International Journal of Information Technology and Business Management
29th June 2013. Vol.14 No.1

ISSN 2304-0777 www.jitbm.com

THE RISK-ADJUSTED PERFORMANCE OF EQUITY AND BALANCED FUNDS IN THE PHILIPPINES

Catherine Kalayaan S. Almonte
Financial Management Department, Faculty, De La Salle University, Manila, Philippines
E-mail: catherine.almonte@dlsu.edu.ph

Abstract:

The Treynor, Sharpe, and information ratios of equity and balanced mutual funds in the Philippines for the period January 2010 until December 2012 were calculated. Benchmarking (largely inspired by [8] Badillo, Chang, Lagamayo, & Lim, 2003; [6] Arugaslan, Edwards, & Samant, 2008; [4] Almonte, 2012d; [23] Nooney & Devi, 2012; [31] Reilly & Brown, 2012) and statistical analyses (inspired by [36] Tehrani, Ahmadinia, & Hasbaei, 2011; [31] Reilly & Brown, 2012) were conducted. According to the results, (1) the leaders were First Metro Save and Learn Equity Fund, Inc. and First Metro Save and Learn Balanced Fund, Inc., (2) there were correlations between the ratios, (3) there were statistical differences between the ratios, and (4) balanced funds were like equity funds.

Keywords: risk-adjusted performance, Treynor ratio, Sharpe ratio, information ratio, mutual funds

INTRODUCTION

Determining how well a portfolio performs may be conducted by studying "... composite equity portfolio performance measures that combine risk and return performance into a single value" ([31] Reilly & Brown, 2012, p. 935). The Treynor ratio "... *implicitly assumes* a completely diversified portfolio" ([31] Reilly & Brown, 2012, p. 937). On the other hand, the Sharpe ratio "... seeks to measure the *total risk* of the portfolio by using the standard deviation of returns rather than considering only the systematic risk summarized by beta" ([31] Reilly & Brown, 2012, p. 939). The information ratio indicates the proficiency of the fund manager ([15] Goodwin, 1998; [31] Reilly & Brown, 2012). The researcher adhered to the suggestion(s) of [4] Almonte (2012d).

The objectives of this study were: (1) to calculate the funds' Treynor, Sharpe, and information ratios (largely inspired by [16] T. Jagric, Podobnik, Strasek, & V. Jagric, 2007; [11] Bansal, Kumar, & Gupta, 2012; [31] Reilly & Brown, 2012; [4] Almonte, 2012d); (2) to establish the funds' performance on a per ratio basis (largely inspired by [8] Badillo, Chang, Lagamayo, & Lim, 2003; [6] Arugaslan, Edwards, & Samant, 2008; [4] Almonte, 2012d; [23] Nooney & Devi, 2012; [31] Reilly & Brown, 2012) and on an overall basis (inspired by [8] Badillo, et al., 2003); (3) to determine if a correlation exists between the ratios (inspired by [31] Reilly & Brown, 2012); and (4) to ascertain if a certain ratio is significantly different from another (inspired by [36] Tehrani, Ahmadinia, & Hasbaei, 2011). Since the third and fourth objectives could be statistically tested, the following research hypotheses were made (note: the first and second hypotheses were inspired by [31] Reilly & Brown (2012) while the third and fourth hypotheses were inspired by [36] Tehrani, et al.

International Journal of Information Technology and Business Management
29th June 2013. Vol.14 No.1

ISSN 2304-0777 www.jitbm.com

(2011)): *(1) There was a significant correlation between the Treynor and Sharpe ratios, the Treynor and information ratios, and the Sharpe and information ratios of equity funds based in Philippine Pesos; (2) There was a significant correlation between the Treynor and Sharpe ratios, the Treynor and information ratios, and the Sharpe and information ratios of balanced funds based in Philippine Pesos; (3) The Treynor, Sharpe, and information ratios of equity funds based in Philippine Pesos were significantly different from each other; and (4) The Treynor, Sharpe, and information ratios of balanced funds based in Philippine Pesos were significantly different from each other.*

As with [6] Arugaslan, et al. (2008), this research could assist investors on how to judge fund performance more thoroughly by using a functional approach.

LITERATURE

Single Measure of Risk-Adjusted Performance

[11] Bansal, Kumar, & Gupta (2012), also cited in [4] Almonte (2012d), studied a dozen funds (Indian setting). According to them, 25% of funds had Sharpe ratios greater than zero ([11] Bansal, Kumar, & Gupta, 2012).

[4] Almonte (2012d) evaluated the Sharpe ratios of Philippine stock funds. Her research revealed that all portfolios produced Sharpe ratios that were greater than zero and that 80% of the funds were able to do better than the benchmark when the investment period was short-term to medium-term ([4] Almonte, 2012d).

Several Measures of Risk-Adjusted Performance

There were several studies that were set in India ([12] Debasish, 2009; [10] Bansal, Garg, & Saini, 2012; [13] Dhanda, Batra, & Anjum, 2012; [23] Nooney & Devi, 2012). ([12] Debasish (2009), also cited in [4] Almonte (2012d), studied more than 20 mutual funds. Based on the results, 52%, 57%, and 70% of the funds generated positive Treynor ratios, Sharpe ratios, and Jensen's alphas, respectively ([12] Debasish, 2009). In contrast to [12] Debasish (2009), [10] Bansal, Garg, & Saini (2012) studied six mutual funds by using the Treynor and Sharpe ratios. The results showed that the market benchmark had negative Treynor and Sharpe ratios ([10] Bansal, Garg, & Saini, 2012). Furthermore, except for one fund that gave positive ratios, all other funds' ratios were less than zero ([10] Bansal, Garg, & Saini, 2012). Moreover, [13] Dhanda, et al. (2012) studied several funds; their analysis was conducted annually. According to them, for the first period, all funds had positive Treynor and Sharpe ratios; for the second period, 40% of the funds had positive Treynor and Sharpe ratios ([13] Dhanda, et al., 2012). Additionally, [23] Nooney & Devi (2012) studied local and overseas mutual funds. They used the Treynor ratio, Sharpe ratio, and Jensen's alpha to judge fund performance ([23] Nooney & Devi, 2012). Part of their study showed that in terms of average return, local balanced and bond funds did better than overseas balanced and bond funds while overseas equity and money market funds did better than local equity and money market funds ([23] Nooney & Devi, 2012).

