relation between the fund of mutual fund returns and GDP of the Indian economy. The investigation is done by using Johansen co-integration test for finding long-run relationship between the Fund of Mutual Fund returns and the GDP, and the Granger causality test based on the Vector Error Correction Model (VECM) for short-run relationship between these two variables to demonstrate the casual relationship. The data are collected from AMFI websites and respective AMC websites, from April 2007 to March 2014. The results displayed sufficient evidence to support long-run relationship between FOFs returns and the GDP. We found that all the five schemes of Fund of Mutual fund return and the GDP are interlinked and it was bidirectional for four out of five funds studied, only in case of Birla SL FOF was unidirectional from asset allocator to GDP. The findings suggest that the FOFs cause effective financial intermediation to generate long term saving to finance investment and that eventually could strengthen the country.

KEYWORDS

fund of mutual funds , schemes returns, GDP, stationaity, co-integration, VECM, causality.

INTRODUCTION

Fund of funds are particular investment vehicles to invest in more than two mutual funds. Ordinarily, it holds many funds in it. Globally, several FOFs pick breed of funds from across different fund houses and put them into one. These are called multi-managers fund of funds. Mutual fund industry is experiencing rapid growth in the form of fund of funds. These funds distinguish themselves by investing in shares of other mutual funds rather than buying individual securities. Fund of Funds are classified into four as Fund of mutual funds, Fund of hedge funds, Fund of exchange traded fund and Real estate fund. Investment in FOFs can be beneficial for retail and institutional investors due to the distinct features of this financial product. With FOFs, the retail investors can easily get exposure to sectors, asset classes, markets, and products which is otherwise not permissible easily. FOFs pool money from large diverse investor, and invest in assets that demand high minimum investments or that offer discounts to costs or loads, management fees. Retail investors do not have access to sophisticated data systems or information system and even if such access are at disposal, retail investors may find it difficult to appropriate investment decisions. The large and growing Fund of mutual funds have attracted majority of capital in FOFs. Intensive diversification benefits are another beneficial aspects of all FOFs. Fund of mutual funds deliver precious service to the investors by screening the mutual fund market, performing due diligence process, in selecting the most correct investment decisions.

Fund of Funds provide an efficient solution to the challenge of investing in mutual funds. Indeed, they have become the most common means of access for investors who are looking for diversified exposure to mutual funds, but who do not have the resources to research, monitor, and manage multiple mutual funds. The FOFs manager has two functions: One is to seek out investors, educate them on the investment benefits, accumulate the assets from investors, and report on and explain investment activities and performance: The second is to follow the mutual fund industry, determine strategy weightings, conduct due diligence, and select individual fund that are expected to outperform. A portfolio manager uses his or her experience and skill to select the best underlying funds based on past performance and other factors, and if the portfolio manager happens to be smart and talented, this can increase the return potential and decrease the risk potential of FOF.

For years researchers have attempted to analyse the relationship between the stock market and GDP. The stock prices reflect the profitability potential and profitability is assumed to be linked with economic activities. The individual investors do not always anticipate correctly the stock returns. Sometimes it moves in some unanticipated direction of the economy. Thus linking FOFs return and the economy represented by GDP makes sense for the investors so that they can anticipate their returns based on the GDP movements.

Two things that support the behaviors of the stock market predictability: One is when the stock market rises the investors are willing to purchase more, so the economy expands. On the other side with the stock market decline, the investors spend less, so the economic growth automatically decreases. On these behavior suggest that the stock market predict economy, although it can be argued that the causations are different if economy grows investments expands stock market goes up, with decline of economy stock market falls. But how FOFs relates in the GDP is a matter to be investigated. In this study we aim to investigate relationship between fund of mutual funds returns and GDP.

This paper is organized as follows: Section 2 provides an overview of the methodology that has been used. In section 3 a description of the data and their analysis is presented. Section 4 reports the results of the empirical analysis. Section 5 concludes the granger causality relationship between funds of mutual fund returns of growth oriented schemes and GDP of the economy.

OBJECTIVE

To find the causality relation between Fund of Mutual fund returns and GDP of the Indian economy.

