Building the Optimal Islamic Investment Portfolio from the Egyptian Shariah Index (EGX33) Companies Based on Active and Passive Strategies[1]

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ABSTRACT

This research aims to identify the optimal Islamic investment portfolio by employing the Sharpe ratio maximization model and the Treynor-Black model, applied to companies listed on the Egyptian Shariah Index EGX33. The performance of these two portfolios is then compared to the performance of the EGX33 Shariah Index and an equally weighted portfolio based on naive diversification. The study relied on several evaluation criteria, including the Sharpe ratio, the Modigliani and Modigliani M-Square measure, the Treynor ratio, and the information ratio. The researcher utilized weekly data spanning from the initial inception of the index at the beginning of January 2022, until the end of January 2025, prior to the first revision of the index. The study also outlined the investor's overall portfolio, which includes both the risky portfolio of Shariah-compliant stocks and the risk-free investment represented by the Egyptian one-year (364 days) Treasury bills. The results demonstrated the superiority of portfolios that applied the active strategy using the Sharpe ratio maximization and Treynor-Black models over those that followed the passive strategy, represented by the EGX33 Shariah Index portfolio and the equally weighted portfolio. These findings were confirmed even when the sampling period was altered. This research is beneficial for both practitioners and academics interested in constructing the optimal Islamic investment portfolio. Future research could explore the use of other optimization models, conduct comparative studies with other similar countries, utilize daily or monthly data instead of weekly data, or examine Treasury bills with maturities other than one year.

Keywords: *Optimal Islamic Investment Portfolio, Passive and Active Strategies, Sharpe Ratio Maximization Model, Treynor-Black Model, Egyptian Shariah Index EGX33, Egyptian Market.*

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1. INTRODUCTION

Portfolio risk is reduced through proper diversification of financial assets. Therefore, amid the rapid transformations in global financial markets, constructing the optimal portfolio has become an urgent necessity to achieve a balance between risk and return. This research highlights the importance of studying active investment strategies based on scientific principles to enhance the performance and sustainability of Shariah-compliant equity portfolios. It then compares the performance of these portfolios with those managed under a passive strategy, contributing to the development of an effective and well-integrated investment portfolios.

According to passive strategies, the stock market is efficient, assuming that stocks are fairly valued at their true prices. This implies that there is no opportunity to achieve abnormal returns by changing the portfolio's components. If abnormal returns do occur, they are attributed to chance. Consequently, it is not possible to achieve a risk-adjusted return on the portfolio exceeds the market return. The buy-and-hold strategy and the index strategy are considered the main forms of passive strategies (Hindi, 2015).

Active stock portfolio management strategies, on the other hand, don't recognize market efficiency, as they assume that stocks may be mispriced—that is, their values may be either higher or lower than their true value. Therefore, investors should construct their portfolios with undervalued stocks, which have a positive alpha, while disposing of overvalued stocks (Hindi, 2015). The Treynor-Black model is one of the main models which apply active strategies (Bodie, Kane, & Marcus, 2018). Harry Markowitz is among the pioneers of modern portfolio theory through his paper, Portfolio Selection (Markowitz, 1952). After Markowitz (1952), many researchers introduced other models based on different risk measures or simplified procedures to derive the optimal portfolio.

Islamic finance has proven to be a viable alternative to the conventional system, especially after its outstanding performance during the 2008 financial crisis. Consequently, some recent studies have sought to construct investment portfolios comprising assets that comply with Shariah principles. The construction of these Islamic portfolios is based on fundamental Islamic finance

principles, including the prohibition of riba (usury), gharar (excessive uncertainty), and maysir (gambling), as well as avoiding prohibited and unethical activities. Additionally, purifying income through zakat is emphasized to ensure fairness and reduce economic disparities within society (Lim, Goh, & Sim, 2023b).

