

Relating Mutual Funds Performance & Stock Market Performance: Evidence from Egyptian Exchange (EGX)

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Abstract:

This study seeks to examine relationship between mutual funds' performance and Egyptian stock market performance, different types of mutual funds operating in the Egyptian capital market (open-end equity funds, open-end money market funds, open-end fixed income funds, and open-end balanced funds) was examined. The researcher relies on net asset value figure (NAV) in order to measure mutual funds' performance; performance was measured through rate of return on invested funds, fund's risk adjusted performance ratio (Sharpe Ratio), and fund's systematic risk adjusted performance ratio (Treynor Ratio). Results revealed significant relationship between funds' return, funds' risk adjusted performance ratio (Sharpe Ratio), and fund's systematic risk adjusted performance ratio (Treynor Ratio) and level of Egyptian stock market performance (EGX 30). Results showed Sharpe Ratio model as the best model that explain the impact of mutual funds' performance on level of Egyptian stock market performance.

Key Words: Mutual Funds' Performance, Stock Market Performance, Stock Market Efficiency, Egyptian Exchange, Net Asset Value, Sharpe Ratio, Treynor Ratio.

ملخص البحث:

تسعى هذه الدراسة إلى تحليل العلاقة بين أداء الأنواع المختلفة لصناديق الاستثمار وأداء سوق الأوراق المالية المصري. أشتمل التحليل على دراسة أنواع مختلفة من صناديق الاستثمار مثل صناديق الأسهم وصناديق السوق النقدي (سوق المال) وصناديق الدخل الثابت والصناديق المتوازنة. أعتمد الباحث على صافي قيمة أصول الصناديق كمعيار أساسي للحكم على أداء صناديق الاستثمار المختلفة وتضمنت مؤشرات أداء صناديق الاستثمار كل من معدل العائد على الأموال المستثمرة، ومعدل العائد المرجح بالمخاطر الكلية (مؤشر شارب)، ومعدل العائد المرجح بالمخاطر المنتظمة (مؤشر ترينور). كشفت النتائج عن وجود علاقة معنوية ذات دلالة إحصائية بين كل من عوائد الصناديق المختلفة، ومؤشر شارب وترينور ومستوى أداء سوق الأوراق المالية المصرية متمثلاً في عوائد المؤشر الرئيسي للبورصة المصرية EGX30. أظهرت النتائج أن نموذج معدل العائد المرجح بالمخاطر الكلية (شارب) هو أفضل نموذج يوضح تأثير أداء صناديق الاستثمار على مستوى أداء سوق الأوراق المالية المصرية.

الكلمات المفتاحية: أداء صناديق الاستثمار، أداء سوق المال، كفاءة سوق المال، البورصة المصرية، صافي قيمة أصول الصندوق، مؤشر شارب، مؤشر ترينور.

1. Introduction

(Kharbanda & Singh, 2018) insists that, development of stock markets depends greatly on the development of institutional investors. Stock market considered as one of the most important

pillars of any financial system, its main role of fund allocation, financial development, and financial sustainability depends mainly on its level of efficiency. Through acting as institutional investors, mutual funds support mainly financial markets in performing its basic role due to high level of financial awareness, administrative experience, and diversified portfolios. Stock markets said to be efficient when securities prices at any point of time fully reflects all available information related to these securities (Ren & Ren, 2017).

An efficient market is a fair market where all participants receive relevant information about traded securities at the same point of time, thus securities are fairly priced, as a result, investors will not waste their time looking for mispriced securities. Efficient markets are transparent, it provides protection, confidence, and attract investments from inside & outside the economy, as a result, increasing rates of direct investment (El-Masry & Badr, 2021).

(Abdelzaher, 2019 & Abdalla, 2012) argued that stock markets considered as reflective mirror that reflects modern civilized face of the economy. Stock market regarded as one of the most important components of any financial system, it aims to secure liquidity and accumulate savings in order to contribute positively in development process through utilizing financial resources. Efficient financial markets contribute positively in economic

growth of any country, without efficient markets, efficient financing and investment channels can't be created. However, stock market efficiency is formulated through efficiency of those companies, institutions, and financial instruments that exist inside the financial market (Trabelsi Mnif, 2015).

(Elroukh, 2024 & Hong et al., 2021) also insists that stock markets efficiency is considered as one of controversial topics that arise among researchers interested in finance & investment discipline. Although it is not a new topic, its results differ from one market to another, or even for the same market from one period to another. Financial management literature has discussed & dealt with this topic deeply especially in the last decade due to its importance & sensitivity. Historically, Fama was the first to introduce market efficient concept, he defined Efficient Markets as markets that fully reflects all available information to all participants at the same point of time and this perfect information are reflected directly in value of traded stocks, furtherly, Fama divided financial markets efficiency into three levels, depending on level of information availability; weak efficiency form, semi-strong efficiency form, and strong efficiency form (Khan et al., 2017; du Toit et al., 2018).

The idea of mutual funds simply based on large number of investors pooling their investments in diversified portfolios through professional investment managers who manage these

investments to achieve high level of wealth maximization (Barber et al., 2016; Chauhan, 2023). Investors can simply join the fund through buying mutual funds certificates. Experience provided by those professional investment managers guarantees higher returns for investors compared with returns that can be realized individually. Through this pool of investment, administrative burden and levels of risk exposure can be minimized. Mutual funds almost allow small beginner investors to enter investment directly as it provides satisfactory returns associated with limited level of risk (Grau-Carles et al., 2019; Khurram et al., 2021).

(Tanos, 2022) insists that professional investment managers, sometimes called asset managers, primarily invest the fund in order to realize reasonable capital gains that resulted from expected price raising, other sources of return might include interest or dividends earned. The fund is also subject to losses depending on changes in value of assets that the fund originally invests in. That's to say, mutual funds are considered as a company that collect together group of investors and invest their money in financial markets in an indirect way and then distribute realized return among each investor depending on his share in the mutual fund (Agussalim et al., 2017).

With respect to Egypt, there are two principal types of mutual funds, which are Open mutual funds and closed mutual funds. Open

funds are found by large financial institutions such as banks and insurance companies, an open fund issue new shares whenever investors choose to invest into it. While closed funds issue shares only once with limited quantities to all investors, closed funds trade likely as stocks as it subject to forces of supply & demand (Zaghlool, 2017).

(Bangash et al., 2018 & Graham et al., 2020) lately insists that, investing in mutual funds generally provide range of benefits including professional management, efficient diversification, risk mitigation, and ease of retrieving invested money. However, mutual funds might entail risk resulting from fluctuation in prices of securities, as a result some fund managers tend to follow geographical diversification strategy through buying in international stock markets.

