

A Look into the Granger Causality of the Philippine Stock Index and Selected Mutual Funds

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ABSTRACT: Investing in mutual funds has become more popular among Filipinos over the years. Investing in such promises more advantages compared to the conventional scheme of only storing money in a bank. The Philippines is lagging behind as compared to the amount of mutual fund investments in its neighboring countries. This study used a Granger causality test to determine how the following mutual fund types, specifically balanced (balf), equity (equi) and fixed (fixf) funds are related to the Philippine stock index (psei). The results showed only the stock index psei granger caused only one fund, the equity fund (equi).

KEYWORDS : Balanced fund, equity fund, fixed income fund, granger, bidirectional

I. INTRODUCTION

Investing in mutual funds provides small individual and institutional investors with the opportunities for diversified portfolio placements. Investment companies are in a position to pool these assets, allowing them to invest the funds in different diversified securities portfolios. This scheme appeals to investors as they are able to select funds that are compatible with their investment priorities and risk appetite, strengthened by the trust that experienced fund managers manage their funds. It offers the investor with an alternative forum for the growth of excess funds. In contrast to other nations, the Philippines' mutual funds are not that progressive, although they have existed for more than 50 years. The majority of Filipinos have a low level of understanding of this potential for investment. Indeed, as demonstrated by the fact that only institutional investors are engaged in this investment, and not individuals, there is a lack of awareness about its existence. Contrary to other types, equity-related funds are the most common due to the potential for greater returns although this involves a higher level of risk. There are relatively few institutional investor players represented in the Philippine stock market. The 2017 Stock Market Investor Profile/PSE Academy (n.d.) [1] disclosed that of the overall accounts, they accounted for approximately 3.1% (27,278 institutional investors). Even if they are smaller in size, since their accounts required greater investments in them, institutional investors could potentially influence the stock market. Investments firms are considered one of the biggest investors in the stock market. Gueyle and Institutions (2016) [2] concluded that there was no impact on stock market returns from Canadian mutual fund flows. This study determined whether this was also the case as regards the context of the Philippines.

1.1 Statement of the Problem

This study delved into the bi-directional link between the Philippine Stock Exchange (psei) and three select mutual fund type returns. It aimed to address the following:

- 1.1.1. Do the returns of the three selected mutual fund types individually affect the psei?
- 1.1.2. Does the psei affect the three mutual fund types individually?
- 1.1.3. Is there bidirectional (or feedback) causality between each of the three mutual funds and the psei?
- 1.1.4. Does informed trader theory exist in the Philippine market?

1.2 Hypotheses of the Study

- H_{a1}: There is Granger-causality from balf to psei.
H_{a2}: There is Granger-causality from psei to balf.
H_{a3}: There is Granger-causality from equi to psei.
H_{a4}: There is Granger-causality from psei to equi.
H_{a5}: There is Granger-causality from fixf to psei.
H_{a6}: There is Granger-causality from psei to fixf.

1.3 Significance of the Study

Mutual funds in the Philippines are fast becoming famous. Professional investment managers, institutional and individual investors and policy makers alike could benefit from a greater appreciation and understanding of them. In their trading strategies, fund executives could be motivated by how to turn market opportunities into profits. Investors may profit, both institutional and individual, if they better understand the dynamics of the

market. Policy makers could possibly gain insights from the outcome of this study in designing effective policies that increase the robustness of the nation's investment climate.

1.4 Scope and Limitations

The analysis used eleven-year daily data on stock and fund returns from January 2008 until December 2019. The study's selection of three (3) types of mutual funds considered the availability and consistency of data.

II. LITERATURE REVIEW

Qureshi, Ismail, & Gee Chan (2016)[3] investigated the relationship of the mutual funds and the stock index among some countries. Results showed that stock market return data had less impact on risk-related information in terms of portfolio mix decision-making by mutual fund managers. Mutual funds could also minimize market volatility, but since mutual funds lead to high-risk market conditions, stock market exposure to funds could also decrease. The preference of fund managers under such circumstances may be for investments that promise guaranteed returns. However, there are other variables in their portfolio mix that could affect the fund managers. Alexandri (2015)[4] carried out a similar study on variables that could impact the efficiency of mutual funds. The research studied the inclusion of stock in the investment company's portfolio mix and the market timing. The results showed that an average value stock revealed one of the fundamental requirements for stock selection. In addition, the uncertainty of the stock prices influenced the fund managers to consider the timing of the market when the fund was to be invested in the stock market. In the portfolio mix, stock selection has become important especially in other countries. This was also supported by the study done by Qureshi, Kutan, Khan, & Qureshi (2018)[5], whose results revealed that market risk and stock returns were correlated with mutual funds.

