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Performance Evaluation of Turkish Pension Mutual Funds

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ABSTRACT

Private pension funds are one of the most profitable investment tools. They are designed to earn profit for a number of different groups ranging from investors to intermediary institutions. Research has shown that pension funds provide investment opportunities in both developed and developing countries. Since 2003, private pension system has been officially introduced in Turkey as pension companies have begun presenting their pension products to participants. Aim of this paper is to value the performance levels of pension funds in Turkey. 20 companies are selected, which are all listed at Borsa Istanbul (formerly known as Istanbul Stock Exchange) based on their performances between 2012 and 2013. These 20 selected companies are the highest asset sized entities within their industry listed at Borsa Istanbul. Evaluation of the funds' performances in the study has been concluded by employing Sharpe ratio.

Keywords: *Earnings, Profitability, Pension Mutual Funds, Sharpe Ratio, Evaluation Measures*

1. INTRODUCTION

Funds collected in pension systems help to increase country's saving volume. In countries lacking pension systems tend to rely heavily upon mattress savings. In such system, accumulations of funds, which in fact could lead to significant amount of savings, remain inadequate. With the pension system, these small savings are collected and recorded. At the same time, it provides fund accumulation for financial system to develop and expand. Besides, instead of short run transactions of pension funds, goal of having long run return enables long-term institutional investment to increase in capital markets. This situation increases the strength of capital markets against crises while limiting the short-term capital movements and its effects. This provides a safe environment for investors and affects financial stability in the long run positively [1].

Over the years, pension funds have accumulated sizeable amounts of assets in most of the OECD countries. While the pension funds are attracting more participants, the fact of increasing ageing population and less reliance on pay-as-you-go public pensions is expected to lead in an increase the size of complementary social security in many developed economies even further [2].

Incoming of long-term funds and providing regular fund inflow to capital markets with the pension system contribute interest rates to drop and increases the borrowing opportunities of public and private industry. This enables the public to borrow long-term loans with lower interest rates and financial system functions more accurately since the burden from budget deficits and social security decreases. The savings that are directed to investments become an important support source for stable economic growth while providing an increase in production and

employment. Besides, increase in the savings volume with the decrease of consumption, helps inflation to be under control and increases the confidence to national currency since the funds are held on local currency [3].

Turkey is relatively new to pension funds since an active pension funds system has begun only in the last two Decades (in 1999) when Turkey has been reforming its pension system in line with the European Union initiatives in addition to the "requirements of the neo-liberal model with the discourse of ensuring the proper functioning of the social security system and its fiscal sustainability" [4]. According to "Turkey Pension Fund Market Forecast to 2013", a relatively new report, Turkey has different characteristics in terms of the interest towards pension funds.

"Unlike the rest of the world, the number of pension funds participants in Turkey has been increasing at fast pace because of its strategy of safe investments. People prefer to invest in less risky instruments like pension funds" [5].

Such change required a more qualified social security service by restructuring financial, institutional, administrative structure and renewing the current public social security system in order to implement such a new system. As a result of these developments, private pension savings and investment system law (No. 4632) put into action [6, 7]. However, October 2003 is accepted as the turning point for the private pension system in Turkey as it has become operational when the pension companies began to present their pension products to participants.

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According to Individual Pension System Progress report 2011, private pension funds have a growth of 19% and have a net value of 14.301.795.430 TL. In respect of 31 December 2011 this value reached to 14.345.204.854 YTL since there are 6 funds that are not offered to public. Within 2011, with the funds that offered to public increased to 153. There were 22 pension mutual funds that offered to public. 11 of them were flexible, 4 of them were stock, three of them were government bond (TL), two of them are government bonds (FX) and two are liquid funds[8].

The guidelines about the foundation and operation of pension mutual funds are set by Capital Markets Boards of Turkey. Information about pension mutual funds' administrative charges is disclosed in the Internet site of pension monitoring center[8]. As of December 2011, 2,939,878 contracts are in force. Participants' number has grown around 16% and exceeded 2,5 million. Turkey has a young demographic structure; as a result the growth potential of the system is high. Within this scope, pension monitoring center forecast that at the end of 2015 number of participants will reach 4 million people with fund amount of 48 billion TL and at the end of 2020, it is expected to reach 5,5 million people with fund amount of 115 billion TL[10].