[22] Nafees, Shah, & Khan (2011) studied two types of mutual funds in Pakistan: open-end and closed-end stock and balanced funds. They used the Treynor ratio, Sharpe ratio, Jensen's alpha, the information ratio, and the Sortino ratio to research fund performance ([22] Nafees, et al., 2011). According to their data presentation, 64% of open-end funds generated negative Treynor, Sharpe, and Sortino ratios; 91% of open-end funds had negative Jensen alphas and information ratios; 50% of closed-end funds generated negative Treynor, Sharpe, information, and Sortino ratios; and 100% of closed-end funds had negative Jensen alphas ([22] Nafees, et al., 2011).

Some studies were set in Tehran ([18] Kolbadi & Ahmadinia, 2011; [36] Tehrani, et al., 2011). [18] Kolbadi & Ahmadinia (2011) studied funds by employing the Sortino ratio, Sharpe ratio, and Sterling ratio. On the other hand, [36] Tehrani, et al. (2011) determined that based on the average

ISSN 2304-0777 www.jitbm.com

ranking of the ratios, the Treynor ratio was the leader while the Sharpe ratio was the laggard. Part of their statistical tests indicated the following: there was a difference in the average ranking of the Treynor ratio compared to the average ranking of the Sharpe ratio, there was no difference in the average ranking of the Sortino ratio compared to the average ranking of the Treynor ratio, and there was no difference in the average ranking of the Sortino ratio compared to the average ranking of the Sharpe ratio ([36] Tehrani, et al., 2011).

[16] T. Jagric, et al. (2007), also cited in [4] Almonte (2012d), studied nine funds in Slovenia. They determined that the funds' had pretty constant rankings (Treynor and Sharpe ratios); 100% of the funds generated Treynor ratios, Sharpe ratios, and Jensen's alphas that were greater than zero ([16] T. Jagric, et al., 2007).

[6] Arugaslan, et al. (2008), also cited in [4] Almonte (2012d), studied stock funds in America for two periods using more than three measures. Part of their results showed that: (1) in the first period, 70% of the funds had positive Treynor, Sharpe, & Sortino ratios while 85% of the funds generated positive Jensen alphas and (2) in the second (longer) period, 100% of the funds had positive Treynor, Sharpe, & Sortino ratios while 80% of the funds generated positive Jensen alphas ([6] Arugaslan, et al., 2008).

[17] Kapoor (2012) studied mutual funds and hedge funds in Canada via their Treynor, Sharpe, information ratios, etc. Part of his results showed that hedge funds did better than mutual funds based on the Treynor, Sharpe, and information ratios ([17] Kapoor, 2012).

[31] Reilly & Brown (2012) studied mutual funds using the Treynor ratio, Sharpe ratio, information ratio, and Jensen's alpha. Part of their results showed that 40% of the funds' Treynor ratios, Sharpe ratios, and Jensen alphas (three factors) were greater than zero; 73% of the funds' information ratios and Jensen alphas (one factor) were greater than zero; and 30% of the funds' Jensen alphas (four factors) were greater than zero ([31] Reilly & Brown, 2012).

Review and Literature Gap

It seemed that researchers ([16] T. Jagric, et al., 2007; [6] Arugaslan, et al., 2008; [12] Debasish, 2009; [18] Kolbadi & Ahmadinia, 2011; [22] Nafees, et al., 2011; [36] Tehrani, et al., 2011; [4] Almonte, 2012d ; [10] Bansal, Garg, & Saini, 2012; [11] Bansal, Kumar, & Gupta, 2012; [13] Dhanda, et al. 2012; [17] Kapoor, 2012; [23] Nooney & Devi, 2012; [31] Reilly & Brown, 2012) favored the Sharpe and Treynor ratios when conducting studies about risk-adjusted performance. The use of the Sharpe ratio in all 13 studies ([16] T. Jagric, et al., 2007; [6] Arugaslan, et al., 2008; [12] Debasish, 2009; [18] Kolbadi & Ahmadinia, 2011; [22] Nafees, et al., 2011; [36] Tehrani, et al., 2011; [4] Almonte, 2012d ; [10] Bansal, Garg, & Saini, 2012; [11] Bansal, Kumar, & Gupta, 2012; [13] Dhanda, et al. 2012; [17] Kapoor, 2012; [23] Nooney & Devi, 2012; [31] Reilly & Brown, 2012) substantiated the statement that it "… is the simplest measure to compute, requiring just a few straightforward calculations based on the portfolio returns themselves" ([31] Reilly & Brown, 2012, p. 945). Moreover, the use of the Treynor ratio in 11 studies ([16] T. Jagric, et al., 2007; [6] Arugaslan, et al., 2008; [12] Debasish, 2009; [18] Kolbadi & Ahmadinia, 2011; [22] Nafees, et al., 2011; [36] Tehrani, et al., 2011; [10] Bansal, Garg, & Saini, 2012; [13] Dhanda, et al. 2012; [17] Kapoor, 2012; [23] Nooney & Devi, 2012; [31] Reilly & Brown, 2012) involving several measures of risk-adjusted performance confirmed its resemblance with the Sharpe ratio ([31] Reilly & Brown, 2012). The information ratio seemed to be relatively unpopular with recent works as only three ([22] Nafees, et al., 2011; [17] Kapoor, 2012; [31] Reilly & Brown, 2012) explicitly used it.