REVIEW OF LITERATURE

Kok sook ching et, al., (2010), linked Life Insurance Sectors of Malaysia and GDP to demonstrate the possible causal relation. The results suggest that there was a long-run relationship between the life insurance sector and GDP and concluded that the Life Insurance sector an effective financial intermediation to strengthen the country growth. **Sezgin Acikalin et, al., (2008),** investigated the relationships between returns in Istanbul Stock Exchange (ISE) and Microeconomic variables of Turkish economy. They explored co-integration test and VECM on a quarterly data set and found a long term stable relationship between ISE and GDP, Exchange rate, Interest rate and Current account balance. They found unidirectional relationship and suggested that Macroeconomic variables had an effect on ISE Index.

Pasquale Foresti (2007), focused on the relationship between stock market prices and growth. A Granger-causality analysis was carried out and to assess the predictability power of one indicator for the other. They found that stock market prices can be used in order to predict growth, but the opposite is not true. **Hiimeyra Burucu and Filiz Yildiz contuk (2011),** demonstrated the relationship and directions between investment fund flow and earnings of market stock in Turkey. They investigated possibility of a causality mechanism. The finding showed that there exist relationship between investment fund flow and earnings of stock market and proved there was not causality relationship.

George K. Zestos and Xiangnan Tao (2002), found the causal relations between the growth rates of exports, imports and the GDP of Canada. The test proved that Canada is more open an economy than the United States and is more trade dependent. **Naser I. Abumustafa (2007)** evaluated stock prices as a leading indicator of economic activity. They found that the higher the causality between stock market capital and GDP in any economy lower is the risk. **Yasuo Nishiyama (2007),** derived the term structure of CD rates and federal funds rates. They found long term market rates granger cause policy-controlled rates. They found unidirectional Causality.

Heung-Joo Cha et. al., (2010) investigates the dynamics and possibilities of a causality between stock returns and investment flow in the Japanese financial market. The study covered the period from 1990 to 2007. Nikkai 225 stock average was used for stock market performance, 10 years Govt. bond and 3 months cash indicies were also used for the study. They suggested that the investment net flow and the stock return explained the positive causality performance in the Japanese financial market.

Nasar I. Abumustafa (2007), evaluated the stock prices as a leading indicator of economic activity. They collected data from 1986 to 2002 for six countries as Egypt, Jordan, Kuwait, Morocco, Saudi and Tunisia. They concluded that Granger Causality test indicates the causality between GDP and market capitalization in all Arab countries.

T.R.J. Goodworth et. al., (2007) examined the factor-based, non-parametric risk measurement framework for hedge funds and fund of funds. With the helps of quantitative portfolio construction and they attempted to ensure maximum portfolio diversification, with active style analysis, implied risk profiles and time dependent factor exposures. **Karthik patel (2007)** examined the risk underperforming the bench mark as a function of the number of manager in the portfolio through fund of funds. **Strene Pomerantz (2006),** investigated the persuit of alpha in a fund of hedge funds and performance could be analysed through the process of sector allocation, geographic diversification and individual security selection. This analysis provided multi-dimentional view to the performance of fund of hedge funds. **M.A. Miceli and G. Susinno (2004),** explained about ultrametricity in fund of fund diversification. They used 49 hedge funds observed NAV time series from 1999 to 2003. They observed broad boot strapped distribution and obtained strategy through minimum spanning tree and that done by clustering process classification.

Andrew ang et. Al., (2008) analysed the expected after fee return of average was lower than hedge funds even though fund of fund managers are skilled investors. They found that many type investors the hurdle rate was close to the returns earned by the typical hedge funds. T. **Colon et. Al., (2007)** stated that random matrix theory in fund of funds portfolio optimization and they concluded that correlation matrix was a good choice for portfolio optimization. **Zakri Y. Bello (2009)** analysed on the predictability of mutual funds returns and this was investigated empirically, if mutual fund returns are predictable using common indicator of business and monetary condition. **Vincent Globe (2010)** reconciled theoretically the negative unconditional performance in sample model of the relationship between a fund manager and his investors. They found the survival of several funds with poor unconditional performance and suggested the existence of recession-related misspecification in popular performance measures. Reviewing previous studies covering different aspects of fund of funds have shown variety of technical and quantitative measure and in our study we find the causality relation between fund of mutual funds returns and GDP in the Indian economy.