2. LITERATURE REVIEW

As of today, pension funds hold up a great deal of share of global market portfolio. Literature reveals that because of limited data, much of the work on pension funds, especially regarding profitability has been done in the recent years. Blake et al. (2013) states that in 2009, U.S. and U.K. pension fund assets amounted to \$9.7 and \$1.8 trillion (at 2011 exchange rates), representing 67.6% and 80.5% of GDP, respectively; by comparison, U.S. and U.K. mutual fund assets during 2009 amounted to \$11.1 and \$0.72 trillion, respectively [11].

2.1 Works According to Portfolio Performance

Sharpe (1966) examined the performance of 34 open-end mutual funds between 1954 and 1964. He measured the performance of the mutual funds with Sharpe ratio and Treynor index. He found out that the gross performance of the average mutual funds was worse than Dow Jones portfolio [12].

Jensen (1968) examined performance of 115 mutual funds between 1945-1964. He used alpha as an indicator of fund managers forecasting ability. He found out that the fund managers do not show outstanding performance [13].

McDonald (1973) used the mutual funds' monthly returns between 1964 and 1969. He examined the Sharpe, Jensen and Treynor measures. He found out that as the risk level increases the return increases [14].

Blake et al. (1933) examined the performance of 46 bond funds between 1979 and 1989 with the alpha coefficient that was found by multiple regression analysis method. He found out that the bond funds have a lower performance than the sample portfolios [15].

Detzler (1999) examined 19 global bond funds' characteristics of risk and return between 1988 and 1995, using their monthly returns. He used multiple regression analysis and found out that the funds do not perform better than the indexes [16].

Dahlquist et al. (2000) examined the performance of 210 funds between 1993 and 1997. He used regression and alpha as a measurement and he found out that fund does not show outstanding performance in overall [17].

In Turkey, there are noteworthy works on the performance of investment mutual funds. Some of the remarkable works do shed significant light on the matter especially in terms of the evolution of pension funds in addition to their returns in Turkey [18, 19, 20, 21, 22, 23, 24].

2.2 Fund Performance Evaluation Methods

2.2.1 Sharpe Ratio

Sharpe's Index contains information determined by the return and risk of the portfolio or other investment that is evaluated. Sharpe's performance measurement considers the total risk of the portfolio. Sharpe's performance model is stated as risk premium / total risk. This shows the demanded additional return over investors' risk free interest rate when comparing the total risk of the portfolio [25].

$$\text{Sharpe Ratio} = [R_p - R_f] / \sigma_p$$

Rp: p portfolio average return, Rf : Risk free stock

2.2.2 Treynor Index

Treynor index is developed in 1965 and it is the first model that is used for performance evaluation of the portfolio. This index is depending on the concept of the portfolio's characteristic line. Slope of the characteristic line is the beta coefficient that neither is the indicator of systematic risk [26]. Higher the Treynor index show that the additional return of the fund against risk of each unit that it undertakes.

$$\text{Treynor Index} = [R_p - R_f] / \beta_p$$

Rp: p portfolio average return, Rf : average return of risk free stock β_p : p slope of the portfolio

2.2.3 M2 Modigliani

M2 square is developed by Modigliani and Modigliani. It equates the volatility of the managed portfolio with the market by generating a hypothetical portfolio made up of T-bills and the managed portfolio. In

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case that the risk is lower than the market, leverage is used and the hypothetical portfolio is compared to the market [27].

Like the Sharpe ratio, the M2 measure also focuses on total volatility as a measure of risk, but its risk-adjusted measure of performance has the easy interpretation of a differential return relative to the benchmark index [28]. The formula is;

$$M2 = R_f + (\text{Sharpe ratio} * \sigma_m)$$

R_f = Risk free return

σ_m = Standard deviation of returns of another investment

2.2.4 Sortino Ratio

The Sortino ratio is alike with the Sharpe ratio, apart from that rather than using standard deviation as the denominator, it uses downside deviation. The Sortino ratio was developed to distinguish between good and bad volatility in the Sharpe ratio.