Thus, combining (1) the inclusion of the information ratio (together with the Treynor and Sharpe ratios (largely inspired by [16] T. Jagric, et al., 2007; [11] Bansal, Kumar, & Gupta, 2012; [31] Reilly & Brown, 2012; [4] Almonte, 2012d)), (2) using several versions of the balanced funds' benchmark, and (3) using an overall ranking (inspired by [8] Badillo, et al., 2003) to determine which fund was the

International Journal of Information Technology and Business Management
29th June 2013. Vol.14 No.1

ISSN 2304-0777 www.jitbm.com

leader and top underperformer made this study different.

METHODOLOGY

This study measured the risk-adjusted performance ([31] Reilly & Brown, 2012), via the Treynor ([37] Treynor, 1965), Sharpe ([32] Sharpe, 1966), and information ratios ([15] Goodwin, 1998) of Peso-based equity and balanced funds in the Philippines for the period January 2010 until December 2012. A total of 14 mutual funds were included in this study. Fund names were obtained from the Philippine Investment Funds Association ([28] PIFA, http://www.pifa.com.ph/factsfignavps.asp, 2013, April 29).

Following [4] Almonte (2012d), who used an earlier version of the [31] Reilly & Brown (2012) book, the ratios were calculated based on the formulae provided by [31] Reilly & Brown, 2012, pp. 937-940, & 942) and [21] Microsoft Excel 2007 was used to calculate the ratios. The researcher followed [4] Almonte (2012d) regarding the general method used for calculating the Sharpe ratios.

The following were used (variables based on [31] Reilly & Brown, 2012, pp. 937-940, & 942): (1) the 91-day Treasury bill rate was used as a reference for the risk-free rate (modelled after [6] Arugaslan, et al., 2008; [4] Almonte, 2012d), (2) the Philippine stock market composite index or PSEi served as the benchmark for equity funds (inspired by [16] T. Jagric, et al., 2007; [6] Arugaslan, et al., 2008; [4] Almonte, 2012d; [19] J.J.F. Lago, personal communication, 2013, January 9), and (3) both the PSEi and the yield of the one-year fixed income security ("PDS1Y – PDS Tenor 1 Year" as called by [35] Technistock (Philippines), Inc.; as suggested by industry practitioner [19], [20] J.J.F. Lago, personal communication, 2013, January 9, 2013, January 11) were used to compute for the benchmark of balanced funds.

Although balanced funds comprise of equities and fixed income securities ([29] PIFA, http://www.pifa.com.ph/mf_101.html, 2013, June 13), some do not necessarily follow an equal split between stocks and fixed income ([1] Almonte, 2012a) because some fund managers tend to be overweight on equities ([24], [25], [26], [27] Philam Asset Management, Inc., 2010, July 30, 2011, July 15, 2012, May 18, 2013, April 19; [7] ATR KimEng Asset Management, 2011, November 29; [34] Sun Life Financial Philippines, 2013, March 27). Corollary to this, several versions of the balanced funds' benchmark were constructed: (1) 50% equity, 50% fixed income securities (the theoretical fund composition; also suggested by [19] J.J.F. Lago, personal communication, 2013, January 9), (2) 60% equity, 40% fixed income securities, (3) 70% equity, 30% fixed income securities, and (4) 80% equity, 20% fixed income securities. Furthermore, this study assumed that balanced funds' combination of equity and fixed income securities could have varied over time and between one fund and another.

The benchmark Treynor ratio required a value of the market beta. As it is commonly known, the market beta has a value of 1 ([14] Gitman, 2009; [31] Reilly & Brown, 2012). Having the supporting computations for the benchmarks of the equity and balanced funds enabled the researcher to determine the Treynor and Sharpe ratios of the market ([31] Reilly & Brown, 2012). A minimum value of zero was used for the market benchmark's information ratio (i.e. the fund must, at the very least, perform at par with the market; based on the information ratio formula ([15] Goodwin, 1998; [31] Reilly & Brown, 2012)).

Some notes regarding calculations (variables based on [31] Reilly & Brown, 2012, pp. 937-940, & 942): (1) arithmetic means (based on monthly values) of mutual funds' returns and standard deviations were annualized ([15] Goodwin, 1998, p. 37; [4] Almonte, 2012d), (2) arithmetic means (based on monthly values) of benchmarks' returns and standard deviations were annualized ([15] Goodwin, 1998, p. 37; [4] Almonte, 2012d), (3) standard deviations of the funds' surplus return were annualized ([15] Goodwin, 1998, p. 37), (4) average annual risk-free rate = the mean of the 91-day Treasury bill rates for 2010, 2011, and 2012 (followed the method of [4] Almonte, 2012d), and (5) beta = used the slope function of [21]

International Journal of Information Technology and Business Management
29th June 2013. Vol.14 No.1

ISSN 2304-0777 www.jitbm.com

Microsoft Excel where data involved monthly fund returns and monthly benchmark returns.

Data, on a per month basis, ([4] Almonte, 2012d; net asset values per share of mutual funds, information on the PSEi, and the yields of the one-year fixed income security) was obtained from [35] Technistock (Philippines), Inc. (note: [35] Technistock was also used by [1], [2], [3], [4] Almonte 2012a, 2012b, 2012c, and 2012d). On the other hand, data (on a per year basis) for the 91-day Treasury bill was obtained from the Bureau of the Treasury (as cited in the website of the [9] Bangko Sentral ng Pilipinas (BSP), http://www.bsp.gov.ph/statistics/sdds/tbillsdds.htm, 2013, April 2).

The procedure used for analysis came from various sources (e.g. [8] Badillo, et al., 2003; [16] T. Jagric, et al., 2007; [36] Tehrani, et al., 2011; [3], [4] Almonte, 2012c, 2012d; [23] Nooney & Devi, 2012; [31] Reilly & Brown, 2012). In line with [6] Arugaslan, et al. (2008), [4] Almonte (2012d), [10] Bansal, Garg, & Saini (2012), and [31] Reilly & Brown (2012), this study defined a fund with a ranking of 1 to be the leader.