2. Theoretical Framework & Literature Review.

As mentioned before, mutual funds are investment companies that collect money from investors and invest it in such financial assets as stocks & bonds in order to generate realizable return on behalf of those investors. In the light of multiplicity of research variables as well as diversity of relationships that exist between these variables, the researcher throughout the following literature will examine researches that dealt with mutual funds' performance & their role in stimulating stock market movements, also the researcher will examine researches that dealt with mutual funds' performance and stock market efficiency.

(Abdelzaher, 2021) aims is to verify market efficiency assumptions within the Egyptian stock market. Daily stock returns between a time series of ten years from 2005 to 2015 was examined in order to test to what extent the Egyptian stock market is efficient. Parametric and non-parametric tests were followed. Jarque- Bera test was used to measure the moderation of returns; Both GARCH model & ARCH model were utilized also. Results revealed that; the Egyptian stock market follow the inefficient form of efficiency, and the prices are closer to random traffic standards (random walk), showing that price of listed stocks in the Egyptian stock market changes randomly. Some traded shares are found to be undervalues, others founded to be overvalued. Consequences of this inefficiency level reflect that; prices of traded stocks don't reflect all historical information; as a result, investors might realize unusual returns through using historical prices of shares.

On the other hand, and with respect to mutual funds' performance, (Farid & Wahba, 2022) insists that, presence & role performed by mutual funds is of great importance. Variety of factors might affect mutual funds' performance, one of these factors is the size of the mutual fund (net asset value). Researchers focus specifically on examining the impact of fund size on mutual fund's performance in Egypt. Results showed that Log Net asset value (NAV) has a negative significant impact on mutual funds' performance, Age of the fund also was found to

have a negative significant impact on funds' performance. Revealed results also reflects significant impact of fund type on funds' performance, while total fund expenses were found to have a positive significant impact on funds' performance.

(Alaagam, 2022) aims to evaluate performance of Mutual funds in Egypt by assessing their ability to attract investors savings and generate profitable returns to increase the volume of investment and achieve economic benefit, using annual dataset and employing a sharp and Treynor Indexes, our results show that the return rates on the listed funds were relatively low in Egypt, but some of the funds had higher returns than government treasury bills, which averaged 9.9213. The highest rate was 21.21% and 5.5% the lower rate of return. However, a number of funds achieved negative values as their rate return was lower than the rate of return on treasury bills, and the risk indicator in the Fund was higher as Faisal Bank mutual fund, which had - 3.47% rate of return.

(Virparia, 2022) insists that, mutual fund industry has experienced a drastic growth within the past twenty years. Increase within the number of schemes with increased mobilization of funds in the past few years provide benefits to the importance of the Indian mutual funds industry. Mutual funds have a number of schemes within it, such as large cap, Mid cap and Small cap funds, which makes it hard for the investors to choose the best scheme out of so many available options. This

Study specifically focused on the performance analysis of mutual fund schemes based on the Large cap, Mid cap and Small cap, which helps investors to take decision based on risk and returns in current time. These mutual funds individually using different tools such as Annual returns, Standard Deviation, Beta, Sharpe's Ratio, Treynor's Ratio, Jensen's Alpha Ratio.

(Elton & Gruber, 2020) review major models of mutual fund performance; some models utilize return data to evaluate equity funds from single to multi-index models, others measure passive portfolio performance, other models use holdings-based performance measures, timing ability, and measuring bond fund performance. We conclude with a discussion of issues affecting performance measurement: data sources and bias, missing factors, and improvements to benchmarks.

(Alvi & Rehan, 2020) aims to evaluate drivers & determinants of mutual fund performance. Researchers examine sixteen out of nineteen asset management companies, comprising about one hundred and fourteen mutual funds in the Mutual Fund Association of Pakistan. Quarterly data were collected from March 2013 to March 2018, reflecting a time series of five years. Results reflect that, main determinants & drivers of mutual funds' performance includes asset under management, fund risk, KSE-100 returns, total expenses, total revenues & earnings, age of the fund. Management quality rating was found to have an

insignificant positive impact on returns. However, risk-free instruments have a significant negative impact on fund returns. A multiple regression model was used to extract results, and results further suggested that the roles of fund risk & market return have a significant impact on Funds returns.

(Gusni et al., 2018) identifies main factors that might affect mutual fund performance in Indonesia, panel data analysis method were used. The study examines performance of equity mutual fund through using risk-adjusted performance proposed by Treynor and examines factors affecting mutual fund performance by using investment manager ability (timing & stock selection skill), fund size & age, and inflation. About nineteen (19) equity mutual funds was selected covering a period from 2011 to 2015 (five years). Results reflects that; equity mutual fund performance tends to fluctuate in Indonesia, main influential factors include stock selection skills, inflation, and market timing skill. Finally, fund size was found to have a non-significant impact on equity mutual funds' performance.

3. Research Problem.

Current research primarily aims to assess to what extent mutual funds' performance can affect level of Egyptian stock market performance. Mutual funds represent form of modern organization that works to manage funds according to desires, needs, and degree of risk tolerance of its investors (Cuthbertson et al., 2022; Pandey,

2022). Mutual funds are non-traditional investment portfolios that work to accumulate savings & fund surplus then invest it in range of financial assets, it can be regarded as an investment tool that allow its holders to obtain realizable return greater than risk-free rate of return through well-managed diversified portfolio of securities (Zaiane & Allita, 2017).

Investment through mutual funds enables small investors to direct their savings to financial investments, this would improve overall investment climate within the Egyptian financial market (Olokoyo et al., 2020; Hensawang, 2022). From this standpoint, the researcher throughout this research attempt to test to what extent mutual funds' performance can affect level of Egyptian stock market efficiency. Operating in such an efficient market provide many advantages for all parties, participants, and institutions dealing within this market.

Based on research literature (Alber, 2013; Hong et al., 2018; Nguyen et al., 2018; Abdelzaher, 2019; Coffie, 2019; Ahmed et al., 2020; Ashamu & Soyebbo, 2020; Yu et al., 2022), and in the light of many personal interviews conducted by the researcher¹;

¹ In order to determine nature of mutual funds market in Egypt, to what extent do Egyptian investors are aware about role & importance of mutual funds, to know practical market criteria's for evaluating & assessing mutual funds' performance, and finally to know recent innovated changes introduced in Egyptian mutual funds market; the researcher conducted a series of personal interviews with number of portfolio managers & investment managers operating within the Egyptian non-banking financial sector, some executive directors in mutual funds management companies, also the researcher interviewed executive director of the Egyptian Investment Management Association (EIMA).

financial performance of mutual funds can be determined through figure of net asset value (NAV) as certificates prices solely can't reflect financial performance of mutual funds. Net asset value figure takes into consideration fund's investment policy, the number of certificates issued, as well as fund's returns and expenditures (Gupta & Sinha, 2016; Sherrill et al., 2017; Liyan Bukhari & Shabir Hakim, 2021).

