

## Philippine Mutual Funds Performance 2008-2018

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**Introduction:** This paper examined the effects of macroeconomic variables as interest rate, inflation rate, and exchange rate on the performance of mutual funds in the Philippines from 2008 to 2018. But still, the basic investment tenet “historical returns are not a guarantee of future performance” remains true to form. One cannot predict the future performance of a fund just by looking at its past performance due to the difficulty of ignoring uncertainty. “Exposure to risk,” meanwhile, refers to volatility in the returns achieved by the fund and deviations from expected returns. These are calculated by financial indicators such as  $r$ -squared, beta, or standard deviation of the residuals. These provide the figures to determine the risk exposure of the investment fund. The Durbin-Watson test was computed to test for the presence of autocorrelation and unit root. The Ljung-Box test tested for the presence of independence of the mutual fund returns. Regression equations with the macroeconomic variables as explanatory variables and the mutual fund returns as dependent variables were derived to determine to what extent the macroeconomic variables affected the returns of the mutual funds.

Interest rate, the impact of changing interest rates is clear when it comes to the profitability of debt-oriented mutual funds. Nonetheless, rising interest rates may make mutual funds, and other investments, less attractive in general since the cost of borrowing increases as interest rates rise, individuals and businesses have less money to put into their portfolios. This means mutual funds have less capital to work with, making it harder to generate healthy returns. But to investors, increasing interest rates would yield higher returns. However, the stability of short-term debt, money market funds or other mutual funds that invest primarily in secured short-term assets issued by highly rated governments or corporations are less vulnerable to the ravages of interest rate volatility (Boyte-White, 2018). Rising rates is bad news for debt fund investors. When the interest rate starts to move up, the price of existing

bonds falls which in turn pushes down the net asset value (NAV) of debt funds, translating into lower returns for the investor (Dhawan, 2018). But rising rates affect both the equity and fixed-income markets, albeit in different ways. Interest-rate movements are essentially the bond market’s way of signaling how investors feel about the future of their future returns. Despite all the seemingly complex machinations behind rate fluctuations, it can boil down to a simple supply-and-demand equation.

Inflation rate, inflation is one that consumers and investors want to be as low as possible. For the simple reason that it erodes both purchasing power and the returns on investments as the prices of goods and services rise. Since this factor is inevitable knowing how to protect investment value from shrinking considerably, several types of mutual funds can protect investment value in different ways. One way of fighting inflation’s effect on the investment is to buy mutual funds that invest in commodities, real property or in real estate investment trusts or invests in Treasury inflation-protected securities.

Mutual Funds do not have inflation rate (Anindya Dhar, BDE, 2017). We talk about inflation when we consider the purchasing power of money. Inflation rate is the rate at which the price of general goods and services increase with time. This is a result of increase in money supply and the subsequent reduction in the purchasing power of money. The only consideration to make while investing in mutual funds about inflation rate is whether the returns offered by your investment are greater than inflation rate.

Gusni, Silviana, Faisal Hamdani (2018) investigated the performance of equity mutual fund using risk-adjusted performance proposed by Treynor (1965) and examined factors affecting mutual fund performance by using the ability of investment manager (market timing and stock selection skill), fund size, and inflation. The result showed that equity mutual fund performance tends to fluctuate in Indonesia. Equity mutual fund performance was influence by stock selection skill and inflation,

meanwhile, market timing skill and fund size had no significant effect on the equity mutual fund performance.

Exchange rate, in overseas investing, currency movements play a major role in a fund's total returns (Dierking, 2017). Understanding how foreign currencies behave against the U.S. dollar can help investors manage foreign exchange risk in their portfolios. Exchange rate movements could either enhance or diminish the return of that security. Currency risk, or exchange rate risk, comes from the chance that exchange rate movements could negatively impact an investment's total return. It is important to note that currency risk can affect both the price appreciation of a security and the dividend and interest payments it makes. Exchange rate movements are a reflection of short-term economic conditions and can occur because of a number of different factors:

Interest rates, higher interest rates lead to higher rates of return for investors.

Trade balance, the balance of trade between imports and exports can impact the supply and demand for currencies.