According to [31] Reilly & Brown (2012), a discrepancy in the Treynor and Sharpe ratio rankings "… comes directly from a difference in portfolio diversification levels" (p. 945). To determine the overall performance of the funds, the rankings of the funds' three ratios were added (similar to a technique used by [8] Badillo, et al., 2003).

Spearman correlation (also used by [36] Tehrani, et al., 2011 for a different hypothesis) was used to test the first and second hypotheses. The correlation coefficients were interpreted using the information provided by [33] Statstutor, http://www.statstutor.ac.uk/resources/uploaded/spearmans.pdf, (n.d.). On the other hand, the Kruskal-Wallis test (also used by [8] Badillo, et al., 2003; [18] Kolbadi & Ahmadinia, 2011; [1], [2], [3], [5] Almonte, 2012a, 2012b, 2012c, 2013 for different hypotheses), was used to test the third and fourth hypotheses. Spearman correlation and the Kruskal-Wallis test were performed via [38] XLSTAT 2011.4.02 (note: [38] XLSTAT was also used by [1], [2], [3], [5] Almonte, 2012a, 2012b, 2012c, 2013).

The methodological limitations of this research were the following: (1) the length of period studied was covered by the adjustment in the trading hours of the stock market ([30] Philippine Stock Exchange, Inc., The, http://www.pse.com.ph/stockMarket/announcements.html, 2011, September 26; [2], [4] Almonte, 2012b, 2012d), (2) annual data for the risk-free rate was used (because there was at least one month where the 91-day Treasury bill was not released; [4] Almonte, 2012d), (3) the apparent need to have several versions of balanced funds' benchmarks due to the varying degrees of aggressiveness of fund managers, (4) fund managers of balanced funds could have changed the proportion of equity and fixed income securities at any time, (5) arithmetic means were used ([15] Goodwin, 1998, pp. 37-39; [4] Almonte, 2012d), (6) as applicable, the last entry for each month of the involved data sets from [35] Technistock (Philippines), Inc. were matched, and (7) the effects of rounding off numbers ([4] Almonte, 2012d).

RESULTS

Return, Beta, Standard Deviation, and Surplus Return

Among the equity funds (Table 1), First Metro Save and Learn Equity Fund, Inc. provided the highest return and surplus return while United Fund, Inc. gave the lowest positive return and underperformed the most. With the exception of Philam Strategic Growth Fund, Inc. and United Fund, Inc., all funds produced surplus returns. In terms of systematic risk, all funds moved slower than the market although two funds came close to capturing a beta of 1 ([14] Gitman, 2009; [31] Reilly & Brown, 2012). Philequity Fund, Inc. generated a beta closest to that of the market's even though it is an actively-managed fund while Philippine Stock Index Fund Corporation came in second (this fund's beta value was expected because it is an index fund). The relatively low beta of Philequity PSE Index Fund, Inc. was unexpected because it is an index fund. In terms

ISSN 2304-0777 www.jitbm.com

of standard deviation, Philam Strategic Growth Fund, Inc. and United Fund, Inc. had the highest and lowest values, respectively.

For balanced funds (Table 1), First Metro Save and Learn Balanced Fund, Inc. provided the highest return and surplus return while Optima Balanced Fund, Inc. gave the lowest return (although positive) and surplus return (Optima only produced surplus returns when the benchmark was at a maximum of 70% equity). Balanced funds generated surplus returns except when the benchmark was at 80% equity (ATRKE Philippine Balanced Fund, Inc.; Optima Balanced Fund, Inc. (top underperformer); and Sun Life of Canada Prosperity Balanced Fund, Inc. were underperformers). There was an inverse relationship between the funds' beta values and the proportion of equity held by the funds' benchmarks. ALFM Growth Fund, Inc. and Optima Balanced Fund, Inc. had the highest and lowest standard deviations, respectively.

Except for Philam Strategic Growth Fund, Inc. and United Fund, Inc., the Treynor, Sharpe, and information ratios of equity funds (Table 2) were higher than their respective benchmarks. Based on the ranking of the funds using all ratios, First Metro Save and Learn Equity Fund, Inc. was the leader while United Fund, Inc. was the top underperformer. Applying [31] Reilly & Brown (2012), ATRKE Equity Opportunity Fund, Inc. and Philam Strategic Growth Fund, Inc. had better rankings with their Treynor ratios compared to their Sharpe ratios (Table 2).

Balanced funds whose benchmarks were set at 50% equity (Table 3) and 60% equity (Table 4) produced almost identical results. The funds, save for ALFM Growth Fund, Inc. and Sun Life of Canada Prosperity Balanced Fund, Inc., generated Treynor and Sharpe ratios that were higher than their benchmarks. All funds' information ratios did better than the minimum requirement. According to the overall ranking of the funds, First Metro Save and Learn Balanced Fund, Inc. was the leader while ALFM Growth Fund, Inc. was the top underperformer. The difference in results (benchmark at 50% equity compared to benchmark at 60% equity) was observed in the rankings of the funds' information ratios.

Balanced funds whose benchmarks were set at 70% equity (Table 5) produced the following results: all funds, except for Sun Life of Canada Prosperity Balanced Fund, Inc., generated Treynor ratios higher than the benchmark; all funds, except for ALFM Growth Fund, Inc. and Sun Life of Canada Prosperity Balanced Fund, Inc., generated Sharpe ratios higher than the benchmark; all funds' information ratios did better than the benchmark. As per the overall ranking of the funds, First Metro Save and Learn Balanced Fund, Inc. was the leader while ALFM Growth Fund, Inc. was the top underperformer.

Balanced funds whose benchmarks were set at 80% equity (Table 6) had the following results: all funds, except for Sun Life of Canada Prosperity Balanced Fund, Inc., generated Treynor ratios higher than the benchmark; all funds, except for ALFM Growth Fund, Inc. and Sun Life of Canada Prosperity Balanced Fund, Inc., generated Sharpe ratios higher than the benchmark; with regards to the information ratio, only three funds (ALFM Growth Fund, Inc.; First Metro Save and Learn Balanced Fund, Inc.; and Philam Fund, Inc.) did better than the benchmark. Regarding the overall ranking of the funds, First Metro Save and Learn Balanced Fund, Inc. was the leader while Sun Life of Canada Prosperity Balanced Fund, Inc. was the top underperformer.