Through net asset value figure (NAV), mutual funds financial performance can be measured in terms of rate of return on invested funds, fund's risk adjusted performance ratio which referred as Sharpe Ratio, and fund's systematic risk adjusted performance ratio which referred as Treynor Ratio. (Gyamfi Gyimah et al., 2021; Durán Santomil et al., 2022; Yuan & Yuan, 2023).

Accordingly, research problem can be represented in terms of the following questions:

- 1- Can mutual funds' performance affect Egyptian stock market performance?
- 2- Can mutual funds' performance represented by rate of return on invested funds affect Egyptian stock market performance?
- 3- Can mutual funds' performance represented by fund's risk adjusted performance ratio (Sharpe Ratio) affect Egyptian stock market performance?

4- Can mutual funds' performance represented by fund's systematic risk adjusted performance ratio (Treyner Ratio) affect Egyptian stock market performance?

4. Research Hypotheses:

In the light of research literature & research problem stated earlier, hypotheses of this research was formulated as follows:

First Main Hypothesis: There is a statistical significant relationship between mutual funds' performance and level of Egyptian stock market performance.

From this main hypothesis, the following sub-hypotheses were derived:

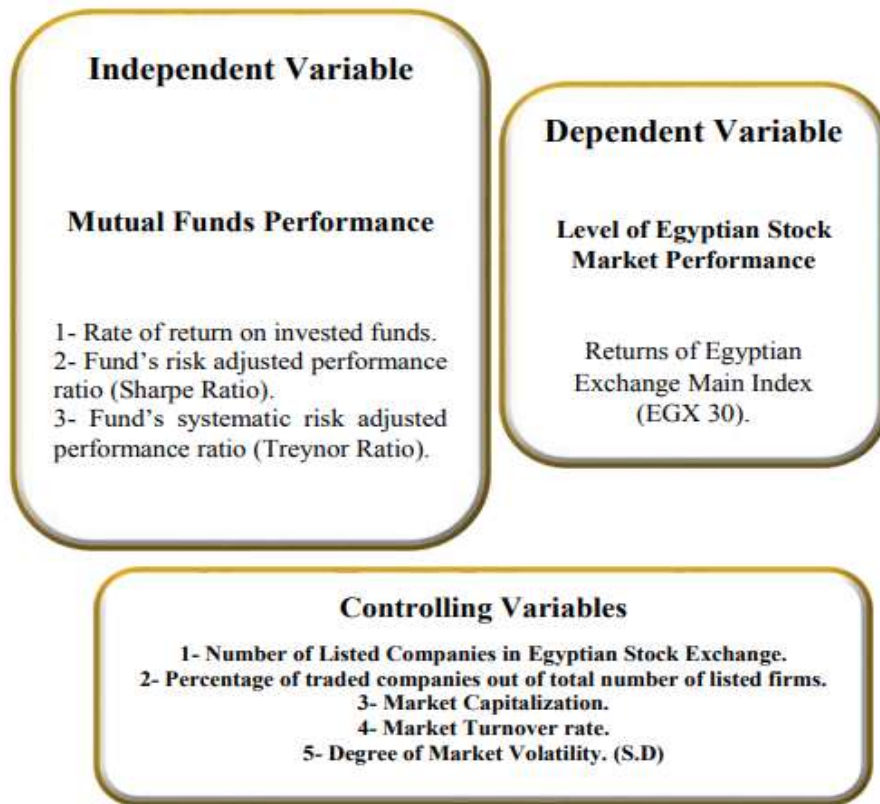
First Sub-Hypothesis: There is a statistical significant relationship between mutual funds' rate of return and level of Egyptian stock market performance.

Second Sub-hypothesis: There is a statistical significant relationship between fund's risk adjusted performance ratio (Sharpe Ratio) and level of Egyptian stock market performance.

Third Sub-hypothesis: There is a statistical significant relationship between fund's systematic risk adjusted performance ratio (Treyner Ratio) and level of Egyptian stock market performance.

5. Research Model.

In the light of the research problem, and according to (do Castelo Gouveia et al., 2018; Abera, 2019; Alsharif & Ahmad, 2021; Elmoghany, 2021; Grønberg et al., 2021; Bello et al., 2022; Cuthbertson et al., 2022; Fapetu et al., 2022; Seal & Mukherjee, 2022), research model can be expressed as follows:



6. Description of Research Variables & Methods of Data Collection².

Variables	Method of Measurement	Sources of Data
Independent Variable	Performance of mutual funds will be measured through fund's net asset value figure (NAV), net asset value criterion is the basis on which mutual fund's performance can be evaluated. Net asset value can be calculated simply through deducting the figure of total liabilities from funds' total assets. In other words, NAV represent market value of all owned securities plus any pending receivables minus funds obligations.	Periodical published reports issued by the Egyptian Investment Management Association (EIMA).
Mutual Funds Performance	<p>Unit price can be calculated through dividing net asset value by number of certificates issued. NAV represent an important indicator for investors because it determines prices at which buying & selling decisions can be taken. Rising NAV indicates increasing in value of funds' assets therefore investors can sell their shares for a profit, while falling NAV indicates decline in value of funds' assets therefore investors might expose to a probable loss in case of selling their shares.</p> <p>1- Rate of Return on Invested Funds.</p> $R_t = \frac{(NAV_t - NAV_{t-1}) + D_t}{NAV_{t-1}}$ <p>Where: R_t: Rate of return on invested funds. NAV_t: Net asset value at ending. NAV_{t-1}: Net asset value at the beginning. D_t: Cash flow received during period (t).</p> <p>2- Fund's Risk Adjusted Performance Ratio (Sharpe Ratio): Sometimes called reward to variability ratio, it can be calculated simply through dividing funds risk premium by funds risk.</p> $S_p = \frac{R_p - R_f}{\sigma_p}$ <p>S_p: Sharpe ratio for measuring funds' risk-adjusted relative returns.</p>	<p>EIMA is a professional Association established in 2000 to represent Asset & Investment Management companies operating in the Egyptian capital market under the supervision of the Egyptian Financial Authority.</p>

² Data analyzed during this research are available at Egyptian Investment Management Association (EIMA), (<http://eima.org.eg/>) & (<https://www.alborsanews.com/>)