Findings from the investigation of Yi, Liu, He, Qin, & Gan (2018)[6] disclosed that fund managers can adjust their investment exposure in the market that could influence the stock market because fund managers had the ability to do market timing not only regarding volatility but also liquidity (Metcalf, 2017)[7]. But the Aydogan, Vardar, & Tunc, (2014)[8] study showed that there was a bi-directional relationship between the fund and stock returns. Hence, both funds and stock index returns had impact on each other. Fund herding influenced a market boom and eventually could also influence the increase of stock returns (Latief, Zulfiqar, & Shah, 2018)[9]. The presence of large institutional mutual fund investors and their participation in herding made it possible for the market conditions to boom. In addition, any adjustments to potential benefit for other financial instruments can impact the stock market as the fund managers can modify the portfolio mix decision (Kane & Ong, 2014)[10]. The effect of equity mutual funds and the stock index was also carried out in Australia (Pojanavatee, 2014)[11], and the findings showed that the two variables had long-term relationships. But the findings did not show a bidirectional association between the involved variables (fund and stock) from the Hossain (2013)[12] study, which indicates that there is no vice versa relationship. This could only mean that only mutual funds could be impacted by the stock index. Mishra (2015)[13] further supported that only stock market returns could have an effect on mutual funds results in India and not vice versa. Similar findings from the Gueyie & Institutions study (2016)[2] showed that returns from the stock index could only influence the performance of returns from the mutual fund.

A Soeroto (2016)[14] research on mutual funds showed that fund growth had a positive impact on the performance of equity funds, suggesting that disclosures could have something to do with the decision of the investor; hence, this could also affect the stock index performance. The Feng & Johansson (2015)[15] findings showed that IPOs with high residuals had substantial positive returns relative to those with low residuals. Further, the study of Ratanabanchuen & Saengchote, 2018)[16], preference for investment in Thai mutual funds are highly capitalized companies.

III. THEORETICAL AND CONCEPTUAL FRAMEWORKS

Investors and traders may have important external knowledge at their disposal that enables them to make profit-generating decisions. The informed theory of traders implies that the use of this relevant information is a signal for decisions based on perceived levels of risk in relation to potential rewards. Therefore, knowledgeable traders can deduce their investment choices based on the equilibrium price. This is consistent with the very essence of an investment in a mutual fund, where skilled managers work for and on behalf of their individual and institutional investors, who through their trading decisions, might in turn influence the movement and volatility of stock prices.

Figure 1 illustrates the hypothesized relationship between the funds being studied and the Philippine Stock Exchange Index. The bi-directional arrows show the potential two-way association between these funds and the index, namely the equi, fixf and balf in relation to psei. As the name implies, equity fund (equi) consists of 100% equities. This fund satisfies those investors who have relatively have higher risk appetite and focus on long-term investments. Fixed income fund (fixf) is allocated purely to fixed income securities. This fund is attractive to those whose appetite is relatively less than those in the first group, as this provides a higher level of current income for capital preservation. The balanced fund (balf), which best suits those who are moderate investors, that consists in a combination of equity and investment with fixed earnings. It consists of a relatively high degree of current income investment options in the combination of equity and debt, as it also aims to retain cash, liquidity, and long-term capital appreciation.

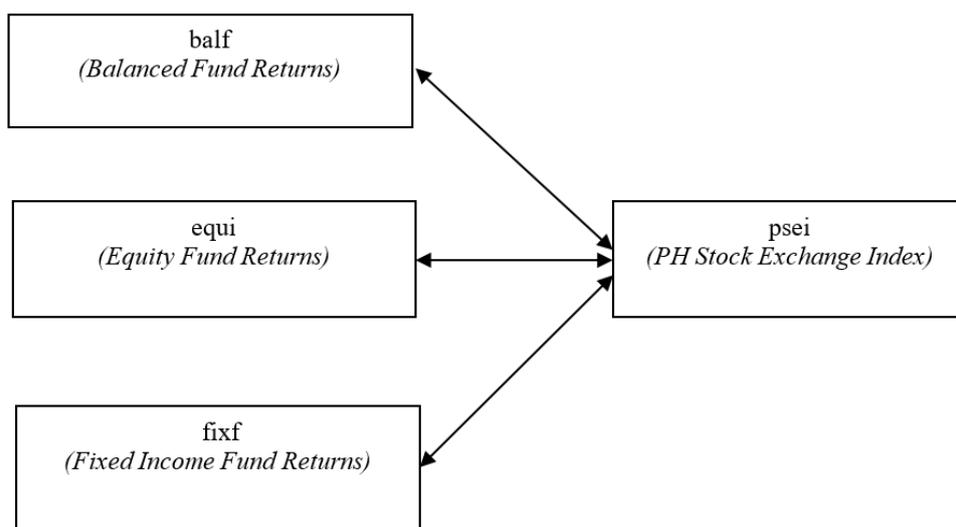


Fig 1: Conceptual framework

IV. METHODOLOGY

There are various fund types among investment companies, but this study only focused on three types, namely: equity, balance and fixed funds (equi, balf and fixf). This study made use of daily prices from 2008 to 2019, with a total of 2885 days observations. This research also generated descriptive statistics. A test was conducted using granger causality to investigate if the Philippine stock exchange index could be influenced by each fund category included in the analysis and vice versa. The software RStudio was employed for the statistical measure.