The Egyptian Exchange (EGX) launched the EGX33 Shariah Index on June 12, 2024. This index includes 33 companies whose activities comply with Shariah principles, adhere to specified financial criteria, and maintain a sufficient level of liquidity and trading volume. The index weights are determined based on free-float market capitalization, with a maximum weight cap of 15% per company to prevent any single company from dominating the index. The EGX33 Shariah Index aims to meet the needs of investors seeking Shariah-compliant investments by tracking the performance of Shariah-compliant companies in the Egyptian market. The index was back-calculated starting from January 1, 2022, with a base value of 1,000 points. It is reviewed semi-annually, with the first review at the end of January and the second at the end of July. The final list of constituent companies and their weights is determined at the beginning of February and August each year (Egyptian Exchange [EGX], 2025).

This paper aims to employ both passive and active strategies to construct the optimal investment portfolio from the companies included in the EGX33 Shariah Index. The primary contribution of this study lies in being the first of its kind, to the best of the research's knowledge, to apply modern investment strategies in constructing the optimal portfolio from companies belonging to a newly established index in the Egyptian market, whose constituents comply with Shariah principles. This is particularly significant given the scarcity of applied research on Shariah-compliant companies, and the desire of many investors to invest in Shariah-compliant investments.

Therefore, the main objective of the research is to construct investment portfolios from the companies listed in the EGX33 Shariah Index and to compare the performance of these alternative portfolios to identify the optimal investment portfolio for investors. The sub-objectives of the research are:

- Employing the active strategy to construct the optimal risky portfolio that maximizes the Sharpe ratio through the optimal allocation of EGX33 index stocks.
- Utilizing the active strategy to form the optimal total portfolio by optimally allocating between EGX33 index stocks—selected to maximize the Sharpe ratio—and the risk-free investment.
- Applying active equity portfolio management to determine the optimal risky portfolio of Shariah-compliant stocks that are undervalued and allocating them optimally based on the Treynor-Black model.
- Implementing active equity portfolio management to derive the optimal total portfolio by identifying the best combination of undervalued Shariah-compliant stocks and the risk-free investment.
- Evaluating the performance of alternative portfolios using multiple criteria, including the Sharpe ratio, Modigliani and Modigliani's M-Square measure, the Treynor measure, and the information ratio, while comparing their performance with the passive portfolio index of the Egyptian Shariah-compliant stock market and portfolios based on naïve (simple) diversification.
- Validating the robustness of results, by repeating study using only data from the EGX33 index's inception until the end of the index first revision period on January 31, 2025.
- The remaining part of the paper includes research limitations, followed by a review of the most related previous studies. This is followed by the research hypotheses, based on the theoretical framework and prior studies. Next, the research data and sample are presented, followed by the section of variables measurement and methods employed. The research results are then presented, followed by the conclusion and discussion of the findings. Finally, recommendations for future research are shown.

2. RESEARCH LIMITATIONS

This research was applied to Shariah-compliant companies in Egypt only, due to the recent launch of the Egyptian Shariah Index EGX33 in mid-2024. Data are collected Weekly. Treasury bills with a one-year maturity (364 days) were employed as a measure for risk-free investment. Only two active equity portfolio management models were used: The Sharpe ratio maximization model and the

Treynor-Black model. Thus, the researcher recommends applying other methods to Shariah-compliant companies in Egypt or conducting comparative studies with Islamic companies in other countries. Additionally, it allows for the use of different data frequencies or another measure for risk-free investment.

3. THEORETICAL FRAMEWORK AND LITERATURE REVIEW

Researchers have increasingly focused on constructing the optimal portfolio since Harry Markowitz's pioneering work in his famous 1952 paper on portfolio selection (Markowitz, 1952) up to now. The model introduced by Markowitz in this paper is known as the Mean-Variance (MV) Model. This model is based on quadratic programming and aims to determine the portfolio that achieves the best balance between portfolio return, measured as the weighted average of asset returns within the portfolio, and portfolio risk, measured by variance. The goal of this model is to minimize portfolio risk while ensuring a minimum required return.