Public debt, high levels of government debt can have a negative impact on a country's exchange rate.

Political environment, a country experiencing political unrest or governmental instability likely makes for a less attractive investment opportunity.

Both domestic mutual funds and international funds expose investors to currency risk (Zacks, 2018). In contrast, a global fund can protect the investor from fluctuations involving the dollar. When the dollar rises, the foreign securities in the fund lose value but the market value of the U.S. securities rises. Depending on the exact makeup of the fund, rising U.S. asset prices may more than offset losses tied to foreign holdings. The investment risks posed by changing exchange rates emphasize the importance of investing in companies, not in currencies. The shifts and turns of currencies are largely unpredictable and can be volatile, even dramatic, in the short term. However, over the long term, research studies have found that the effect of currency volatility tends to balance out (Mackenzie Investments, 2017). This is why one should consider focusing on funds that buy the stocks of competitive companies at attractive

prices. These are businesses that have long-term advantages in their industries and offer products and services that customers want.

The variability in short-term exchange rate movements and the impact this can have on investment returns shows that currency movements tend to have minimal impact over the long term. Over periods of 15 years or longer, the impact of exchanges between the Canadian dollar and the U.S. dollar on investment returns gets closer and closer to zero – an important point for long-term investors (Global Asset Management, 2018).

Mutual Funds in the Philippines, the year 2008 was not a good year for most mutual funds that declined severely in values thus wiping out the gains earned in 2007. Likewise, bonds and money markets suffered from the economic crunch that hit the global markets.

The 1st quarter of 2009 showed positive returns of Philippine mutual funds showing recovery. The 2nd quarter showed a continuing improvement in the funds. Most of the equity funds tracked the performance of the PSE index, which grew up 30% year to date (2018). Some balanced funds, which invest in both stocks and bonds, were even comparable with other equity funds in terms of returns.

In 2010, just 1 out of 8 equity funds underperformed compared to the PSE index while of the Peso balanced funds, 5 out of 8 funds were above par index performance. It should be noted that the benchmark Philippine Stock Exchange index (PSEi) increased 63% in 2009 but grew by only 37.6% in 2010.

In 2011, the Philippine equity market got a net gain of 4.07% considered as the best performance of a stock market in Southeast Asia. Also, investment funds followed while most mutual funds ended positive.

The Philippines survived 2011 and managed to end the year with above-average performance even with the continuing economic crunch in the global markets due to the European debt crisis and the United States troubled finances. Despite the continuing economic crunch in the global markets, fueled by the European debt crisis and the United States' troubled finances, the Philippines survived 2011 and managed to end the

year with above-average performance. Bond funds registered an average return of 7.43% last year — better than the average return of 3.12% booked by equity funds brought about by the improving credit rating of the Philippines and investors' risk made bonds more attractive in 2011.

The year 2012 was a good year for mutual funds with positive growths. Nonetheless, only a few managed to outperform the benchmark index. All stock mutual funds grew by two-digits, but they paled in comparison to the 32.95% return of the PSEi. Balanced funds had returns that matched the performance of equity funds. Even external threats credit rating downgrades, loan defaults and recession in the European region, and the debt ceiling and fiscal cliff problem of the United States the market rallied. Yields of Philippine bond funds and money market funds were relatively high compared to the previous year. Their returns were a lot higher than the interest rates offered by bank's savings and time deposit accounts. In 2013, bond funds outperformed equity funds. Equity mutual funds actually underperformed in 2012 with barely half of Philippine

### Methods

David Diltz and [David Rakowski](#), (2018) in his study, "Mutual fund research: a perspective on how we have arrived at the current state of academic research on mutual funds" presented studies done by various authors on various factors affecting mutual funds' performance.

The Top Ten Philippine mutual funds included in this study were classified into the following: Peso Stock Funds (PSF), Peso Balanced Funds (PBF), Dollar Balanced Funds (DBF), Peso Bond Funds (PBF), Foreign Currency Bond Funds (FCB) and Peso Money Market Funds (PMMF).