	<p>R_p: Funds' expected/actual return on investment. R_f: Risk-Free investment's return. σ_p: Standard deviation of fund's return (total risk).</p> <p>3- Fund's Systematic Risk Adjusted Performance Ratio (Treyner Ratio): Treynor ratio is an extension of Sharpe ratio. Instead of using total risk, Treynor uses beta (systematic risk) in the denominator.</p> $\text{Treyner Ratio} = \frac{R_p - R_f}{\beta}$ <p>Where: R_p: Funds' expected/actual return on investment. R_f: Risk-Free investment's return. β: Beta coefficient for investment in funds' certificates. (systematic risk)</p>	
<p>Dependent Variable</p> <p>Level of Egyptian Stock Market Performance</p>	<p>Level of Egyptian stock market performance can be assessed through tracing Egyptian capital market returns represented by returns of Egyptian Exchange Main Index (EGX 30). Level of market efficiency can be furtherly examined through calculating skewness values of market returns, kurtosis values of market returns, and independence values of market returns.</p>	<p>Periodical published reports issued by the Egyptian Stock Exchange (EGX)</p>
<p>Controlling Variables</p>	<p>1- Number of Listed Companies in Egyptian Stock Exchange. 2- Percentage of traded companies out of total number of listed firms. (%) 3- Market Capitalization: It can be calculated through multiplying number of listed shares by their corresponding market prices at the end of the year. 4- Market Turnover Rate: It can be calculated through dividing trading value of all listed shares by market capitalization. It reflects strength of stock liquidity through identifying frequency of traded stocks in the market during specific period of time. Higher trading rates for a stock reflects higher liquidity, liquidity provides broader opportunities for buying & selling, increases investment attractiveness, and increase level of market depth. 5- Degree of Market Volatility: It can be measured through calculating standard deviation of daily stocks returns.</p>	<p>Periodical published reports issued by the Egyptian Stock Exchange (EGX)</p>

7. Research Objectives:

In the light of academic literature & research model mentioned previously, primary objective of this research lies in trying to determine possible significant relationship that might exist between mutual funds' performance and level of Egyptian stock market performance. Efficient capital market is a prerequisite for economic growth and states development; it helps in raising level of foreign direct investments, reduce overall level of financial risk, channeling funds in proper ways, increase level of economic welfare, mobilize savings, and spread confidence within investors. Accordingly, basic objectives of this research can be represented as follows:

- 1- To what extent do performance of different types of mutual funds affect level of Egyptian stock market performance?
- 2- To what extent do mutual funds' performance represented by rate of return on invested funds affect level of Egyptian stock market performance?
- 3- To what extent do mutual funds' performance represented by fund's risk adjusted performance ratio (Sharpe Ratio) affect level of Egyptian stock market performance?
- 4- To what extent do mutual funds' performance represented by fund's systematic risk adjusted performance ratio (Treyner Ratio) affect level of Egyptian stock market performance?

8. Research Significance.

Significance of this research stems from the importance of the topic it addresses; mutual funds, despite their modernity, play prominent role in financial & investment sector of different countries; mutual fund investing has certainly played a great role in shaping economies of different countries (Qureshi et al., 2019; Li et al., 2021). Also, mutual funds regarded by many investors as a promising investment tool, it almost provides realizable returns, quick liquidity, and low level of financial risk. On the other hand, financial market efficiency is the cornerstone for states development; an efficient capital market leads to a competitive market economy that promotes efficient use of resources & efficient resource allocation thus becoming a self-regulating and self-adjusting economy. Accordingly, theoretical & practical importance of this research can be represented as follows:

- 1- Mutual funds help to develop & revitalize financial markets through stimulating buying & selling financial assets, which leads to advancing local financial market and attracting external capital (internationalization of the financial market).
- 2- Mutual funds help to protect national savings through utilizing them by efficient & and professional investment managers. It considered as source of financing in financial markets; through it corporations can grow & expand their level of operations.

3- Open-end mutual funds have facilitated short-term investment transactions for individual & institutional investors.

4- Despite researchers' interest in studying level of Egyptian stock market efficiency, there is a scarcity of English studies that dealt with the impact of mutual funds' performance on level of Egyptian stock market performance.

5- By the end of this research, and after testing research hypotheses, the researcher expects to end up with a set of scientific recommendations that will benefit all investment parties' inside the Egyptian stock exchange (EGX).

9. Research Limits.

Popularity of mutual funds can largely be attributed to their simplicity & affordability, as mentioned before mutual funds are investment bundles that pool funds from investors and invest it in financial assets such as stocks, bonds, treasury bills, gold, and many other assets. With respect to Egypt, National Bank of Egypt (NBE) established country's first mutual fund in 1994, nowadays number of mutual funds inside the Egyptian financial market exceeds 100 mutual funds with a total market value exceeding 120 billion Egyptian pound. In the light of research model & hypotheses stated earlier, this research was conducted within the following limits:

Theoretical limits: This research is limited to studying the impact of mutual funds' performance on level of Egyptian stock market performance.

Practical limits: This research is limited to studying the impact of open-ended mutual funds' performance on the level of Egyptian stock market efficiency. Open-ended mutual funds include range of different types, categories, and classifications. However, this research considers only four types of mutual funds³ as these types of funds represent more than 85% of the total number of funds operating in the Egyptian financial market. Also, these four types of open-ended mutual funds were selected because of their nature which is mostly consistent with objectives & problem of this research.

Duration limits: Practical part of this research will be applied to a time series consisting of ten years starting from January 2013 till December 2022.

10. Research Population, Sample, and Data Collection Methods.

As mentioned earlier, research population consists of all open-ended mutual funds operating in the Egyptian financial sector except those funds with a special nature (Islamic funds &

³ These four types are as follows: Open-End Equity Funds, Open-End Money Market Funds, Open-End Fixed Income Funds, and finally Open-End Balanced Funds. The following types of investment funds were excluded due to their special nature, which may not be consistent with research objectives:

Capital guaranteed Funds	1	Fund of Funds	2
Capital Protected Funds	3	Open-End Islamic Money Market Funds	3
Asset Allocator Funds	3	Open-End Income Mixed Funds	1
Open-End Islamic Funds	10	Open End Mixed Money Market & Fixed Income	1
Open-End Islamic Balanced Funds	2	Foreign Currency Funds	2

foreign currency funds). The following table show number of open-end mutual funds representing research population according to published reports issued by the Egyptian Investment Management Association (EIMA) in December 2022.

Open-End Equity Funds	28
Open-End Money Market Funds	34
Open-End Fixed Income Funds	8
Open-End Balanced Funds	9
Total	79

Time series analysis of ten years will be conducted in order to study research variables and test research hypotheses. Accordingly, the researcher will exclude from research population those mutual funds that began their activity after 2013. as a result, total size of research population decreased to be 59 mutual funds instead of 79 mutual funds as follows:

Open-End Equity Funds	26
Open-End Money Market Funds	22
Open-End Fixed Income Funds	4
Open-End Balanced Funds	7
Total	59

Due to availability of all financial data related to all mutual funds found in research population, the researcher will apply practical part of this research on the whole research population which consists of 59 open-ended mutual funds divided into

twenty-six open-end equity funds, twenty-two open-end money market funds, four open-end fixed income funds, and seven open-end balanced funds.

