Mutual Fund Performances of Polish Domestic Equity Fund Managers[1]

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Abstract

Purpose of the article: The main purpose of the paper is empirically evaluating selectivity skills and market timing ability of Polish fund managers during the period from January 2009 to November 2014. After the global financial crisis of 2008, in this period of quantitative easing (QE), thanks to an increase in the money supply, a capital flow from developed countries to developing countries was observed. In this study, we try to analyse that although the financial market in Poland made an incredible progress, whether fund managers show better or worse performance than the market.

Methodology/Methods: In order to evaluate fund manager performances, Jensen alpha (1968) is computed, which depicts selectivity skills of fund managers. For determining market timing ability of fund managers, Treynor & Mazuy (1966) regression analysis and Henriksson & Merton (1981) regression analysis are applied. Fund performances are evaluated using Warsaw Stock Exchange Index as the benchmark index.

Scientific aim: In this study, we have tried to evaluate selectivity skills and market timing ability of Polish fund managers. A total of 14 equity fund managers' performances are analysed. The study can be guiding especially for investors who are interested in Polish equity fund performances in a period where emerging stock markets outperformed with quantitative easing.

Findings: Jensen (1968) alphas indicate that over this period fund managers did not have selective ability, as none of the 14 funds had statistically significant positive alphas. Furthermore, Treynor & Mazuy (1966) and Henriksson & Merton (1981) regression analysis indicate that over the same period fund managers did not also have market timing ability, as again none of the 14 funds had statistically significant positive coefficients.

Conclusions: In this work, we can detect that in the era of quantitative easing, although the financial market in Poland made an incredible progress, the fund returns were generally lower than the stock market and Polish fund managers could not display a good performance both in selectivity skills and market timing abilities.

Keywords: Polish funds, selectivity skills, market timing, performance evaluation, equity funds.

JEL Classification: G11, F39

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Introduction

Mutual fund performance has always become one of the most researched areas of finance studies. Using different technical measurement methods, these types of studies analyse fund performances of various markets from different perspectives. Especially, after the period of liberalization of the financial markets, mutual funds have gained much more significance among investors, resulting in various studies that have been carried out on performance evaluations. Mutual funds bring investors who share a common goal together. According to Deepak (2011), investors invest their money into capital market instruments such as shares, debentures and other securities. The returns from investments are equally shared among shareholders according to their investment ratio. Hence, mutual funds are proper investment and provide the chance to invest different professionally managed financial instruments. According to Rao (2006), diversification of the risk is the main objective of investing in a mutual fund. Diversified portfolios are created by mutual fund investments and fund managers take different level of risk in order to get maximum value from their investments. Therefore, when comparing and evaluating the investments, returns are measured by taking into account the risks involved in achieving the returns.

The 2008 global crisis devastated the U.S. and European economies and financial markets. During the ensuing recession, significant investment banks collapsed (*e.g.*, Lehman Brothers) and commercial banking crises notably enveloped Portugal, Ireland, Spain, Greece, and Italy. To combat recession, the U.S. Federal Reserve initiated quantitative easing (QE) between December 2008 and October 2014, purchasing huge quantities of sovereign debt to swell the money supply. Its actions were paralleled by central banks globally. QE occurred in four segments: QE1 (December 2008–June 2010), QE2 (November 2010–June 2011), QE3 (September 2012–October 2014), and QE4 (January 2013–October 2014) (Useconomy, 2014).

During the quantitative easing policy, monetary supply raises and creates a plethora of money in the financial markets. Huge amount of money influx from developed countries to developing countries experienced dramatically. Thus, in this paper, we have tried to analyse fund performances of Polish equity funds between 09 January 2009–31 0ctober 2014 in the era of quantitative easing. Poland is considered as one of the emerging markets and over the study period of 5 years –10 months, Warsaw Stock Exchange (WSE) grew by 12.8% compounded annually on average. Warsaw Stock Exchange performed better than major developed European markets. In the sample period, developed market indices DAX, FTSE 100, CAC 40 yielded 12.1%, 6.8% and 4.1%, respectively.