The equations are shown below:

$$psei_t = a_0 + \sum_{i=1}^k a_i psei_{t-1} + \sum_{i=1}^k b_i balf_{t-1} + v_{1t} \tag{1}$$

$$psei_t = c_0 + \sum_{i=1}^k c_i psei_{t-1} + \sum_{i=1}^k d_i equi_{t-1} + v_{2t} \tag{2}$$

$$psei_t = f_0 + \sum_{i=1}^k f_i psei_{t-1} + \sum_{i=1}^k g_i fixf_{t-1} + v_{3t} \tag{3}$$

$$balf_t = h_0 + \sum_{i=1}^k h_i balf_{t-1} + \sum_{i=1}^k j_i psei_{t-1} + v_{4t} \tag{4}$$

$$equi_t = k_0 + \sum_{i=1}^k k_i equi_{t-1} + \sum_{i=1}^k l_i psei_{t-1} + v_{5t} \tag{5}$$

$$fixf_t = m_0 + \sum_{i=1}^k m_i fixf_{t-1} + \sum_{i=1}^k n_i psei_{t-1} + v_{6t} \tag{6}$$

where
$$psei_t = \frac{psei_t}{psei_{t-1}} - 1$$

$$balf_t, equi_t, fixf_t = \frac{Value\ of\ Asset\ i_t}{Value\ of\ Asset\ i_{t-1}} - 1$$

V. RESULTS

Below shows the descriptive statistics of the daily returns, from Jan 2008 to December 2019 of the stock index return (psei), balance fund (balf), and equity fund (equi) returns.

Table 1: Descriptive Statistics

	<i>balf</i>	<i>equi</i>	<i>fixf</i>	<i>psei</i>
Mean	0.00036	0.00038	0.00023	0.00034
Standard Error	0.00013	0.00017	0.00004	0.00023
Median	0.00010	0.00050	0.00008	0.00051
Standard Deviation	0.00679	0.00929	0.00195	0.01209
Sample Variance	0.00005	0.00009	0.00000	0.00015
Kurtosis	20.69944	5.40052	50.00938	7.40618
Skewness	-1.19371	-0.49667	3.06912	-0.64258
Range	0.14876	0.13595	0.04770	0.19579
Maximum	0.05727	0.06074	0.03289	0.07311
Minimum	-0.09149	-0.07521	-0.01481	-0.12268
Sum	1.02993	1.09473	0.65436	0.98249
IQR	0.00438	0.00961	0.00076	0.01270
Count	2885	2885	2885	2885

The output above showed that the average returns *balf* and *equi* reflected small variance to that of the stock index. Further, *fixf* showed the least returns variance, and so with *balf*. The *balf* was highly skewed to the right. On the contrary, *balf* and *equi* were highly concentrated to the left. The variables, especially *fixf*, exhibited high kurtosis.

Figure 2 presents the scatter plots of funds and stock index returns. Granger test requires the stationarity of the data. The plot showed no trend and constant variance, hence stationary. For all the variables, an ADF (Augmented Dickey-Fuller) test was carried out. At 5% confidence level, the non-stationarity null-hypothesis would be rejected.