11. Statistical Analysis & Testing Hypotheses.

As mentioned in research limits, practical part of this research will be applied on a time series of ten years considering fifty-nine mutual funds representing four different types/categories of mutual funds. Weekly financial data of mutual funds was resampled to quarterly data, second difference for financial data was taken to achieve time series stationarity. Statistical analyses of this research will include different techniques & methods in order to explain descriptive statistics for research variables, regression analyses between explanatory variables and responding variables while taking into consideration the effect of controlling variables that might affect regression equation. (R)-programming language was used during testing research hypotheses.

11.1 Descriptive Statistics for Research Variables.

As shown in research model, main variables of this research include mutual funds' performance and Egyptian stock market performance. Statistics summary for research variables can be represented in the following table:

Table (1): Descriptive Statistics for Research Variables

Statistic	Y	X_1	X_2	X_3	X_4
Min	62507	1348	1970	1156	4072
1 st Q	109284	1840	2226	1545	4692
Median	137825	2383	2562	2165	5437
Mean	138518	2307	2568	2004	5768
3 rd Q	175416	2708	2851	2408	6949
Max	224071	3418	3340	2783	8153
n	40	40	40	40	40

Where:

Y: Returns of Egyptian exchange main index (EGX30).

X_1 : Open-End Equity Funds.

X_2 : Open-End Money Market Funds.

X_3 : Open-End Fixed Income Funds.

X_4 : Open-End Balanced Funds.

Returns of Egyptian exchange main index (EGX30) was represented by Y, these returns was observed to has a wide range during research period, with values stretching from 62507 to 224,071 indicating significant variability in market performance during research period. Median market value was 137,825, which is slightly lower than mean of 138,518, suggesting a relatively balanced distribution with a slight skewness towards higher values. Open-end equity funds (X_1) show a range from 1,348 to 3,418, with a median significantly higher than the first quartile, indicating a skewed distribution towards higher values. This suggests that, while most equity funds have moderate values, there were a few with exceptionally high values. Open-end money market funds (X_2) and

fixed income funds (X_3) display similar patterns, with medians of 2,562 and 2,165 respectively, positioned close to centers of respective ranges, indicating a more symmetric distribution of values. Finally, Open-end balanced funds (X_4) values ranging from 4,072 to 8,153, with a median of 5,437 indicating a more varied performance among this type of mutual funds, with a tendency towards higher values compared to the first quartile.

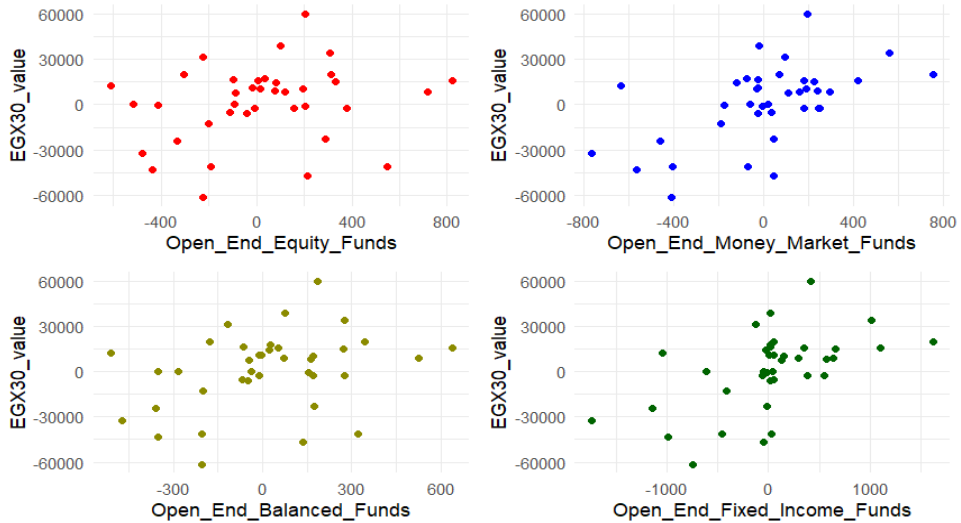
11.2 Testing Reliability & Stationarity of Time Series.

This study was conducted based on time series data of ten years from 2013 to 2022. Stationarity test was conducted; at the first time data wasn't stationary, after taking the second difference all research variables throughout the time series became stationary.

Table (2): Time Series Stationarity Test

ADF	Y	X_1	X_2	X_3	X_4
statistic	-4.6293	-4.4676	-5.9559	-4.6299	-6.3814
p-value	0.0001	0.0001	0.0001	0.0001	0.0001

H_0 : Time series is non – stationary H_1 : Time series is stationary
Stationarity tests implies rejecting null hypothesis and accepting alternative hypothesis, concluding that time series is stationary after taking the second difference of research data. The following scatter charts indicates existence of linear trend between dependent variable and independent variable of this research.



11.3 Testing Research Hypotheses.

This research primarily aims to assess the impact of mutual funds' performance on the level of Egyptian stock market performance. Four different types of mutual funds will be examined, significant differences between mean values of (NAV) among the four different types of mutual funds can be represented in the following table.

Table (3): Results of Analysis of Variance Test (ANOVA)

Source of Variation	SS (Sum of Squares)	DF	MS (Mean SS)	F-Test	P-Value	F-critical
Between Groups	368608596.8	3	122869532.26	207.60	0.00	2.66
Within Groups	92329416.61	156	591855.2347			
Total	460938013.4	159				

Results of ANOVA test indicates differences in mean values of (NAV) among different types of mutual funds (open-end equity funds, open-end money market funds, open-end fixed income funds, and open-end balanced funds). In the light of ANOVA test results, the researcher can furtherly proceed with examining the impact of mutual funds' performance on the level of Egyptian stock market performance.

First main hypothesis of this research states that; statistical significant relationship might exist between mutual funds' performance and level of Egyptian stock market performance. Furtherly, this main hypothesis was divided into three sub hypotheses in order to test to what extent there is a significant relationship between mutual funds' rate of return, Sharpe Ratio, Treynor Ratio, and level of Egyptian stock market performance.

In order to test the first main hypothesis with its three derived sub-hypotheses, multiple regression was conducted between independent variable (mutual funds' performance) and dependent variable (level of Egyptian stock market performance) under the effect of different controlling variables. controlling variables was represented as C_1 (Number of listed companies), C_2 (percentage of traded companies out of total listed firms), C_3 (Market capital in billion), C_4 (Market turnover rate), and C_5 (Degree of market volatility).