This paper attempted to study the top mutual funds' performance from 2008 to 2018 focusing on three macroeconomic variables: interest rate, inflation rate and exchange rate. OLS and polynomial regressions were initially tested for goodness of fit. The result showed that OLS regression was better suited for the analysis as it has a lower standard deviation and standard deviation of the residuals. The r-squared, beta and standard deviation of the residuals were used to test the risk exposure of the funds. The Ljung

equity mutual funds managing to beat the 1.33% growth of the benchmark Philippine Stock Exchange index (PSEi) in 2013. Peso-denominated bond mutual funds also easily outperformed the PSEi's growth in 2013 and also that of the equity funds.

The year 2014 was also a good year for the mutual funds each of which posted two-digit returns, better off than their performance in 2013.

The year 2015 was not a good year for the funds each of which posted negative returns although with a minimal positive net gain against the returns in 2014.

Of the 40 peso-denominated mutual funds, just 9 posted positive returns. The rest suffered a loss, where below par the PSEi with a -3.81% as of January 2015.

In the year 2016, investments reached new highs and peak returns, both in the performance of the Philippine stock market and in mutual funds.

The mutual funds also ended up with positive returns in 2017 most of them outperforming the PSEi. The mutual funds ended the year 2018 with positive returns. Overall, the mutual funds posted positive net returns from 2008-2018.

Box test if the mutual fund returns are dependent to the macroeconomic variables. The Durbin-Watson statistics was used to test the presence of autocorrelation and a unit root.

The mutual fund returns performance data were taken from Investment Company Association of the Philippines published online by Pinoy Money Talk.

**Results:** Ljung-Box test, many statistical tests are used to try to reject some null hypothesis. In this particular case, the Ljung-Box test tries to reject the independence of some values:

\*If  $p\text{-value} < .05$ : Reject the null hypothesis assuring a 5% chance of making a mistake. One can assume that the values are showing dependence on each other.

\*If  $p\text{-value} > .05$ : One does not have enough statistical evidence that the values are dependent. This could mean that the values are dependent anyway or it can mean that they are independent. But one is not proving any specific possibility, what the test actually said is that one cannot assert the dependence of the values, neither one can assert the independence of the values. In general, what is

important is to keep in mind that  $p$ -value  $<.05$  lets one reject the null hypothesis, but a  $p$ -value  $>.05$  does not let one confirm the null hypothesis. The Ljung-Box test statistic results showed that the mutual fund returns under study had all  $p$ -values  $>.05$ , that is, the mutual fund returns were independent from the changes in interest rates, inflation rate, and exchange rate.

Durbin-Watson statistic, It is a test statistic to detect the presence of autocorrelation at lag 1 in the residuals from a regression analysis. Later, John Denis Sargan and Alok Bhargava developed several von Neumann-Durbin-Watson types of test statistics for the null hypothesis that the errors on a regression model follow a process with a unit root against the alternative hypothesis that the errors follow a stationary first order.  $DW=2.0$  indicates no autocorrelation. A  $DW$  which is substantially less than 2.0 indicates presence of positive serial correlation while a  $DW$  which is substantially greater than 2.0 reflects successive error terms negative correlation that are negatively correlated which imply an underestimation of the level of statistical significance.

The computed  $DW$ s ranged from 1.898 to 2.209 which can be considered as relatively close to 2.0.

### F-test Performance of Mutual Fund Returns in the Philippines 2008-2018

Table 1 provides the F-test performance of mutual funds in the in the Philippines for 2008-2018 to show the effects of inflation rate.

Table 1  
F-Test Performance of Mutual Funds in the Philippines  
INFLATION RATES 2008-2018

Statistics	MUTUAL FUNDS					
	DB F	FCB	PBF	PBO	PM M	PSF
Coefficients	-10.7	-1.71	-.535	-13.28	.140	-10.65
Durbin-Watson	1.91	2.97	1.91	1.10	2.016	2.010
Std. Dev. (Res.)	.775	.775	.775	.775	.775	.775

t-value	-1.44	-.643	-.402	-1.465	-.434	-1.22
Mean (Residuals)	0.0	0.0	0.0	0.0	0.0	0.0
p-value	.199	.544	.702	.193	.679	.268
F-Value	1.11	.686	1.19	2.271	.726	.773
p-value	.42	.627	.403	.177	.605	.581
r-square	.42	.314	.442	.602	.326	.340

Coefficients, the effects of inflation rate to the mutual funds were negative. The  $t$ -values were significantly small and correspondingly the  $p$ -values were greater than .05. Also, except for PMM, the rest of the mutual funds had year beginning of negative rates caused by inflation rate.