Again applying [31] Reilly & Brown (2012), ALFM Growth Fund, Inc. had a better ranking with its Treynor ratio compared to its Sharpe ratio (Tables 3, 4, 5, and 6).

Comparing the results with other studies: (1) the Treynor ratio results were consistent with [16] T. Jagric, et al., 2007; [6] Arugaslan, et al., 2008; [12] Debasish, 2009; [13] Dhanda, et al., 2012 (first period results only); [23] Nooney & Devi, 2012 in that more funds had positive values; (2) the Sharpe ratio results were consistent with [16] T. Jagric, et al., 2007; [6] Arugaslan, et al., 2008; [12] Debasish, 2009; [4] Almonte, 2012d ; [13] Dhanda, et al., 2012 (first period results only); [23] Nooney & Devi, 2012 in that more funds had positive values; (3) the rankings were

ISSN 2304-0777 www.jitbm.com

basically consistent with [16] T. Jagric, et al., 2007 and [31] Reilly & Brown, 2012 in that most funds had the same Treynor and Sharpe ratio rankings; and (4) the information ratio results were consistent with [31] Reilly & Brown, 2012 in that more funds had values greater than zero.

Statistical Tests

Based on the correlation coefficient interpretation provided by [33] Statstutor, http://www.statstutor.ac.uk/resources/uploaded/spearmans.pdf, n.d.), the Treynor and Sharpe ratios, the Treynor and information ratios, and the Sharpe and information ratios of equity funds showed "very strong" ([33] Statstutor, http://www.statstutor.ac.uk/resources/uploaded/spearmans.pdf, n.d., p. 2) statistically significant correlations while only the Treynor and Sharpe ratios of balanced funds (benchmarks at 50%, 60%, 70%, and 80% equity) exhibited "very strong" ([33] Statstutor, http://www.statstutor.ac.uk/resources/uploaded/spearmans.pdf, n.d., p. 2), statistically significant correlations (Table 7).

The results of the correlation tests of the equity funds' ratios were consistent with [31] Reilly & Brown (2012). However, for balanced funds, the correlation results were only partially consistent with [31] Reilly & Brown (2012).

The Kruskal-Wallis test (Table 8) revealed that the measures of risk-adjusted performance of all funds were different from each other. Specifically, there were statistically significant differences between the following (Table 9): (1) the Treynor and Sharpe ratios of equity and balanced funds (benchmarks at 50%, 60%, 70%, and 80% equity), (2) the Treynor and information ratios of balanced funds (benchmarks at 50%, 60%, and 70% equity), and (3) the Sharpe and information ratios of equity and balanced funds (benchmarks at 70% and 80% equity).

The distinction in the Treynor and Sharpe ratios was consistent with the results of [36] Tehrani, et al., 2011.

Table 1

International Journal of Information Technology and Business Management
29th June 2013. Vol.14 No.1

ISSN 2304-0777 www.jitbm.com

RETURN, BETA, STANDARD DEVIATION, AND SURPLUS RETURN

Note: ** = part of the sample ([4] Almonte, 2012d); * = part of the sample ([1] Almonte, 2012a); N/A = not applicable; format of table was partially adapted from [4] "Assessing the Sharpe ratio of equity funds in the Philippines" by C.K.S. Almonte, 2012d, *International Journal of Information Technology and Business Management, 7*(1), pp. 19-20 (Copyright 2012 JITBM and ARF).**

Fund/Benchmark	Return	Beta	Standard Deviation	Surplus Return
Equity Funds				
ATRKE Equity Opportunity Fund, Inc.**	22.99%	0.8850	15.74%	0.02%
First Metro Save and Learn Equity Fund, Inc.**	29.01%	0.8633	16.86%	6.03%
Philam Strategic Growth Fund, Inc.**	17.69%	0.8387	20.95%	-5.28%
Philequity Fund, Inc.**	27.88%	0.9820	16.68%	4.91%
Philequity PSE Index Fund, Inc.	23.66%	0.8778	14.73%	0.69%
Philippine Stock Index Fund Corporation	23.72%	0.9808	16.88%	0.75%
Sun Life Prosperity Philippine Equity Fund, Inc.**	23.28%	0.9158	15.68%	0.31%
United Fund, Inc.	11.53%	0.5958	10.88%	-11.44%
Benchmark: PSEi	22.97%	1.0000	16.53%	N/A
Balanced Funds: Benchmark: 50% Equity, 50% Fixed Income Securities				
ALFM Growth Fund, Inc.	22.00%	1.8642	19.86%	9.00%
ATRKE Philippine Balanced Fund, Inc.***	18.54%	1.3292	11.95%	5.54%
First Metro Save and Learn Balanced Fund, Inc.	27.64%	1.6285	15.97%	14.65%
Optima Balanced Fund, Inc.	18.07%	1.1014	10.92%	5.08%
Philam Fund, Inc.***	22.77%	1.7660	15.51%	9.77%
Sun Life of Canada Prosperity Balanced Fund, Inc.***	18.57%	1.5772	13.36%	5.58%
Benchmark: 50% Equity, 50% Fixed Income Securities	13.00%	1.0000	8.28%	N/A
Balanced Funds: Benchmark: 60% Equity, 40% Fixed Income Securities				
ALFM Growth Fund, Inc.	22.00%	1.5525	19.86%	7.01%
ATRKE Philippine Balanced Fund, Inc.***	18.54%	1.1072	11.95%	3.55%
First Metro Save and Learn Balanced Fund, Inc.	27.64%	1.3556	15.97%	12.65%
Optima Balanced Fund, Inc.	18.07%	0.9185	10.92%	3.08%
Philam Fund, Inc.***	22.77%	1.4710	15.51%	7.78%
Sun Life of Canada Prosperity Balanced Fund, Inc.***	18.57%	1.3149	13.36%	3.58%
Benchmark: 60% Equity, 40% Fixed Income Securities	14.99%	1.0000	9.93%	N/A
Balanced Funds: Benchmark: 70% Equity, 30% Fixed Income Securities				
ALFM Growth Fund, Inc.	22.00%	1.3300	19.86%	5.01%
ATRKE Philippine Balanced Fund, Inc.***	18.54%	0.9487	11.95%	1.55%
First Metro Save and Learn Balanced Fund, Inc.	27.64%	1.1610	15.97%	10.66%
Optima Balanced Fund, Inc.	18.07%	0.7877	10.92%	1.09%
Philam Fund, Inc.***	22.77%	1.2604	15.51%	5.78%
Sun Life of Canada Prosperity Balanced Fund, Inc.***	18.57%	1.1274	13.36%	1.59%
Benchmark: 70% Equity, 30% Fixed Income Securities	16.99%	1.0000	11.58%	N/A
Balanced Funds: Benchmark: 80% Equity, 20% Fixed Income Securities				
ALFM Growth Fund, Inc.	22.00%	1.1632	19.86%	3.02%
ATRKE Philippine Balanced Fund, Inc.***	18.54%	0.8299	11.95%	-0.44%
First Metro Save and Learn Balanced Fund, Inc.	27.64%	1.0152	15.97%	8.66%
Optima Balanced Fund, Inc.	18.07%	0.6894	10.92%	-0.91%
Philam Fund, Inc.***	22.77%	1.1025	15.51%	3.79%
Sun Life of Canada Prosperity Balanced Fund, Inc.***	18.57%	0.9867	13.36%	-0.41%
Benchmark: 80% Equity, 20% Fixed Income Securities	18.98%	1.0000	13.23%	N/A