1. Literature review

Since 1960s, there have been many studies on performance of mutual funds and their managers. Jensen (1968) examined 115 mutual funds – which were active between 1945–1964 – by using an alpha indicator that he generated. His alpha indicator shows the selectivity skills of fund managers. Based on his results, funds could not outperform the market performance, revealing that mutual fund managers, in general, did not have selective ability.

With the aim of detecting the market timing ability of the fund managers, Treynor, Mazuy (1966) established the quadratic regression analysis method. They applied this method to 57 open–end mutual funds (25 growth funds and 32 balanced funds). They revealed only a single fund as having statistically significant market timing ability.

Henriksson, Merton (1981) and Henriksson (1984) developed both parametric and nonparametric statistical models to the test market timing ability of portfolios. Having been introduced by Henriksson, Merton (1981), and the parametric and non-parametric tests in question were applied by Henriksson (1984) to evaluate the market timing ability of 116 open-end funds between 1968 and 1980 in the U.S. market. The results revealed that there wasn't any support for market timing ability. Moreover, Henriksson found an inverse relationship between selection ability and market timing ability.

Chang, Lewellen (1984) tested the market timing ability of 67 U.S. funds covering the period from 1971 to 1979 by using the Henriksson & Merton (1981) method. It was found that there were weak indications of fund manager market timing ability.

Gallo, Swanson (1996) tested 37 U.S. mutual funds by using the Treynor & Mazuy model for market timing, yet found no evidence of market timing of funds.

Christensen (2005) evaluated 47 Danish funds between January 1996 and June 2003. He found that fund managers did not have selectivity skills in general and, in terms of timing ability, the results were also negative, due to the fact that only two funds had significant timing ability.

Studies on fund manager performance are scant in Poland as in other emerging economies. Swinkels,

Rzeznizcak (2009) investigated the manager's selectivity and market timing skills of 38 Polish mutual funds (equity, balanced and bond funds) using monthly fund returns over to period February 2000–April 2007. According to their analysis, fund managers did not have selective ability. Furthermore, fund managers in the analysis period also did not have market timing ability.

Białkowski, Otten (2011) tested the performance of the 140 Polish mutual funds over the period 2000–2008 using a multi-factor Carhart model. There are two main outcomes of their study; first Polish funds had lower performances than their benchmarks and second domestic funds outperformed the international funds.

2. Methodology

In this study, we have tried to evaluate selectivity skills and market timing ability of Polish fund managers. A total of 14 equity fund managers' performances are analysed. In order to evaluate fund manager performances, Jensen alpha (1968) is computed, which depicts selectivity skills of fund managers. For determining market timing ability of fund managers, Treynor & Mazuy (1966) and Henriksson & Merton (1981) regression analysis are applied.

2.1 Jensen's alpha
"A portfolio manager's predictive ability (is) his ability to earn returns through the successful forecast of security prices that are higher than those which we could presume given the level of his riskiness of his portfolio" (Jensen, 1968, p. 389).

Jensen's model can be written as

$$R_{pt} - R_{ft} = p + p\,(R_{mt} - R_{ft}) + e_{pt}, \qquad (1)$$

where:

p	return on the portfolio adjusted for market returns (*i.e.*, excess returns),
R_{pt}	return on portfolio p at time t,
R_{ft}	return on a riskless asset at time t,
R_{mt}	return on the market portfolio at time t,
p	sensitivity of excess returns of portfolio t to excess market returns (*i.e.*, above-average market returns).

The sign of alpha displays whether a portfolio manager outperforms the market after adjusting for risk. A positive (negative) alpha denotes above-market (below-market) performance (Mayo, 2011).

2.2 Treynor & Mazuy regression analysis
Investment managers may well beat the market, if they are able to adjust the composition of their portfolios in time when the general stock market is going up or down. That is, if fund managers believe the market is going to drop, they alter the composition of the portfolios they manage from more to less volatile securities. If they think the market is going to climb, they shift in the opposite direction (Treynor, Mazuy, 1966).