RELATIONSHIP BETWEEN FUND OF MUTUAL FUNDS RETURNS AND GDP

SCOPE AND DATA SET

In this study, the effect of fund of mutual funds returns on the GDP is econometrically investigated. As for the estimation of the effects concerned, the samples collected from the AMFI web sites and respective AMC web sites from April 2007 to March 2014 and returns were calculated from the respective schemes NAV prices. For this study equity growth oriented five schemes are taken into consideration. GDP data collected from RBI statistical report. The data used from April 2007 to March 2014 monthly returns frequency has been used for the time series.

HYPOTHESIS

In order to answer the stock returns cause the GDP, the hypothesis test is used as shown below:

H_0 : The Fund of Mutual Funds return does not Granger Cause the GDP.

H_1: The Fund of Mutual Funds return does Granger Cause the GDP.

METHODS

In the current study, the interaction of Fund of Mutual Fund returns and GDP for India has been investigated. Firstly, by means of the variables, the data were exposed to test of stagnation. For this purpose, Fund of Funds returns and GDP whether they were stagnated and if at what level they were stagnated were tested by means of the unit root test developed by Phillips-Perron. Then co-integration test investigating whether long term relation existed among the variables included in the models was conducted. In order to test the long term relationship Johansen-Juselius co-integration test was used. After finding the co-integration relationship next we used the VECM to explore the possibility of short term relationship between fund of funds returns and GDP.

Finally, the causal relation between Fund of Fund returns and GDP and the direction of the relation whether unidirectional or bidirectional were analysed by means of granger causality test. Akaike Information Criterion (AIC) or Schwartz information criterion (SIC) minimum, is determined as the most appropriate model. Granger Causality technique measures the information given by one variable in explaining the latest value of another variable. In addition, it also says that variable Y is Granger caused by variable X if variable X assists in predicting the value of variable Y. If this is the case, it means that the lagged values of variables X are statistically significant in explaining variable Y. The null hypothesis (H_o) that we test the X variable does not Granger cause variable Y and variable Y does not granger caused variable X. In summary, one variable (X_t) is said to granger causes another variable (Y_t) if the lagged values X can predict Y and vice-versa.

ANALYSIS RESULTS

In the time series analysis, the data should be stagnated. To estimate the effect of Fund of Funds returns on GDP in India, Augmented Dickey fuller unit root test was applied. Table 1 shows unit root test results.

TABLE 1: AUGMENTED DICKEY-FULLER UNIT ROOT TEST

FoFs Schemes	ADF test statistic	t-Statistic		Prob. value
GDP	-3.520619	1% level 5%level 10% level	-3.514426 -2.898145 -2.586351	0.0098
FTI life stage FOFS-20(G)	-8.844417	1% level 5%level 10% level	-3.514426 -2.898145 -2.586351	0.0000
FTI life stage FOFS-30(G)	-8.005481	1% level 5%level 10% level	-3.515536 -2.898623 -2.586605	0.0000
FTI Dynamic PE ratio FOF (G)	-9.228287	1% level 5%level 10% level	-3.514426 -2.898145 -2.586351	0.0000
ING 5 star MM FOF (G)	-8.688878	1% level 5%level 10% level	-3.520307 -2.900670 -2.587691	0.0000
Birla SL asset all. Agg. (G)	-9.258656	1% level 5%level 10% level	-3.514426 -2.898145 -2.586351	0.0000

Note: variable's stagnation at the level of 1%, 5%, 10% significance.

In the table 1, the Fund of Funds returns stagnated at the level of 1% significance, the variables of GDP became stagnated with the first difference at the level of 1% significance. After determination of Unit root and co-integration at fist order, Johensen co-integration test was applied to investicate whether co-integration exists among two variables for all the four schemes. Co-integration analysis is important, since the error term coming from the linear combination of two variables is stationary. Results show that the Null hypothesis claiming that there is no co-integration between the variables is rejected. Therefore, the Fund of Funds returns and GDP are co-integrated and there is a long term relationship between the variables.