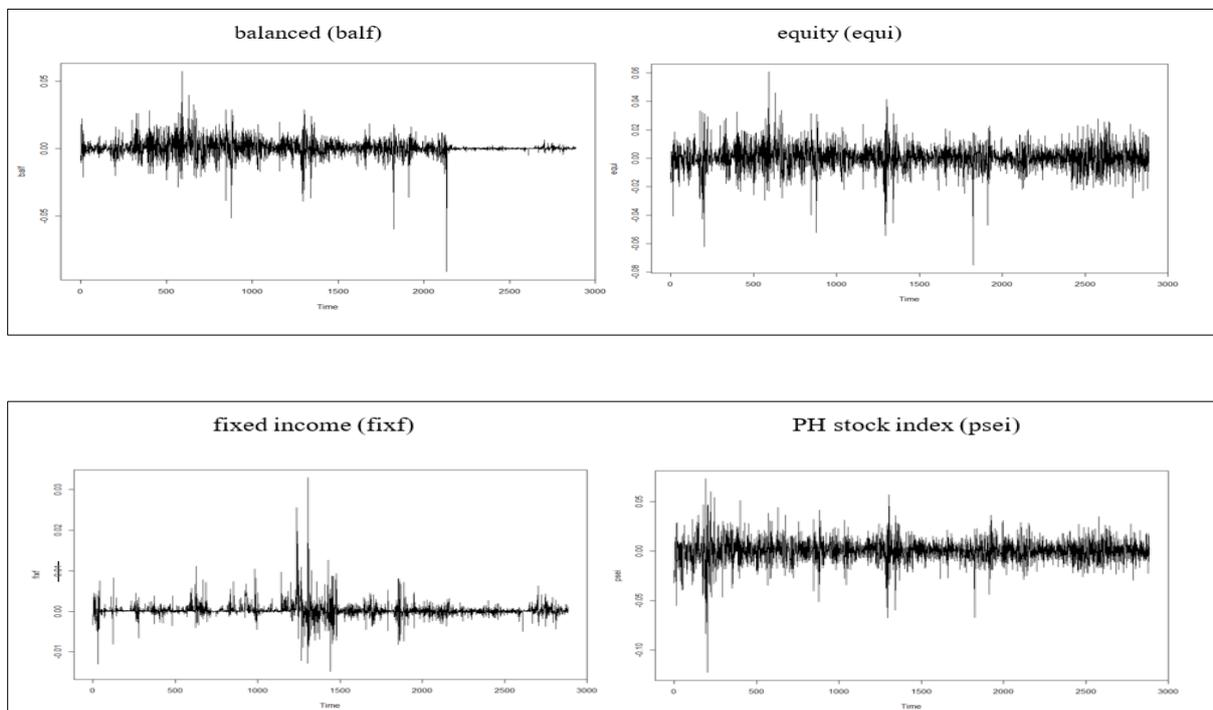


Fig. 2: Plots of the returns of the variables

Table 2: Stationary Test Using ADF

Null Hypothesis	p-value	Remarks
psei (not stationary)	2.2e-16***	Reject Ho
balf (not stationary)	2.2e-16***	Reject Ho
equi (not stationary)	2.2e-16***	Reject Ho
fixf (not stationary)	2.2e-16***	Reject Ho

The ADF test showed that all the variables as shown in table 2 are stationary.

Table 3: Granger Causality tests for the three funds and PSE index

Alternative Hypothesis	lag length	(df1, df2, F-stat)	p-value
psei granger-causes balf	2	(df1=2, df2=2878, F=1.7946)	0.1664
balf granger-causes psei	2	(df1=2, df2=2878, F=0.6956)	0.4988
psei granger-causes equi	4	(df1=4, df2=2872, F=2.3985)	0.0481*
equi granger-causes psei	2	(df1=2, df2=2878, F= 0.1991)	0.8195
psei granger-causes fixf	2	(df1=2, df2=2878, F=1.7293)	0.1776
fixf granger-causes psei	2	(df1=2, df2=2878, F=0.0061)	0.9939

Table 3 showed that psei did not granger cause balf. Similarly, balf did not granger cause psei. Hence, the study failed to accept both H_{a1} and H_{a2} .

The results showed that psei granger caused equi. However, equi did not granger cause psei. Hence, the study accepted H_{a3} but failed to accept H_{a4} .

Also, the results showed that psei did not granger cause fixf. Similarly, fixf did not granger cause psei. Hence, the study failed to accept both H_{a5} and H_{a6} .

No bidirectional granger causality for any of the funds and the stock index were found. Only one unidirectional causality was established, that of the stock index (psei) granger causing the equity fund (equi).

The results were consistent with the study of Mishra, P. K. (2015)[13] and that of Gueyie, et al (2016)[2], that stock indices had unidirectional effect on funds.

VI. CONCLUSIONS

There are several investment options and one of them is mutual fund that has existed in the Philippines for over half a century. The findings of this study have proven that the Philippine stock market index influences the equity fund, but not vice-versa. The same could not be inferred about the other two funds. The results partially validate the informed trader theory. The nature of fund investing is such that the investors do not directly choose the specific portfolio of assets to be invested in. That role is assumed by fund managers, who are assumed to exercise due diligence in the choice of assets based on relevant market signals.

VII. RECOMMENDATIONS

For future investigation, a granger causality be conducted among bond returns and stock Philippine stock index returns. Other mutual fund types could be added as variables and as an aggregate mutual funds in the Philippines against the Philippine stock index return, if a similar study is also conducted to further validate the informed trader theory. The study suggests to employ a more superior Autoregressive Distributed Lag (ARDL) method.

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