However, Markowitz's model has faced several criticisms due to its reliance on unrealistic assumptions, such as the assumption of normally distributed returns, zero transaction costs, and ignoring investor risk tolerance. Additionally, the model involves complex calculations for portfolio variance, especially when dealing with a large number of assets (Lim et al., 2023b). To address the issue of non-normally distributed returns, Harry Markowitz introduced a modified approach in his book Portfolio Selection: Efficient Diversification of Investments (Markowitz, 1959). This approach, known as the Mean-Semi-Variance Model, also relies on quadratic programming but uses semi-variance as a measure of downside risk instead of variance.

Many researchers following Markowitz have sought to develop other conventional, non-Islamic models to determine the optimal investment portfolio, either by using alternative risk measures or by simplifying the procedures. Some of these models are the Mean-Absolute Deviation Model (Konno & Yamazaki, 1991), the Mean-Variance-Skewness Model (Konno & Suzuki, 1995), and the Value-at-Risk Model (Jorion, 1996).

The Mean-Absolute Deviation Model is a linear programming model that relies on the absolute deviation from the mean instead of variance, making its calculations simpler than the Mean-Variance Model. However, it is less accurate in risk analysis. This model was applied to the Tokyo Stock Exchange in the study by Konno and Yamazaki (1991).

In another study on the Japanese market, Konno, Shirakawa, and Yamazaki (1993) inserted skewness into the Mean-Absolute Deviation Model, presenting what is known as the Mean-Absolute Deviation-Skewness Model. This model relies on linear programming and aims to maximize skewness while imposing constraints on the mean return and variance. Skewness plays an important role when the distribution of asset returns is asymmetric around the mean.

The Mean-Variance-Skewness (MVS) Model is introduced by Konno and Suzuki (1995) in their study on the Japanese market. It is a nonlinear extension of Markowitz's Mean-Variance Model, incorporating cases where the skewness of asset returns and the third derivative of the utility function play significant roles in selecting the optimal portfolio.

Jorion (1996) introduced the Value-at-Risk (VaR) Model as one of the nonlinear models based on downside risk. He analyzed estimation errors in VaR and explored ways to improve the accuracy of its estimates. VaR represents the worst potential loss over a specific time period at a given confidence level. The study concluded that VaR is an important tool for managing financial risk and can therefore be used to determine the optimal portfolio for an investor.

The Value-at-Risk model was applied by Zinel and Abdulhamid (2022) on their study on 15 companies in the Iraqi Stock Exchange. They recommended constructing the optimal portfolio based on this approach. However, a key limitation of VaR is that it does not indicate the extent of losses beyond the estimated threshold. To address this issue, Rockafellar and Uryasev (2000) introduced a linear model based on minimizing Conditional Value-at-Risk (CVaR) instead of minimizing VaR to achieve the optimal portfolio or to hedge against portfolio risks. Their findings indicated that portfolios with low CVaR generally also exhibit low VaR.

In addition to the aforementioned models and previous studies, other researchers have employed Machine Learning Models and genetic algorithms to determine the optimal portfolio. Some studies have also focused on achieving optimal asset allocation within investment portfolios while adhering to Islamic principles. This was done by applying traditional models within the framework of Shariah-compliant rules, such as avoiding excessive risk, prohibiting investments in restricted activities, and eliminating gambling, interest (riba), and uncertainty (gharar). The study by Lim et al. (2023b) is among the key research works that have comprehensively examined traditional and Islamic models, as well as recent developments in this field.

Given the numerous studies that have addressed this topic, the remaining part of this section will highlight peer-reviewed published research within the Arab region. Additionally, it will discuss key studies that have aimed to construct the optimal stocks investment portfolio in Shariah-compliant companies, regardless of the country in which the study was conducted.

Despite the abundance of published research on determining the optimal portfolio in Arab countries, most of these studies have been applied to Iraq and Algeria. There is a limited number of studies focusing on Egypt and some other Arab countries, such as Saudi Arabia, the UAE, Bahrain, Jordan, Syria, and Morocco.