Mutual fund managers may hold a higher proportion of the market portfolio if they are qualified to predict future market conditions and envisage the stock market as a bull market. On the other hand, mutual fund managers may hold a lower proportion of the market portfolio if they expect the market to underperform in the future. Treynor, Mazuy (1966) developed the following model to evaluate market-timing performance:

$$R_{it} - R_{ft} = \alpha_i + \beta_{i0}(R_{mt} - R_{ft}) + \beta_{i1}(R_{mt} - R_{ft})^2 + \varepsilon, \ (2)$$

where α_i is the timing-adjusted alpha, which represents the timing-adjusted selective ability of mutual fund managers. The quadratic term in equation (2) is the market timing factor and the coefficient of the market timing factor, β_{i1}, represents mutual fund managers' market timing ability. If β_{i1} is positive, mutual fund managers have superior market timing ability *i.e.*, the investment portfolios of mutual funds are adjusted actively to well-anticipated changes in market conditions. A negative β_{i1} implies that mutual fund managers do not exhibit market timing ability (Chen *et al.*, 2013).

2.3 Henriksson & Merton regression analysis
Henriksson and Merton regression is another return-based approach that measures the market timing ability of fund managers. This is very similar to the Treynor & Mazuy regression analysis. Market timing of fund managers are computed whether return on the asset will be higher or lower than the risk-free rate. Two different levels of risk are chosen by manager, which depends on the probability fund manager attaches to the market excess return being positive (Cesari, Panetta, 2002).

The formula is:

$$R_{it} - R_{ft} = \alpha_i + \beta_{i0}\,(R_{mt} - R_{ft}) + \gamma_i\,[D\,(R_{mt} - R_{ft})] + \varepsilon. \ (3)$$

When $R_{mt} > R_{ft}$ (up market), D is equal to 1 and when $R_{mt} < R_{ft}$, D is equal to 0.

We can rewrite to formula as:

if $R_{mt} > R_{ft}$ then $R_{it} - R_{ft} = \alpha_i + \gamma_i (R_{mt} - R_{ft}) + \beta_{i1} + \varepsilon$, (4)

if $R_{mt} < R_{ft}$ then $R_{it} - R_{ft} = \alpha_i + \gamma_i (R_{mt} - R_{ft}) + \varepsilon$.   (5)

3. Data

In this study, Polish equity funds are analyzed. According to the Chamber of Fund and Asset Management (IZFIA)[2], there are 9 types of funds in Poland, which are: equity funds, mixed funds, bonds funds, cash funds and money market funds, real estate funds, private equity funds, absolute return funds, commodity funds and securitization funds. Among mutual funds, equity funds are chosen as these funds carry company stocks that are riskier and more vulnerable to volatility in price. Among equity funds, we can separate into the following categories: domestic market funds, European market funds, American market funds, Asia and Pacific funds and global funds. This study evaluated only the domestic mutual funds that are invested in Polish company stocks. According to the Investment Company Institute database (2014; Q3), there are 280 mutual funds in Poland. Of these funds, we evaluated only equity

Table 1. Net Asset Value of Investment Fund Companies in Poland.

Fund Name	Net Asset Value (Zloty)
PZU TFI1[3]	25,340,104,881,61
Pioneer Pekao TFI	16,911,142,069,11
PKO TFI	16,482,825,097,29
Skarbiec TFI	14,798,212,646,99
Aviva Investors Poland TFI	13,240,079,953,69
ING TFI	12,641,847,969,36
BZ WBK TFI	12,483,768,729,35
Union Investment TFI	9,678,482,601,86
Legg Mason TFI	3,360,075,606,98
KBC TFI	3,242,850,988,63
BPH TFI	2,958,691,339,85
Inventum TFI	1,351,153,610,20
MetLife TFI	1,180,590,869,21
TFI SKOK	1,063,973,973,43

Source: http://www.izfa.pl/en/.

[2] IZFIA is a non-governmental organization that brings together on a voluntary basis all fund management companies operating in Poland.

[3] Towarzystwo Funduszy Investycyjnych (Investment Fund Company).

Table 2. Polish Equity Funds.