ISSN 2304-0777 www.jitbm.com

Table 2
EQUITY FUNDS: MEASURES OF RISK-ADJUSTED PERFORMANCE AND FUND RANKING
Note: ** = part of the sample ([4] Almonte, 2012d); N/A = not applicable

Fund/Benchmark	Treynor Ratio	Sharpe Ratio	Informa-tion Ratio	Treynor Ratio Ranking	Sharpe Ratio Rank-ing	Informa-tion Ratio Ranking	Overall Score Based on Rankings of Ratios
ATRKE Equity Opportunity Fund, Inc.**	0.2346	1.3191	0.0038	4	5	6	15
First Metro Save and Learn Equity Fund, Inc.**	0.3102	1.5886	0.6522	1	1	2	4
Philam Strategic Growth Fund, Inc.**	0.1844	0.7383	-0.3311	7	8	7	22
Philequity Fund, Inc.**	0.2612	1.5378	1.2704	2	2	1	5
Philequity PSE Index Fund, Inc.	0.2441	1.4550	0.2122	3	3	3	9
Philippine Stock Index Fund Corporation	0.2192	1.2737	0.1601	6	6	4	16
Sun Life Prosperity Philippine Equity Fund, Inc.**	0.2298	1.3424	0.0707	5	4	5	14
United Fund, Inc.	0.1562	0.8554	-1.4084	8	7	8	23
Benchmark: PSEi	0.2074	1.2550	0.0000	N/A	N/A	N/A	N/A

Table 3
BALANCED FUNDS: MEASURES OF RISK-ADJUSTED PERFORMANCE AND FUND RANKING
Note: Benchmark is 50% Equity, 50% Fixed Income Securities; * = part of the sample ([1] Almonte, 2012a); N/A = not applicable**

Fund/Benchmark	Treynor Ratio	Sharpe Ratio	Informa-tion Ratio	Treynor Ratio Ranking	Sharpe Ratio Rank-ing	Informa-tion Ratio Ranking	Overall Score Based on Rankings of Ratios
ALFM Growth Fund, Inc.	0.1061	0.9957	0.6252	5	6	6	17
ATRKE Philippine Balanced Fund, Inc.***	0.1227	1.3648	1.0248	3	3	3	9
First Metro Save and Learn Balanced Fund, Inc.	0.1561	1.5919	1.4625	1	1	1	3
Optima Balanced Fund, Inc.	0.1439	1.4509	0.8360	2	2	5	9
Philam Fund, Inc.***	0.1163	1.3246	1.1934	4	4	2	10
Sun Life of Canada Prosperity Balanced Fund, Inc.***	0.1036	1.2233	1.0024	6	5	4	15
Benchmark: 50% Equity, 50% Fixed Income Securities	0.1077	1.3011	0.0000	N/A	N/A	N/A	N/A

International Journal of Information Technology and Business Management
29th June 2013. Vol.14 No.1

ISSN 2304-0777 www.jitbm.com

Table 4
BALANCED FUNDS: MEASURES OF RISK-ADJUSTED PERFORMANCE AND FUND RANKING
Note: Benchmark is 60% Equity, 40% Fixed Income Securities; * = part of the sample ([1] Almonte, 2012a); N/A = not applicable**

Fund/Benchmark	Treynor Ratio	Sharpe Ratio	Informa-tion Ratio	Treynor Ratio Ranking	Sharpe Ratio Rank-ing	Informa-tion Ratio Ranking	Overall Score Based on Rankings of Ratios
ALFM Growth Fund, Inc.	0.1274	0.9957	0.5127	5	6	5	16
ATRKE Philippine Balanced Fund, Inc.***	0.1473	1.3648	0.7368	3	3	4	10
First Metro Save and Learn Balanced Fund, Inc.	0.1875	1.5919	1.3620	1	1	1	3
Optima Balanced Fund, Inc.	0.1725	1.4509	0.5082	2	2	6	10
Philam Fund, Inc.***	0.1396	1.3246	1.1095	4	4	2	10
Sun Life of Canada Prosperity Balanced Fund, Inc.***	0.1243	1.2233	0.8459	6	5	3	14
Benchmark: 60% Equity, 40% Fixed Income Securities	0.1276	1.2858	0.0000	N/A	N/A	N/A	N/A