The Sortino ratio hence uses downside standard deviation as the substitute for risk for investors, rather than using standard deviation of all the fund's returns, as this number includes upside standard deviation. This effectively takes away the negative penalty that the Sharpe ratio imposes on positive [29].

$$\text{Sortino Ratio} = \frac{(\overline{RP} - T)}{\sqrt{\frac{\sum (RP_i - T)^2 \text{ where } RP_i < T}{N}}}$$

\overline{RP} = Return of the portfolio

RP_i = Return of the portfolio at time i

T = minimum acceptable value

N = number of days

Jensen (alpha):

The Jensen measure includes the benchmark distinct from the Sharpe and Treynor measures. This method does not permit portfolios with different levels of risk to be compared. The Jensen alpha can be used to rank portfolios within peer groups. Peer groups group together portfolios that are managed in a similar way and consequently have comparable levels of risk [30].

$$R_{Pt} - R_{Ft} = \alpha_p + \beta_p (R_{Mt} - R_{Ft}) + \epsilon_{Pt}$$

α_p = Jensen alpha

β_p = Beta of the portfolio

R_{Mt} = return of the benchmark

R_{Ft} = risk free rate

ϵ_{Pt} = error of the portfolio

3. METHODOLOGY

3.1 Data

There are 176 pension mutual funds according to data of pension monitoring center. 20 pension mutual funds have been taken as they have the highest net asset values. Performance of these funds are measured with Sharpe ratio between 2012 January and 2013 August.

3.2 Measuring Return

With respect to the selected 20 funds, unit prices of the funds are taken into consideration and according to geometric return basis it is calculated as the formula below.

$$R_p = (V_t - V_{t-1}) / V_{t-1}$$

In this formula;

R_p = Return of the portfolio

V_t = Value of the portfolio at ending of period

V_{t-1} = Value of the portfolio at beginning of period

“ V ” denotes the price of the invested asset at “ t ” time, “ R ” denotes the return of investment between “ t ” and “ $t-1$ ” time periods.

3.3 Risk Free Interest Rate

In this study, the risk free interest rate is taken monthly from the electronic database on the website of Central Bank of Turkey. “CBT weighted average fund cost” is used as a base.

In this study, Sharpe ratio that is driven by standard deviation is used for the evaluation of the pension mutual funds between January 2012 and August 2013. In total 20 pension mutual funds are taken into research as they have the highest net asset values. For each pension mutual fund monthly data and returns are taken into consideration. Sharpe ratio shows risk-adjusted performance. It has three components; asset return, risk free asset return and standard deviation of asset. In this study, the mutual fund is taken as a base for asset.

Sharpe ratio is chosen as a main measurement in this research since it uses the total risk in its denominator highlights the risks essential in an inappropriately diversified fund and these characteristics guide the use of the Sharpe ratio if one investment portfolio is to be chosen as the single investment of a particular investor [31].

In addition, the Sharpe ratio has become an industry standard, it is so popular since it is a simple measure and it can be used to compare different strategies. It can be used to compare long and short strategies, bond and stock strategies, leveraged and unleveraged strategies. By calculating the Sharpe ratio of different trading systems,

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you can decide which strategy performs best in adjusted return [32].

3.4 Research Results

Literature widely recognizes the fact that if a portfolio's Sharpe ratio is higher, then the portfolio's risk adjusted performance is expected to be better. By the same token, a negative Sharpe ratio yields to a belief that a risk free asset is expected (may) perform better than the security being analyzed. Sharpe Ratio shows how much extra return you are receiving for the extra volatility of holding the risky stock over a risk free asset, the higher the better. A positive Sharpe Ratio means that the return is above the return of risk free investment, and a negative Sharpe Ratio means that the return is below the return of risk free investment. Appendix 1 shows the ranking of 20 pension mutual funds according to their Sharpe ratio.

"GARANTİ EMEKLİLİK VE HAYAT A.Ş. GRUP. YÖN.GEL.AMAÇ. KAMU BORÇ. ARAÇ. EYF." has the highest Sharpe ratio with 0,85 and "AVİVASA EMEKLİLİK VE HAYAT A.Ş. PARA PİYASASI LİKİT KARMA EMEKLİLİK YATIRIM FONU" has the lowest Sharpe ratio with -7,07.