Fund Name	Equity Share (%)
Arka BZ WBK Akcji	>66%
Aviva Investors Polskich	>60%
BPH FIO Akcji	>70%
ING Akcji	>70%
Inventum Akcji	>60%
KBC Akcyjny	>75%
Legg Mason Akcji	>90%
Metlife Akcji	>66%
Pioneer Akcji Polskich	>80%
PKO Akcji	>60%
PZU Akcji Krakowiak	>50%
Skarbiec Akcja	>50%
Skok Akcji	>80%
Uni Korona Akcje	>60%

Source: http://www.analizy.pl/fundusze/.

funds, which are managed by large asset management companies with a minimum net asset value of one billion zlotys. If a fund was closed, newly established or if it had merged with another fund in the period between January 2009 and October 2014, its performance was not evaluated. Performances of funds that had less than 50% equity shares in their portfolio were also not assessed. Consequently, 14 equity funds were left to work with. The net asset value of investment fund companies is available on (Table 1) and equity shares of selected equity funds are available on (Table 2).

3.1 Returns of funds
Logarithmic returns of funds were computed over weekly price indices of funds. For the study, 304 weeks of data between January 9, 2009 and October 31, 2014 are used.

$$R_p = \ln (P_t / P_t - 1),\qquad(6)$$

where:
R_p return on the fund,
P_t price of the fund at week t,
P_{t-1} price of the fund at week t–1.

3.2 Benchmark
In this study, the Warsaw Stock Exchange (Giełda Papierów Wartościowych w Warszawie) price index is used to see whether funds outperform the market.

$$R_m = \ln (P_{mt} / P_{mt-1}),\qquad(7)$$

where:
R_m returns on the WSE,

P_{mt} value of the WSE price index on week *t*,
P_{mt-1} value of the WSE price index on week
         t–1.

3.3 Risk-free rate

In this study, the Polish 3-month zloty deposit rate is used as proxy, sourced from the Thomson Reuters DataStream. Swinkels, Rzezniczak (2009) had previously used the 3-month zloty rate in their study.

4. Empirical results

4.1 Descriptive statistics for Polish funds

Descriptive statistics of Polish equity funds, benchmarks and risk-free rates are given in Table 3. The Average column indicates the returns of funds, benchmarks and risk-free rates. When comparing average returns, the Warsaw Stock Exchange is higher than all equity funds, so the WSE beats all funds during the quantitative easing era. All funds have positive returns, but only Inventum Akcji has negative returns. The Skew column displays the skew of equity funds and the corresponding value of their benchmarks. All funds, benchmarks and 3-month deposit rates are negatively skewed, denoting a distribution with an asymmetric tail extending toward more negative values. All funds and benchmarks have positive kurtoses, which implies typical heavy tailed financial distributions. The risk-free rate has negative kurtosis, which implies a relatively flat distribution. The R column shows the correlation between funds and their

benchmarks. The average correlation of funds and their benchmark is 0.93650, which implies that there is a strong positive correlation. Metlife Akcji has the highest correlation (0.98935) and Inventum Akcji has the lowest correlation (0.62603) when funds are compared individually. The Standard Deviation column shows the volatility of equity funds, benchmarks and risk-free rates. Standard deviation of Inventum Akcji, Pioneer Akcji Polskich and KBC Akcyjny are higher than the WSE, while on the other side 3-month deposit rate has the lowest standard deviation. The last column exhibits the betas of equity funds, which measure the systematic risks of the funds. Except KBC Akcyjny. All funds' betas are less than 1, thereby indicating that all thirteen funds carry less risk compared to the benchmark WSE index.

4.2 Results of Jensen's alpha for Poland

Table 4 displays the results of Jensen's alpha measure that indicates the selectivity skills of fund managers. Fund managers have either a higher performance or a lower performance relative to the market. Two of the 11 funds have positive alphas, but none of them are statistically significant. The other 12 funds have negative alphas and among them, seven funds are statistically significant: ING Akcji, BPH FIO Akcji, Skarbiec Akcja, Inventum Akcji are statistically significant at the 5% level while Metlife Akcji, PZU Akcji Krakowiak, Pioneer Akcji Polskich are statistically significant at the 1% level. It is interpreted that these funds' managers did not possess selectivity skills during the quantitative easing era.

Table 3. Descriptive Statistics of Polish Equity Funds.