Table 5
BALANCED FUNDS: MEASURES OF RISK-ADJUSTED PERFORMANCE AND FUND RANKING
Note: Benchmark is 70% Equity, 30% Fixed Income Securities; * = part of the sample ([1] Almonte, 2012a); N/A = not applicable**

Fund/Benchmark	Treynor Ratio	Sharpe Ratio	Informa-tion Ratio	Treynor Ratio Ranking	Sharpe Ratio Rank-ing	Informa-tion Ratio Ranking	Overall Score Based on Rankings of Ratios
ALFM Growth Fund, Inc.	0.1487	0.9957	0.3825	5	6	4	15
ATRKE Philippine Balanced Fund, Inc.***	0.1719	1.3648	0.3270	3	3	5	11
First Metro Save and Learn Balanced Fund, Inc.	0.2189	1.5919	1.2088	1	1	1	3
Optima Balanced Fund, Inc.	0.2012	1.4509	0.1677	2	2	6	10
Philam Fund, Inc.***	0.1630	1.3246	0.9548	4	4	2	10
Sun Life of Canada Prosperity Balanced Fund, Inc.***	0.1450	1.2233	0.4930	6	5	3	14
Benchmark: 70% Equity, 30% Fixed Income Securities	0.1476	1.2749	0.0000	N/A	N/A	N/A	N/A

International Journal of Information Technology and Business Management
29th June 2013. Vol.14 No.1

ISSN 2304-0777 www.jitbm.com

Table 6
BALANCED FUNDS: MEASURES OF RISK-ADJUSTED PERFORMANCE AND FUND RANKING
Note: Benchmark is 80% Equity, 20% Fixed Income Securities; * = part of the sample ([1] Almonte, 2012a); N/A = not applicable**

Fund/Benchmark	Treynor Ratio	Sharpe Ratio	Information Ratio	Treynor Ratio Ranking	Sharpe Ratio Ranking	Information Ratio Ranking	Overall Score Based on Rankings of Ratios
ALFM Growth Fund, Inc.	0.1700	0.9957	0.2370	5	6	3	14
ATRKE Philippine Balanced Fund, Inc.***	0.1966	1.3648	-0.0842	3	3	4	10
First Metro Save and Learn Balanced Fund, Inc.	0.2503	1.5919	1.0027	1	1	1	3
Optima Balanced Fund, Inc.	0.2299	1.4509	-0.1244	2	2	5	9
Philam Fund, Inc.***	0.1863	1.3246	0.6953	4	4	2	10
Sun Life of Canada Prosperity Balanced Fund, Inc.***	0.1657	1.2233	-0.1422	6	5	6	17
Benchmark: 80% Equity, 20% Fixed Income Securities	0.1675	1.2666	0.0000	N/A	N/A	N/A	N/A

Table 7
SPEARMAN CORRELATION MATRIX
Treynor Ratio, Sharpe Ratio, and Information Ratio
Note: *p<0.05

Equity Funds	Treynor Ratio	Sharpe Ratio	Information Ratio
Treynor Ratio	1.000	0.952*	0.881*
Sharpe Ratio	0.952*	1.000	0.881*
Information Ratio	0.881*	0.881*	1.000
Balanced Funds: Benchmark: 50% Equity, 50% Fixed Income Securities	Treynor Ratio	Sharpe Ratio	Information Ratio
Treynor Ratio	1.000	0.943*	0.486
Sharpe Ratio	0.943*	1.000	0.600
Information Ratio	0.486	0.600	1.000
Balanced Funds: Benchmark: 60% Equity, 40% Fixed Income Securities	Treynor Ratio	Sharpe Ratio	Information Ratio
Treynor Ratio	1.000	0.943*	0.143
Sharpe Ratio	0.943*	1.000	0.257
Information Ratio	0.143	0.257	1.000
Balanced Funds: Benchmark: 70% Equity, 30% Fixed Income Securities	Treynor Ratio	Sharpe Ratio	Information Ratio
Treynor Ratio	1.000	0.943*	0.029
Sharpe Ratio	0.943*	1.000	0.086
Information Ratio	0.029	0.086	1.000
Balanced Funds: Benchmark: 80% Equity, 20% Fixed Income Securities	Treynor Ratio	Sharpe Ratio	Information Ratio
Treynor Ratio	1.000	0.943*	0.486

ISSN 2304-0777 www.jitbm.com

Sharpe Ratio	0.943*	1.000	0.314
Information Ratio	0.486	0.314	1.000

Table 8
KRUSKAL-WALLIS TEST
Treynor Ratio, Sharpe Ratio, and Information Ratio
Note: Critical value = 5.991, df = 2, α = 0.05 (two-tailed)

Fund Classification	Observed value	Asymptotic *p*-value
Equity Funds	15.135	0.001
Balanced Funds: Benchmark: 50% Equity, 50% Fixed Income Securities	12.538	0.002
Balanced Funds: Benchmark: 60% Equity, 40% Fixed Income Securities	13.661	0.001
Balanced Funds: Benchmark: 70% Equity, 30% Fixed Income Securities	13.556	0.001
Balanced Funds: Benchmark: 80% Equity, 20% Fixed Income Securities	10.749	0.005

Table 9
KRUSKAL-WALLIS TEST: STEEL-DWASS-CRITCHLOW-FLIGNER TECHNIQUE
Treynor Ratio, Sharpe Ratio, and Information Ratio
Note: α = 0.05 (two-tailed), *p<0.05; the Steel-Dwass-Critchlow-Fligner-Technique was also used by [1], [2], [5] Almonte (2012a, 2012b, 2013)