4. CONCLUSION

Findings of this research illustrate that of the 20 selected mutual funds, 10 have positive Sharpe ratio and the other 10 have negative Sharpe ratio. Despite of the fact that all 20 have the highest net asset values within the industry they are listed, only half of these mutual funds have returns that are above the return of risk free investment.

As for the other 10 which have negative Sharpe ratio, their return are below the return of risk free investment which indicates that they are poorly managed since a negative Sharpe ratio is presumed to be unsuccessful. This outcome is associated with the fact that the investment could have been more fruitful on a risk-adjusted basis by holding cash since the main idea behind risk adjusted return is not necessarily to view the return in a void; but in fact to consider how much risk is taken with the aim of generate excess return the amount of return over a market benchmark or over the risk free rate.

In accordance with having better performance, funds that have scored negative are perceived unsuccessful, therefore should be omitted for investment purposes. Earnings wise, investing in funds scored positive Sharpe ratio is expected to have higher returns than those that scored negative ratios which fall under risk free investment criteria. However, with the fast paced proliferation and diversification of the funds in Turkish private pension system, alternative methods may be employed. The scope of the research may be expanded by means of using alternative evaluation methods and techniques which may

provide investors with more quantifiable backing for enhanced decision making.

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	Sharpe Ratio
GARANTİ EMEKLİLİK VE HAYAT A.Ş. GRUP YÖN. GEL. AMAÇ. KAMU BORÇ. ARAÇ. EYF.	0,845049551
GROUPAMA EMEKLİLİK A.Ş. GELİR AMAÇLI KAMU BORÇLANMA ARAÇLARI EYF	0,803985849
GARANTİ EMEKLİLİK VE HAYAT A.Ş. ESNEK EMEKLİLİK YATIRIM FONU	0,291457292
AVİVASA EMEKLİLİK VE HAYAT A.Ş. BÜYÜME AMAÇLI ESNEK EYF	0,222324306
AVİVASA EMEKLİLİK VE HAYAT A.Ş. KAMU BORÇLANMA ARAÇLARI EYFONU-GRUP	0,156486322
GARANTİ EMEKLİLİK VE HAYAT A.Ş. GELİR AMAÇLI KAMU BORÇLANMA ARAÇLARI EYF	0,117000873
AVİVASA EMEKLİLİK VE HAYAT A.Ş. KAMU BORÇLANMA ARAÇLARI EMEKLİLİK YATIRIM FONU	0,044828489
GARANTİ EMEKLİLİK VE HAYAT A.Ş. LİKİT - KAMU EYF	0,043605519
ALLIANZ H.E.A.Ş. GELİR AMAÇLI KAMU BORÇLANMA ARAÇLARI EYF	0,029951963
ANADOLU HAYAT EMEKLİLİK A.Ş. GELİR AMAÇLI KAMU BORÇ. ARAÇ. EYF	0,012683668
YAPI KREDİ EMEKLİLİK A.Ş. GELİR AMAÇLI KAMU BORÇLANMA ARAÇLARI EYF	-0,001015695
YAPI KREDİ EMEKLİLİK A.Ş. ESNEK EYF	-0,005146198
ING EMEKLİLİK A.Ş. GELİR AMAÇLI KAMU BORÇLANMA ARAÇLARI EYF	-0,072662505
VAKIF EMEKLİLİK A.Ş. GELİR AMAÇLI KAMU BORÇLANMA ARAÇLARI EYF	-0,085243059
YAPI KREDİ EMEKLİLİK A.Ş. PARA PİYASASI LİKİT KAMU EYF	-0,111826031
ANADOLU HAYAT EMEKLİLİK A.Ş. ESNEK EYF	-0,152099967
ANADOLU HAYAT EMEKLİLİK A.Ş. BÜYÜME AMAÇLI ESNEK EYF	-0,199678834
AVİVASA EMEKLİLİK VE HAYAT A.Ş. GELİR AMAÇLI KAMU BORÇLANMA ARAÇLARI EYF	-0,240164412
BNP PARIBAS CARDIF EMEKLİLİK A.Ş. GELİR AMAÇLI KAMU BORÇLANMA ARAÇLARI EYF	-0,767733093
AVİVASA EMEKLİLİK VE HAYAT A.Ş. PARA PİYASASI LİKİT KARMA EMEKLİLİK YATIRIM FONU	-7,061182306