Fund Name	Average	Skew	Kurtosis	R	Std. dev.	Beta
Arka BZ WBK Akcji	0.00127	–0.84359	2.84480	0.90655	0.01999	0.84871
Aviva Investors Polskich	0.00211	–101.443	3.78538	0.95153	0.02344	0.87064
BPH FIO Akcji	0.00138	–0.59702	2.10657	0.97380	0.02337	0.88812
ING Akcji	0.00159	–0.78437	2.75429	0,98535	0.02406	0.92530
Inventum Akcji	–0.00134	–179.760	7.75138	0.62603	0.02755	0.67408
KBC Akcyjny	0.00209	–0.65787	2.02407	0.98152	0.02634	100.885
Legg Mason Akcji	0.00171	–0.77361	2.20085	0.97457	0.02084	0.79285
Metlife Akcji	0.00110	–0.62918	2.01015	0.98935	0.02436	0.94052
Pioneer Akcji Polskich	0.00020	–0.89668	4.12864	0.95462	0.02647	0.98641
PKO Akcji	0.00139	–0.99069	3.23915	0.95671	0.01944	0.72593
PZU Akcji Krakowiak	0.00100	–0.79964	2.21045	0.98044	0.02415	0.92401
Skarbiec Akcja	0.00114	–0.78014	2.04972	0.94864	0.02416	0.89441
Skok Akcji	0.00176	–0.52696	1.75195	0.97530	0.02238	0.85181
Uni Korona Akcje	0.00207	–0.64951	1.77195	0.90653	0.02417	0.85508
Warsaw Stock Exchange	0.00225	–0.58838	2.11744		0.02562	
3M Deposit Rate	0.00072	–0.43197	–0.98126		0.00016	

Source: Authors' own study.

Table 4. Results of Jensen's alpha for Poland.

Fund Name	alpha	t-stat	p-value
Aviva Investors Polskich	0.00006	0.14453	0.88518
Uni Korona Akcje	0.00004	0.07603	0.93945
KBC Akcyjny	−0.00018	−0.60421	0.54616
Legg Mason Akcji	−0.00022	−0.81022	0.41845
Skok Akcji	−0.00027	−0.93422	0.35094
PKO Akcji	−0.00044	−1.33933	0.18147
ING Akcji**	−0.00054	−2.30170	0.02203
BPH FIO Akcji**	−0.00070	−2.28206	0.02318
Arka BZ WBK Akcji	−0.00075	−1.47603	0.14098
Skarbiec Akcja**	−0.00095	−2.16295	0.03133
Metlife Akcji***	−0.00106	−5.17564	0.00000
PZU Akcji Krakowiak***	−0.00113	−4.14275	0.00004
Pioneer Akcji Polskich***	−0.00203	−4.46716	0.00001
Inventum Akcji**	−0.00309	−2.49630	0.01308

*Significance levels: * indicates 10%, ** indicates 5%, *** indicates 1%.*

Source: Authors' own study.

4.3 Results of the Treynor & Mazuy regression analysis for Poland

The Treynor & Mazuy (1966) analysis analyzes the market timing ability of fund managers. If fund managers believe that the market is going up, they change their portfolio composition from less volatile to high volatile securities. When the market is going down, they shift their portfolio composition from high volatile to less volatile securities. If fund managers have market timing ability, they create their portfolios according to their estimates of the tenden-cy of the markets. Table 5 denotes the results of the Treynor & Mazuy (1966) method. Two funds, PKO Akcji and Skok Akcji have positive market timing ability, but this is statistically insignificant. Meanwhile, 12 funds have a negative market timing ability and 9 of them are statistically significant. KBC Akcyjny is statistically significant at the 10% level while Pioneer Akcji Polskich, Uni Korona Akcje and Skarbiec Akcja are statistically significant at the 5% level. Meanwhile, PZU Akcji Krakowiak, ING Akcji, Legg Mason Akcji, Aviva Investors Polskich

Table 5. Results of the Treynor & Mazuy Regression Analysis for Poland.