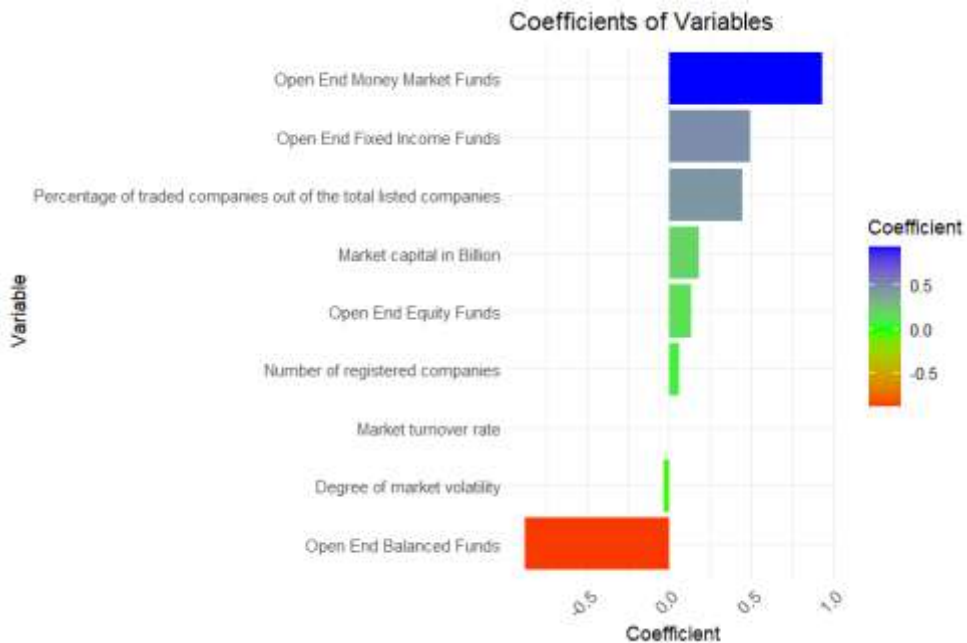
**Table (4): Results of Multiple Regression Analysis
Considering Mutual Funds Performance**

Variable	$\hat{\beta}$	t	p - value	Stand $\hat{\beta}$	F	p - value	R^2
Intercept	1002.148	0.299	0.767		11.52	0.00001	0.787
X_1	10.914	8.176	0.00001	0.139			
X_2	77.421	9.683	0.00001	0.936			
X_3	-87.019	-4.052	0.000465	-0.879			
X_4	20.095	5.221	0.000015	0.497			
C_1	611.872	20.690	0.00001	0.064			
C_2	1638973.58	14.547	0.00001	0.448			
C_3	52.002	8.271	0.00001	0.185			
C_4	-603.703	-0.406	0.68782	-0.001			
C_5	-1.798	-2.187	0.037177	-0.036			

Results of regression analysis indicate significance of regression model; F-test indicate that this model is significant as p-value was (0.00001) which is less than (0.05). According to regression model, mutual funds' performance was found to have a significant impact on level of Egyptian stock market performance, in other words mutual funds' performance was found to explain about 78.7% of changes & variations that occur in value of returns of Egyptian exchange main index (EGX30), all variables were significant except market turnover rate. According to coefficient of independent variable, when performance of open-end equity fund increases by one unit, returns of Egyptian exchange main index tends to increase by 10.914. Also when performance of open-end

money market fund increases by one unit, returns of Egyptian exchange main index tends to increase by 77.421. In the same context, when performance of open-end fixed income funds increases by one unit, returns of Egyptian exchange main index tends to increase by 20.095. On the other hand, returns of Egyptian exchange main index tends to decrease when performance of open-end balanced funds increase.

According to standardized coefficients, the impact of mutual funds' performance on level of Egyptian stock market performance can be represented in the following figure:



According to this figure, both open-end money market funds & open-end balanced funds was found to have the highest magnitude with positive & negative impacts respectively. The previous figure show & compare relative importance of different variables in explaining variance in dependent variable (level of Egyptian stock market performance - returns of Egyptian exchange main index (EGX30)).

In order to test the first sub-hypothesis of this research which states that “there is a statistical significant relationship between mutual funds’ rate of return and level of Egyptian stock market performance”, multiple regression was conducted, under effect of controlling variables, between independent variable represented by returns of different types of mutual funds’ and dependent variable represented by level of Egyptian stock market performance (Returns of Egyptian exchange main index (EGX30)).

**Table (5): Results of Multiple Regression Analysis
Considering Mutual Funds Return**

Variable	$\hat{\beta}$	t	$p - value$	Stand $\hat{\beta}$	F	$p - value$	R^2
Intercept	440.66	0.139	0.8905		4.532	0.00106	0.6017
X_1	393403.436	19.53	0.0000	3.489			
X_2	199403.945	20.45	0.0000	1.697			
X_3	439310.025	16.018	0.0000	3.638			
X_4	229807.353	20.299	0.0000	1.665			
C_1	-2812.035	-10.663	0.0000	-0.304			
C_2	-447827.05	-5.380	0.0000	-0.126			
C_3	-95.588	-2.226	0.0345	-0.351			
C_4	-161963.428	-12.57	0.0000	-0.402			
C_5	-0.949	-1.066	0.2957	-0.02			

Results of regression analysis indicate significance of regression model; F-test indicate that this model is significant as p-value was (0.00106) which is less than (0.05). According to regression model, mutual funds' return was found to have a significant impact on level of Egyptian stock market performance. In other words, mutual funds' return was found to explain about 60.17% of changes & variations that occur in value of returns of Egyptian exchange main index (EGX30), all variables were significant except degree of market volatility. According to coefficient of independent variable, when returns of open-end equity funds, open-end money market funds, open-end balanced funds, and open-end fixed income funds increases, returns of Egyptian exchange main index (EGX30) will increase also.

According to standardized coefficients, the impact of returns of different types of mutual funds on level of Egyptian stock market performance can be represented in the following figure:



According to this figure, both open-end balanced funds returns & open-end equity funds returns was found to have the highest magnitude with positive impact. The previous figure show & compare relative importance of different variables in explaining variance in dependent variable (level of Egyptian stock market efficiency - returns of Egyptian exchange main index (EGX30)).