TABLE 2: JOHANSEN-JUSELIUS CO-INTEGRATION TEST RESULTS

FOF Schemes	Variable	Trace statistics	Eigen value	Max-Eigen Statistic	Critical value	Prob. value
FTI life stage FOFS-20(G)	None *	20.18138	0.215945	19.70536	14.26460	0.0091
	At most 1	0.476018	0.005860	0.476018	3.841466	0.4902
FTI life stage FOFS-30(G)	None *	25.20501	0.261801	24.58689	14.26460	0.0009
	At most 1	0.618116	0.007602	0.618116	3.841466	0.4317
FTI Dynamic PE ratio FOF (G)	None *	24.15816	0.253704	23.70325	14.26460	0.0012
	At most 1	0.454915	0.005600	0.454915	3.841466	0.5000
ING 5 star MM FOF (G)	None *	30.79064	0.325187	30.28560	14.26460	0.0001
	At most 1	0.505045	0.006538	0.505045	3.841466	0.4773
Birla SL asset all. Agg. (G)	None *	28.10535	0.290087	27.75160	14.26460	0.0002
	At most 1	0.353753	0.004358	0.353753	3.841466	0.5520

The lag length is (4) for all the five schemes, it is decided by using AIC. It is seen from Table that, both maximum Eigen value and Trace tests have resulted in the same decisions. It observed that there is one co-integration relationship between two variables. This means that there is a long-run relationship between fund of mutual fund returns and the GDP. The study uses co-integration analysis for long-run relationship and VECM is used for short-term co-efficient estimation.

TABLE 3: RESULTS FROM VECM ESTIMATES

Short run Co-efficient	FTI Life Stage FOFS-20(G)	FTI Life Stage FOFS-30(G)	FTI Dynamic PE Ratio FOF (G)	ING 5 star MM FOF (G)	Birla SL Asset All. Agg. (G)
C(2)	-0.054486				-0.085353
C(3)	-0.317246	-0.244551	-0.225701		-0.060570
C(5)	-3.116383	-2.090505	-2.267859	-14.73689	-4.351032
C(6)				-0.000188	
Adjustment co-efficient					
Co-int-Eq. (1)	-0.583778	-0.788362	-0.700531	-0.980291	-0.758046
R-Squared	0.489011	0.505883	0.457758	0.539675	0.482186
Adj. R-squared	0.453026	0.471086	0.419572	0.505322	0.445720
F- Statistics	13.58926	14.53812	11.98755	15.70987	13.22297
Jarque-Bera value	5.431508	7.609288	11.79955	777.3713	2.246056
Normality P. value	0.006155	0.022267	0.002740	0.0000	0.325293
Chi-square	0.6591	0.6531	0.8073	0.1008	0.7783

Note: Statistically significant (at α = 0.05%)

Auto-correlation and heteroskedasticity tests of the estimated results are presented in the table , it provide healthy signs to make analysis and interpretation on VECM estimates. Especially, this VECM analysed the short run relation between fund of mutual funds return and the GDP. In table 3 co-efficient value of all the five schemes are negative. It certainly indicates the short run relationship of fund of mutual funds return and the GDP. The Chi-square value for all the five schemes is more the 0.05%, so there is no heteroskedasticity problem in the residuals. Normality test also shows desirability of normality of residuals.

The short-run co-efficients reveal that the Changes in Fund of Mutual funds return may be explained by the past changes of GDP. We next look at how the past moves of fund of mutual funds returns create impact on current changes in GDP variables. It showed that past moves of fund of mutual funds returns lead changes in the moves of GDP. If VECM estimates sign some meaningful relationship between the variables, then causality relation should be checked to backup the results from estimation.

One of the techniques to find the relation of causality is granger causality between two variables is given below:

$$Xt = \propto 0 + \sum_{i=1}^{m} \propto i \,.\, Xt - i + \sum_{j=1}^{m} bj \,.\, Yt - j + \mu t,$$

$$Yt = b0 + \sum_{j=1}^{m} b\,j.\,Yt - j + \sum_{i=1}^{m} \propto i\; Xt - i + \vartheta t$$

If bj is statistically significant, then we can say that Y is the granger cause of X, and if αi is meaningful then it is accepted that X is the granger cause of Y.