Fund Name	T & M	t-stat	p-value
PKO Akcjı FIO	0.24704	1.35659	0.17592
Skok Akcji	0.03504	0.16035	0.87272
Metlife Akcji	−0.13506	−0.86272	0.38898
BPH FIO Akcji	−0.26813	−1.14386	0.25359
KBC Akcyjny*	−0.41770	−1.88584	0.06028
PZU Akcji Krakowiak***	−0.58636	−2.82756	0.00500
ING Akcji***	−0.71966	−4.07435	0.00006
Legg Mason Akcji***	−0.72468	−3.58331	0.00040
Pioneer Akcji Polskich**	−0.73981	−2.13899	0.03324
Uni Korona Akcje**	−0.92958	−2.07586	0.03875
Skarbiec Akcja**	−1.22556	−3.70959	0.00025
Aviva Investors Polskich***	−1.32811	−4.29209	0.00002
Inventum Akcji	−1.53016	−1.61733	0.10685
Arka BZ WBK Akcji***	−1.55267	−4.11045	0.00005

*Significance levels: * indicates 10%, ** indicates 5%, *** indicates 1%.*

Source: Authors' own study.

and Arka BZ WBK Akcji are statistically significant at the 1% level.

4.4 Results of Henriksson & Merton regression analysis for Poland

Another approach for market timing ability is the Henriksson & Merton (1984) regression analysis method. Market timing ability allows fund managers to forecast whether returns of funds will be higher than the risk-free rate or vice versa. Table 6 shows the results of Henriksson & Merton (1981) method. According to the results, only one fund has positive market timing ability but it is statistically insignificant. Thirteen funds have a negative market timing ability with ING Akcji, PZU Akcji Krakowiak and Arka BZ WBK Akcji statistically significant at the 10% level while Legg Mason Akcji, Aviva Investors Polskich and Skarbiec Akcji are statistically significant at the 5% level.

5. Conclusion

In this study, selective ability and market timing ability of Polish equity fund managers are analysed over the period from 09 January 2009 to 31 October 2014, in the era of quantitative easing. To the best of our knowledge this is the first study that investigates how Polish fund managers performed in the recent quantitative easing era. In this paper, we used Jensen alpha (1968), Treynor & Mazuy (1966) and

Henriksson & Merton (1981) regression analysis methods for determining selectivity skills and market timing ability of fund managers, respectively. At the end of this study, along with the outcomes, we observe similarities with the results of earlier studies in literature. In this work, we can detect that in the era of quantitative easing, although the financial market in Poland made an incredible progress, the fund returns were generally lower than the stock market and Polish fund managers could not display a good performance both in selectivity skills and market timing abilities. Jensen (1968) alphas indicate that over this period fund managers did not have selective ability, as none of the 14 funds had statistically significant positive alphas. Furthermore, Treynor & Mazuy (1966) and Henriksson & Merton (1981) regression analysis show that over the same period fund managers did not also have market timing ability, as again none of the 14 funds had statistically significant positive coefficients. It can be deduced that Polish fund managers had neither selective ability nor market timing ability during the quantitative easing era. We can suggest studying persistence of Polish fund managers' performances for further research.

Acknowledgment

Table 6. Results of the Henriksson & Merton Regression Analysis for Poland.

Fund Name	H & M	t-stat	p-value
Skok Akcji	0.00001	0.00032	0.99974
PKO Akcji FIO	–0.00566	–0.33897	0.73487
BPH FIO Akcji	–0.00671	–0.32177	0.74785
Metlife Akcji	–0.01195	–0.85895	0.39105
KBC Akcyjny	–0.02189	–1.10828	0.26862
ING Akcji*	–0.03087	–1.92697	0.05492
PZU Akcji Krakowiak*	–0.03279	–1.76556	0.07848
Legg Mason Akcji**	–0.03681	–2.02001	0.04426
Pioneer Akcji Polskich	–0.03703	–1.19884	0.23153
Uni Korona Akcje	–0.04236	–1.05915	0.29038
Inventum Akcji	–0.05026	–0.59573	0.55180
Skarbiec Akcja**	–0.05978	–2.00479	0.04588
Aviva Investors Polskich**	–0.06613	–2.35651	0.01909
Arka BZ WBK Akcji*	–0.06979	–2.03758	0.04246

*Significance levels: * indicates 10%, ** indicates 5%, *** indicates 1%.*

Source: Authors' own study.

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