Durbin Watson test, the Durbin-Watson ( $DW$ ) test for test of stationary shows that mutual funds under study were within the range of normality ( $DW=1.898-2.209$ ). An exception is the foreign currency mutual funds (FCB) which was beyond the normal range ( $DW=2.97$ ). In general, the mutual funds tended to be changing negatively.

Standard deviation of residuals and mean of residuals, the standard deviation of residuals is a test of volatility of the fund. When the mean of the residuals is zero, the volatility is considered to be not significant. The computed values of the residuals were .775 which was significantly low with the mean residuals equal to 0.0.

F-test of significance of performance, the F-test is a test of significance of the whole regression equation. A  $p$ -value that is less than .05 indicates that the whole regression is significant and can be valid as a tool to predict the value of the dependent variable for the next period. The computed  $F$ -values were significantly low with a corresponding  $p$ -value greater than .05,

R-square, the  $r$ -squared test statistic indicates the extent to which included relevant explanatory variables part of the equation that explains the

results of the regression equation. An r-square less than 100% indicates that there are other relevant explanatory variables that were not part of the study. The r-squared values are very low (0.314-0.602).

Table 2 provides a summary of the derived regression equation in relation to interest rate.

Table 2  
F-Test Performance of Mutual Funds in the Philippines  
INTEREST RATES 2008-2018

Statistics	MUTUAL FUNDS					
	DBF	FCB	PBF	PBO	PM M	PSF
Coefficients	- 2.76 8	.30 6	- 3.1 4	28. 1	- .084	- 2.23 0
Durbin-Watson	1.91	2.9 7	1.9 1	1.1 0	2.01 6	2.01 0
Std. Dev. (Res.)	.314 .775	.77 5	.77 5	.77 5	.775	.775
t-value	- .437	.13 4	- .40 4	.16 0	-303	- .298
Mean (Residuals)	0.0	0.0	0.0	0.0	0.0	0.0
p-value	.677	.89 8	.70 0	.87 8	.772	.776
F-Value	1.11	.68 6	1.1 9	2.2 7	.726	.773
p-value	.42	.62 7	.40 3	.17 7	.605	.581
r-squared	.42	.31 4	.44 2	.60 2	.326	.340

Coefficients, interest rate had positive effect on FCB and PBO. The rest of the mutual funds were negatively affected by interest rate. The t-values were significantly low resulting to high p-values (greater than .05).

Durbin-Watson test, the Durbin-Watson test showed that the mutual funds were on normal

ranges although negatively increasing. The volatility test indicates that the mutual funds had unit roots but deviating insignificantly from the unit root on a negative direction.

Standard deviation of residuals and mean of residuals, the standard deviation of the residuals was 0.775 with a mean equal to zero. The mean equal to zero indicated that the mutual funds were not volatile as to the effects of interest rates.

F-test of significance of derived equation, the F-test to determine the significance of the derived equation yielded low F-values and correspondingly high p-values that were greater than .05.

R-squared, the computed r-square were quite low for the mutual funds (.314 - .602). Some relevant explanatory variables were not included in the regression.

Table 3 provides the summary of the performance of mutual funds as to the effects of exchange rates.

Table 3  
F-Test Performance of Mutual Funds in the Philippines  
EXCHANGE RATES 2008-2018

Statistics	MUTUAL FUNDS					
	DBF	FC B	PBF	PBO	PM M	PSF
Coefficients	3.09 4	.33 3	3.85 3	- .419	.062	2.58 0
Durbin-Watson	1.91	2.9 7	1.90	2.20	2.01 6	2.01 0
Std. Dev. (Res.)	.775	.77 5	.775	.755	.775	.775
Mean (Residuals)	0.0	0.0	0.0	0.0	0.0	0.0
t-value	1.06 5	.13 4	- .404	- .800	-303	- .298
p-value	.677	.89 8	.700	.454	.772	.776
F-Value	1.11 7	.68 6	2.27 1	2.27 1	.726	.773
p-value		.62	.177	.177	.605	.581

	.429	7				
r-square		.31	.326	.602	.326	.340
	.427	4				

Coefficients, except for PBO, the rest of the mutual funds were positively affected by exchange rates. The t-test of significance of these coefficients yielded t-values that were significantly low and correspondingly with high p-values those were greater than .05.