TABLE 4: STATISTICALLY SIGNIFICANT RESULTS OF GRANGER CAUSALITY TEST

Variables	Directions of Causality	Observations	F Statistics	P Value
FTI life stage FOFS-20(G) to GDP	No Causality	80	1.60315	0.1830
GDP to FTI life stage FOFS-20(G)			1.26870	0.2904
FTI life stage FOFS-30(G) to GDP	No Causality	80	1.85507	0.1279
GDP to FTI life stage FOFS-30(G)			1.84537	0.1297
FTI Dynamic PE ratio FOF (G) to GDP	No Causality	80	1.76913	0.1446
GDP to FTI Dynamic PE ratio FOF (G)			0.93236	0.4503
ING 5 star MM FOF (G) to GDP	No Causality	80	2.39962	0.0588
GDP to ING 5 star MM FOF (G)			0.58430	0.6751
Birla SL asset all. Agg. (G) to GDP	Unidirectional	80	2.86249	0.0294
GDP to Birla SL asset all. Agg. (G)			0.77085	0.5478

Examining the results of granger causality tests in table 4, it was needed to observed the causality, one from fund of mutual fund returns to GDP variables, and the other from GDP to fund of mutual funds returns. We implement the Granger causality test to answer whether changes in GDP cause changes in fund of funds returns or changes in fund of funds returns cause changes in GDP applying fist differenced log data. AIC is used to select an optimal lag length for each variable. Estimated lag length for each variable is applied to Granger Causality test. It is reflected from table 4 that the fund of mutual funds returns does not Granger cause on GDP. Based on the probability values reported in the table 4, we accept the null hypothesis that is Fund of Mutual Fund returns does not granger cause on the GDP. Therefore, the result shows that Granger causality runs on two way or otherwise said is bi-directional except the scheme of Birla SL asset allocator aggressive (G) on the GDP.

CONCLUSION

Fund of Mutual funds provide an efficient solution to the challenge of individual investor investing in mutual funds. Fund of Funds benefited to the investors seeking the high return potential of mutual funds along with a little diversification to help manage risk and lower investment minimums. They have become the most common means of access for investors who are looking for diversified exposure of the mutual funds, but who do not have the sufficient resources to research, monitor, and manage multiple mutual funds. Fund of Funds that invest in a portfolio of different mutual funds to provide broad exposure to the mutual fund industry and diversify the risk associated with a single investment fund. Fund of Funds generally have much lower required investment. This minimum required investment can be attributed to the economies of scale. This study examines the relationship between Fund of Mutual funds returns and the GDP of the Indian economy. The Sample collected from AMFI websites and respective schemes AMC websites from April 2009 to March 2014.

Time series analysis is used to investigate the relations between Fund of mutual fund returns and the GDP. Firstly, Phillips-berron conducted unit root test for all the five schemes of Fund of mutual funds returns and the GDP and then Johnansen-Juselius conducted co-integration tests on both the variable to diagnose the long-run relation among the two time series variables. Co-integration test was reported the presence of long-run relationship between returns and GDP evidenced in all the five schemes of Fund of mutual funds. Subsquently we conducted the VECM which indicated the presence of short-term relationship. Finally, Granger Causality tests on the study of causality couldn't confirm any specific causality relations between all the five fund of funds returns and the GDP except Birla SL asset allocator FOF (G) and the GDP.

On the whole conclusion, acquired from the report shows that there isn't any causality between Fund of Mutual Fund returns and the GDP although they examine the presence of long term and short term relation between the Fund of Fund returns and GDP in Indian economy. This analysis report made important implications for the decision maker for taking decisions of investment. For example, the finding that GDP have varying impacts and significant on returns in a market , it may prove itself useful for portfolio diversification as well as achieving better risk-return tradeoffs. The report proved that the investors may improve their portfolio in the Mutual fund Industry by focusing on the varying significance of the Indian economy risk factors.

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