Equity Funds	Mean of Ranks	*Wij*		
		Treynor Ratio	Sharpe Ratio	Information Ratio
Treynor Ratio	10.125	-	-4.753*	1.931
Sharpe Ratio	20.250	4.753*	-	4.456*
Information Ratio	7.125	-1.931	-4.456*	-
Balanced Funds: Benchmark: 50% Equity, 50% Fixed Income Securities	Mean of Ranks	*Wij*		
		Treynor Ratio	Sharpe Ratio	Information Ratio
Treynor Ratio	3.500	-	-4.076*	-4.076*
Sharpe Ratio	14.167	4.076*	-	2.265
Information Ratio	10.833	4.076*	-2.265	-
Balanced Funds: Benchmark: 60% Equity, 40% Fixed Income Securities	Mean of Ranks	*Wij*		
		Treynor Ratio	Sharpe Ratio	Information Ratio
Treynor Ratio	3.500	-	-4.076*	-4.076*
Sharpe Ratio	14.833	4.076*	-	3.170
Information Ratio	10.167	4.076*	-3.170	-
Balanced Funds: Benchmark: 70% Equity, 30% Fixed Income Securities	Mean of Ranks	*Wij*		
		Treynor Ratio	Sharpe Ratio	Information Ratio
Treynor Ratio	4.000	-	-4.076*	-3.397*
Sharpe Ratio	15.333	4.076*	-	3.850*
Information Ratio	9.167	3.397*	-3.850*	-
Balanced Funds: Benchmark: 80% Equity, 20% Fixed Income Securities	Mean of Ranks	*Wij*		
		Treynor Ratio	Sharpe Ratio	Information Ratio

International Journal of Information Technology and Business Management
29th June 2013. Vol.14 No.1

ISSN 2304-0777 www.jitbm.com

Treynor Ratio	6.667	-	-4.076*	0.226
Sharpe Ratio	15.333	4.076*	-	3.850*
Information Ratio	6.500	-0.226	-3.850*	-

CONCLUSION

As expected, benchmark returns increased as the equity part of the portfolio increased (Table 1). Mainly, balanced funds (benchmark at 50%, 60%, and 70% equity) had higher betas than equity funds (Table 1). This could be explained by the use of an unsuitable benchmark ([15] Goodwin, 1998; refer to Roll, 1977a, 1978, 1980, 1981 (as cited in [31] Reilly & Brown, 2012, p. 964)). It was noticed that when the beta values of balanced funds (benchmark at 80% equity) were compared to those of equity funds, they were quite in line. Thus, (1) it appeared that balanced funds were more like equity funds and (2) the declining beta values as the equity part of the portfolio increased explained the increasing Treynor ratios of balanced funds (Tables 1, 3, 4, 5, and 6).

Applying [31] Reilly & Brown (2012), the discrepancy in the Treynor and Sharpe ratio rankings of ATRKE Equity Opportunity Fund, Inc.; Philam Strategic Growth Fund, Inc.; Sun Life Prosperity Philippine Equity Fund, Inc.; United Fund, Inc.; ALFM Growth Fund, Inc.; and Sun Life of Canada Prosperity Balanced Fund, Inc. (Tables 2, 3, 4, 5, and 6) showed that these funds had dissimilar risk levels.

For equity funds (Table 2), the overall leader was First Metro Save and Learn Equity Fund, Inc. (with an overall score of 4) while the overall top underperformer was United Fund, Inc. (with an overall score of 23). For balanced funds (benchmark at 50% equity, Table 3), the overall leader was First Metro Save and Learn Balanced Fund, Inc. (with an overall score of 3) while the overall top underperformer was ALFM Growth Fund, Inc. (with an overall score of 17). For balanced funds (benchmark at 60% equity, Table 4), the overall leader was First Metro Save and Learn Balanced Fund, Inc. (with an overall score of 3) while the overall top underperformer was ALFM Growth Fund, Inc. (with an overall score of 16). For balanced funds (benchmark at 70% equity, Table 5) the overall leader was First Metro Save and Learn Balanced Fund, Inc. (with an overall score of 3) while the overall top underperformer was ALFM Growth Fund, Inc. (with an overall score of 15). For balanced funds (benchmark at 80% equity, Table 6), the overall leader was First Metro Save and Learn Balanced Fund, Inc. (with an overall score of 3) while the overall top underperformer was Sun Life of Canada Prosperity Balanced Fund, Inc. (with an overall score of 17).

With regards to the research hypotheses, the following conclusions were made: (1) There was a significant correlation between the Treynor and Sharpe ratios, the Treynor and information ratios, and the Sharpe and information ratios of equity funds based in Philippine Pesos, (2) There was a significant correlation between the Treynor and Sharpe ratios of balanced funds based in Philippine Pesos, (3) The Treynor and Sharpe ratios, and Sharpe and information ratios of equity funds based in Philippine Pesos were significantly different from each other, (4) The Treynor and Sharpe ratios, and Treynor and information ratios of balanced funds (benchmark at 50% and 60% equity) based in Philippine Pesos were significantly different from each other, (5) The Treynor and Sharpe ratios, Treynor and information ratios, and Sharpe and information ratios of balanced funds (benchmark at 70% equity) based in Philippine Pesos were significantly different from each other, and (6) The Treynor and Sharpe ratios, and Sharpe and information ratios of balanced funds (benchmark at 80% equity) based in Philippine Pesos were significantly different from each other. Thus, the consistent conclusions (refer to (3) and (6) of this

ISSN 2304-0777 www.jitbm.com

paragraph) reinforced the idea that balanced funds were like equity funds.

Based on the results of this study, investors and researchers should take extra care in using a suitable benchmark, especially for balanced funds ([15] Goodwin, 1998; this is consistent with Roll, 1977a, 1978, 1980, 1981 (as cited in [31] Reilly & Brown, 2012, p. 964)).

Lastly, consistent with [6] Arugaslan, et al. (2008) and other reports (e.g. [24], [25], [26], [27] Philam Asset Management, Inc., 2010, July 30, 2011, July 15, 2012, May 18, 2013, April 19; [7] ATR KimEng Asset Management, 2011, November 29), this research was not meant to advocate the retention, sale, or purchase of any share in a mutual fund/financial product/instrument.

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