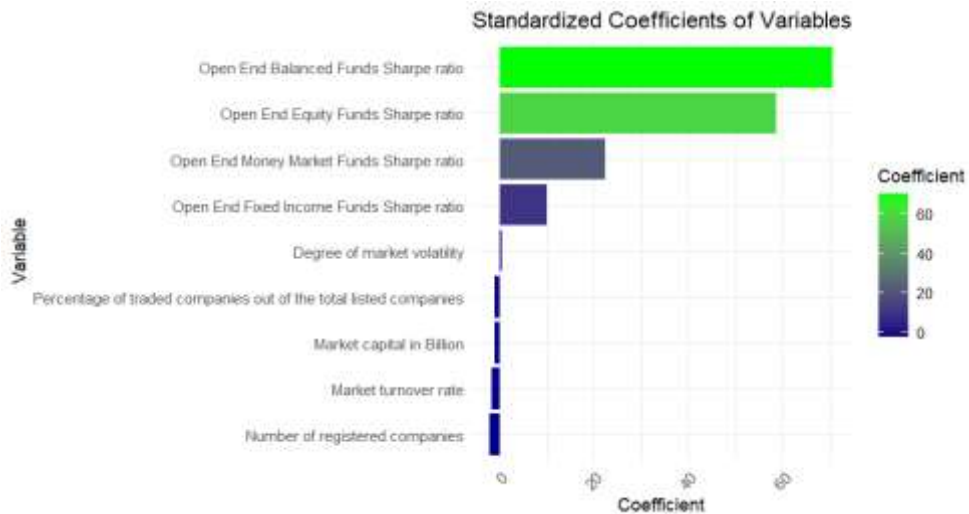
In order to test the second sub-hypothesis of this research which states that “there is a statistical significant relationship between fund’s risk adjusted performance ratio (Sharpe Ratio) and level of Egyptian stock market efficiency”, multiple regression was conducted, under effect of controlling variables, between independent variable represented by Sharpe Ratio of different types of mutual funds’ and dependent variable represented by level of Egyptian stock market performance (Returns of Egyptian exchange main index (EGX30)).

**Table (6): Results of Multiple Regression Analysis
Considering Sharpe Ratio**

Variable	$\hat{\beta}$	t	$p - value$	Stand $\hat{\beta}$	F	$p - value$	R^2
Intercept	283.556	0.08	0.93683		20.89	0.00000	0.8744
X_1	7282981.627	2.19	0.03734	58.64			
X_2	12222493.77	2.84	0.00847	22.350			
X_3	23612469.19	2.35	0.02634	70.529			
X_4	1903717.533	-7.17	0.0000	10.060			
C_1	-6929.607	-2.63	0.01393	-2.034			
C_2	-1246517.665	-1.4	0.1729	-0.955			
C_3	-108.1	-3.85	0.00066	-1.0779			
C_4	-227711.386	-2.17	0.03897	-1.537			
C_5	7.545	2.44	0.02153	0.4290			

Results of regression analysis indicate significance of regression model; F-test indicate that this model is significant as p-value was (0.0000) which is less than (0.05). According to regression model, mutual funds' risk adjusted performance ratio (Sharpe Ratio) was found to have a significant impact on level of Egyptian stock market performance (returns of Egyptian exchange main index - EGX30). In other words, mutual funds' risk adjusted performance ratio (Sharpe Ratio) was found to explain about 87.44% of changes & variations that occur in value of returns of Egyptian exchange main index (EGX30), all variables were significant except market turnover rate, degree of market volatility, and market capitalization. According to coefficient of independent variable, when mutual funds' risk adjusted performance ratio (Sharpe Ratio) of open-end equity funds, open-end money market funds, open-end balanced funds, and open-end fixed income funds increases, returns of Egyptian exchange main index (EGX30) will increase also.

According to standardized coefficients, the impact of risk adjusted performance ratio (Sharpe Ratio) of different types of mutual funds on level of Egyptian stock market performance can be represented in the following figure:



According to this figure, Sharpe Ratio for both open-end balanced funds & open-end equity funds was found to have the highest magnitude with positive impact. The previous figure show & compare relative importance of different variables in explaining variance in dependent variable (level of Egyptian stock market performance - returns of Egyptian exchange main index (EGX30)).

In order to test the third sub-hypothesis of this research which states that “there is a statistical significant relationship between fund’s systematic risk adjusted performance ratio (Treyner Ratio) and level of Egyptian stock market performance”, multiple regression was conducted, under effect of controlling variables, between independent variable represented by Treyner Ratio of

different types of mutual funds' and dependent variable represented by level of Egyptian stock market performance (Returns of Egyptian exchange main index (EGX30)).

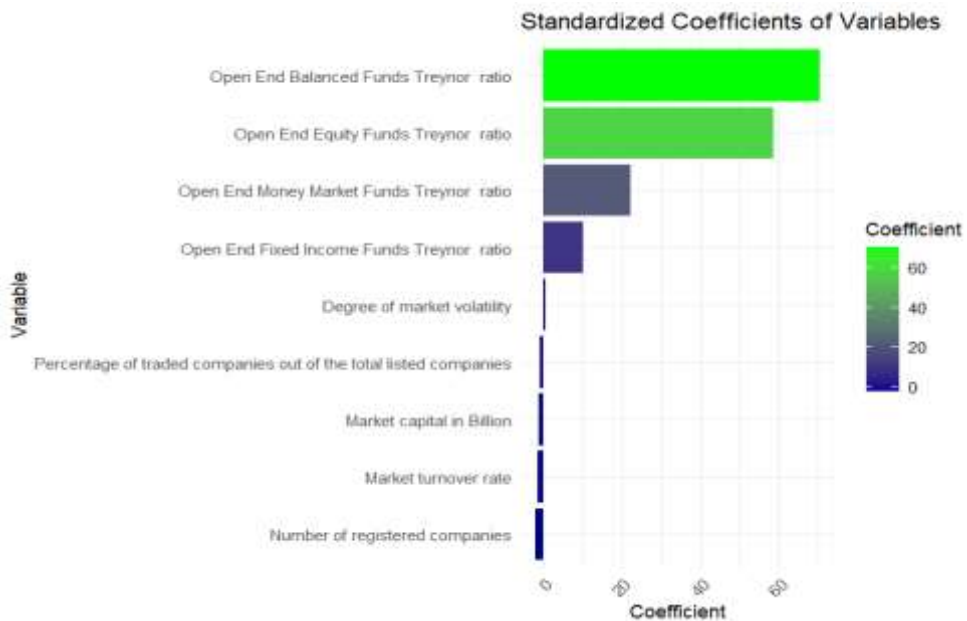
**Table (7): Results of Multiple Regression Analysis
Considering Treynor Ratio**

Variable	$\hat{\beta}$	t	$p - value$	Stand $\hat{\beta}$	F	$p - value$	R^2
Intercept	283.556	0.08	0.93683		9.778	0.00000	0.76522
X_1	7282981.627	2.19	0.03734	58.64			
X_2	12222493.77	2.84	0.00847	22.350			
X_3	23612469.19	2.35	0.02634	70.529			
X_4	1903717.533	7.17	0.0000	10.060			
C_1	-6929.607	-2.63	0.01393	-2.034			
C_2	-1246517.665	-1.4	0.1729	-0.955			
C_3	-108.1	-3.85	0.00066	-1.0779			
C_4	-227711.386	-2.17	0.03897	-1.537			
C_5	7.545	2.44	0.02153	0.4290			