Durbin-Watson test, except for FCB with a high DW=2.97, all the rest of the mutual funds were within the normal range (1.898 – 2.209). These mutual funds had unit roots and were changing negatively overtime. FCB exhibited a high DW value moving to the downside.

Standard deviation of residuals and mean of residuals, the computed standard deviation of the residuals was .775 with a mean equal to zero that indicated no volatility in the returns of the mutual funds.

F-value test of the regression equation, the F-value was low for all mutual funds with corresponding p-values that were greater than .05.

R-square, the computed r-squares range from 0.314 to .602 that explained the extent to which the explanatory variable, exchange rate affected the value of the mutual funds. Other explanatory variables were yet to be identified.

marked on the ACG record by clicking a rapid Morse code key, where the event mark was fully corresponded to ACG spikes.

Discussions: The Box-Ljung test is a diagnostic tool used to test the lack of fit of a time series model. The test examines autocorrelations of the residuals. The autocorrelations tended to be very small and were not significant, thus, it can be safely concluded that the derived regression equations did not significant lack of fit.

Macroeconomic variables, the Philippines economic forecasts - 2018-2020 outlook provided a declining trend from 5.20% 2018 to 3.3% in 2020. The downtrend in inflation provided an upturn of the mutual funds as seen in the inverse relation of the mutual funds (- coefficients), that is, an upturn of inflation rate reflects a corresponding downturn in mutual fund values. As the economic forecast was expected for inflation rates to decrease further to Year 5

2020, values of mutual funds are expected to rise. This results confirmed the earlier findings by researcher as seen in the introduction section. Other authors meanwhile found out that inflation has actually no effect on the value of the mutual fund overtime.

Likewise, interest rates are expected rise from 3.5% in 2018 to 4.0% in 2020. The results showed that an increase in interest rate will cause to increase the return to investors. This result confirmed earlier results of studies done as seen in the introduction

The Durbin-Watson results showed that although the mutual values are decreasing overtime, the decreases were not significant as they were within the normal range of negatively changing or positively changing overtime.

The standard deviations and means of the residuals showed that the changes or volatility of the funds were not significant. For the investor, a quick adjustment in the mutual fund portfolio will provide a hedge against inflation rate.

The dollar denominated funds as expected were vulnerable to inflation rate as the peso had to be exchange to dollar value in the foreign country to which these funds are invested.

The t-tests of significance of the macroeconomic variables to the mutual funds were not significant, that is, their effects on the changes of the fund values were not significant except for some with DW > 2.209 which reflected serious concern.

The F-test significance of the derived regression equations was not also significant which can be inferred that these are not valid tools to predict the values of the mutual based on macroeconomic variables as inflation rate, interest rate and inflation rate. This finding was supported by the low r-square test. The test showed there were more explanatory variables that were needed to be part of the study.

Overall Performance, overall, over the periods 2008 – 2018, the top ten mutual funds in each group were found to be:

Not dependent to the three macroeconomic (interest rate, inflation rate, exchange rate);

Not affected significantly to the three macroeconomic variables;

Exhibiting a unit root staying within the limits of the unit root;

Changing negatively overtime but not significant; and, Have positive returns in the long run.

## Extended Abstract

The Top Ten Philippine Mutual Funds from 2008-2018 were not significantly affected by the three macroeconomic variables. Other studies focused on trade balance, public debt and political environment, market timing and stock selection skill, and fund size which provided significant effects to mutual funds. Further studies could be done to throw in as many explanatory variables as possible (country risk, corruption, technological environment, green environment, etc.) and run them through a multiple wise regression to end up with a meaningful few.