Results of regression analysis indicate significance of regression model; F-test indicate that this model is significant as p-value was (0.0000) which is less than (0.05). According to regression model, mutual fund's systematic risk adjusted performance ratio (Treynor Ratio) was found to have a significant impact on level of Egyptian stock market performance (returns of Egyptian exchange main index - EGX30). In other words, mutual fund's systematic risk adjusted performance ratio (Treynor Ratio) was found to explain about 76.522% of changes & variations that occur in value of returns of Egyptian exchange main index (EGX30), all variables were significant except market turnover

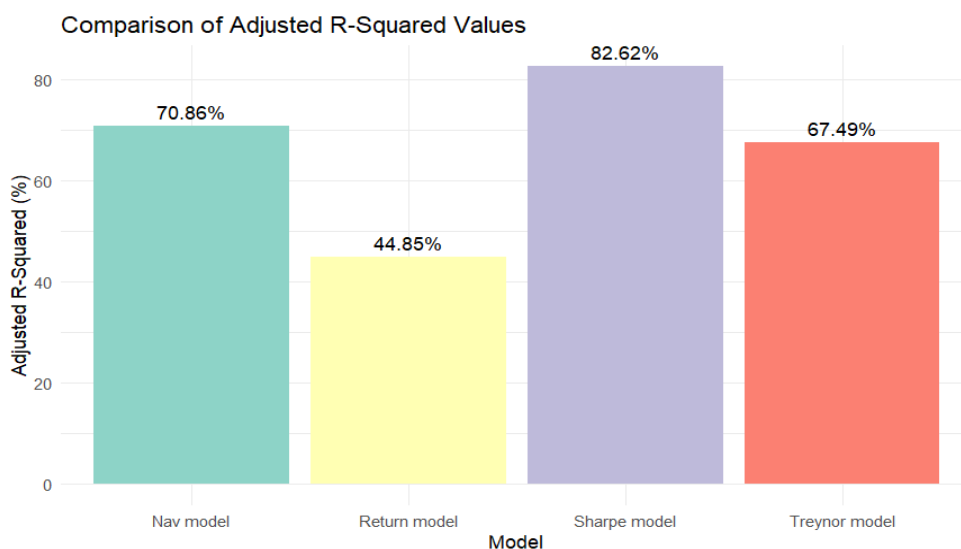
rate and degree of market volatility. According to coefficient of independent variable, when mutual fund's systematic risk adjusted performance ratio (Treynor Ratio) of open-end equity funds, open-end money market funds, open-end balanced funds, and open-end fixed income funds increases, returns of Egyptian exchange main index (EGX30) will increase also.

According to standardized coefficients, the impact of fund's systematic risk adjusted performance ratio (Treynor Ratio) of different types of mutual funds on level of Egyptian stock market performance can be represented in the following figure:



According to this figure, Treynor ratio for both open-end balanced funds & open-end equity funds was found to have the highest magnitude with positive impact. The previous figure show & compare relative importance of different variables in explaining variance in dependent variable (level of Egyptian stock market performance - returns of Egyptian exchange main index (EGX30)).

Since all models are significant, adjusted R^2 for all previously regression models can be represented in the following figure:



Through comparing adjusted R-squared values for different models utilized in this research, mutual funds' performance represented by rate of return on invested funds was found to

explain about 45% of changes that occur in level of Egyptian stock market performance. While mutual funds' performance represented by fund's risk adjusted performance ratio (Sharpe Ratio) was found to explain about 82.62% of changes that occur in level of Egyptian stock market performance. Finally, mutual funds' performance represented by fund's systematic risk adjusted performance ratio (Treyner Ratio) was found to explain about 67.5% of changes that occur in level of Egyptian stock market performance. Since, all models are significant, it is clear that Sharpe Ratio Model is the best model to explain the impact of mutual funds' performance on the level of Egyptian stock market performance.

12. Findings & Recommendations.

Results indicate that, mutual funds' performance was found to have a significant impact on level of Egyptian stock market performance, mutual funds' performance was found to explain about 78.7% of changes & variations that occur in value of returns of Egyptian exchange main index (EGX30). Performance of different types of mutual funds was found to have significant impact on Egyptian stock market performance. When performance of open-end equity fund increases by one unit, returns of Egyptian exchange main index tends to increase by 10.914, when performance of open-end money market fund increases by one unit, returns of Egyptian exchange main index tends to increase by 77.421, when performance of open-end fixed

income funds increases by one unit, returns of Egyptian exchange main index tends to increase by 20.095, finally, when performance of open-end balanced funds increase, returns of Egyptian exchange main index tends to decrease.

Considering the simple classical form of mutual funds' performance, mutual funds' return was found to explain about 60.17% of changes & variations that occur in value of returns of Egyptian exchange main index (EGX30), all variables were significant except degree of market volatility. Considering mutual funds' risk adjusted performance ratio (Sharpe Ratio), results revealed significant impact of sharpe ratio on level of Egyptian stock market performance (returns of Egyptian exchange main index - EGX30), mutual funds' risk adjusted performance ratio (Sharpe Ratio) was found to explain about 87.44% of changes & variations that occur in value of returns of Egyptian exchange main index (EGX30), all variables were significant except market turnover rate, degree of market volatility, and market capitalization.

Considering mutual fund's systematic risk adjusted performance ratio (Treyner Ratio), results revealed significant impact of treynor ratio on level of Egyptian stock market performance (returns of Egyptian exchange main index - EGX30), mutual fund's systematic risk adjusted performance ratio (Treyner Ratio) was found to explain about 76.522% of

changes & variations that occur in value of returns of Egyptian exchange main index (EGX30), all variables were significant except market turnover rate and degree of market volatility. Finally, Sharpe Ratio Model was the best model to explain significant impact of mutual funds' performance on level of Egyptian stock market performance.

In Accordance with Egypt vision 2030, and in the light of research results shown previously, great efforts were exerted by different parties inside the Egyptian economy recently in order to raise level of financial awareness, spreading investment culture among Egyptians, and raise level of Egyptian financial market efficiency; accordingly, the researcher recommends decision makers inside Egyptian non-banking financial sector to:

- 1- Start taking different initiatives in order to encourage small investors to rely on mutual funds as a safe investment tool, especially those investors who haven't any experience in securities investment.
- 2- Start introducing & innovating new unconventional investment tools; new types of mutual funds, in order to activate Egyptian stock market through injecting more liquidity from new investors.
- 3- Starting to digitize mutual funds investment transactions in order to facilitate operations & attract larger segment of individual investors.

4- Working towards more diversification in investment fields of different mutual funds in order to attract largest possible number of potential investors.

5- Working to enhance disclosure & transparency standards related to evaluating mutual funds' performance so that investors are aware of all information necessary for making/taking investment decisions.

6- Working to diversify investment opportunities through increasing number & types of mutual funds' in different regions & industries, this diversity reduces level of associated risk and consider as critical step towards achieving financial sustainability.

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