Several academic theses on this topic have also been discussed, with applications in Iraq (e.g., Akar, 2016; Al-Moussawi, 2022; Al-Shammari, 2018), Saudi Arabia (e.g., Abdelkader, 2022; Al-Saneeh, 2014; Helal, 2021; Matles & Qaderi, 2019), Jordan (e.g., Al-Hmood, 2020; Al-Jbouri, 2017; Salhi, 2019), Syria (e.g., Al-Debs, 2022; Al-Sermini, 2018, Palestine (e.g., Al-Sharafa, 2016; Shbeir, 2015), Algeria (e.g., Abdel-Majid, 2023), the UAE (e.g., Zanagi & Belkhadem, 2022), and Qatar (e.g., Khalaf Allah & Thabet, 2020). In addition, the thesis by Al-Shaarani (2015) was applied to both Jordan and Syria.

Al-Ardi and Jafar (2016) relied on the Capital Asset Pricing Model (CAPM) to construct the optimal portfolio on an annual basis. The sample included 21 companies in the Iraqi industrial sector during the period between 2008 and 2012. The study concluded that it is essential to focus on reducing the correlation

coefficient between assets within the portfolio and applying the dominance principle to achieve the optimal portfolio.

The study by Al-Mayali and Al-Daami (2022) aimed to determine the optimal portfolio in Amman Stock Exchange, using monthly data from 2010 to 2017. The study found that relying on the single-index model is useful for constructing the optimal portfolio, which consisted only of two stocks out of the 41 stocks examined in the study.

Several studies have employed the simple ranking method to construct the optimal portfolio in the Iraqi Stock Exchange. While a group of studies (such as those by Al-Hasnawi & Akar, 2016; Al-Rubaie et al., 2017; Al-Zubaidi et al., 2022; Hashem & Ismail, 2013; Mahmood, 2022) recommended relying on this method for constructing the optimal investment portfolios, the studies by Jabbar and Hadi (2021) and Hadi and Jabbar (2021) found that the performance of portfolios constructed using simultaneous equations system outperforms that of portfolios built on the simple ranking method.

In addition, the studies by Sami (2018) and Al-Yara et al. (2021) recommended relying on the cutoff rate technique to construct the optimal portfolio in Iraq Stock Exchange. In Algeria, Salhi and Mohamedy (2018), employed a goal programming model based on monthly data from five companies from January to October 2017. They concluded that this model successfully led to an optimal portfolio consisting of three stocks. in a similar study on Bahrain, Mohamedy and Salhi (2019) applied the goal programming method using monthly data for four companies over the years 2011 and 2017. They found that the optimal portfolio consisted of two companies.

The study by Zouaoui and Naas (2014) in Algeria, along with studies by Al-Hasnawi and Abbas (2023), and Souza et al. (2023) in Iraq, relied on genetic algorithms to find the optimal investment portfolios. Additionally, the study by Ismail and Ghanawi (2019) in Iraq recommended combining the goal programming method and genetic algorithms to derive the optimal investment portfolio.

In addition to the methods mentioned earlier for constructing investment portfolios, Dooba and Mouselli (2023) employed Fractal Analysis to build the optimal portfolio in the Damascus Securities Exchange, relying on monthly data for a sample of 19 companies. They found that the performance of this portfolio outperformed that of the market portfolio. In the study by Al-Mayali, Al-Taie, and Hamo (2023) on the Iraqi market, the buy-and-hold strategy and the optimal sampling method were used to determine the optimal investment portfolio. Based on the ARCH and GARCH models, an optimal investment portfolio was formed using daily stock return data in the Shawawrah (2024) study on the Amman Stock Exchange during the period from 2018 to 2021.

In a study on the Damascus Securities Exchange, Diob (2023) employed stock evaluation models to determine the optimal portfolio, applying them to 24 companies during the period from 2013 to 2017. The study concluded that the portfolio based on the Sharpe model outperformed the market portfolio and the portfolios based on the Treynor and Jensen models. Additionally, Gordon, certainly equivalent, and Markowitz models were used in the study by Belbali and Ben Laria (2017) on the Algerian Stock Exchange to determine the optimal portfolio. Monthly data during the period from 2013 to 2016 were collected using 108 observations in 23 companies. Furthermore, Abdelhamid and Qader (2022) employed the Markowitz and Telser models to construct the optimal investment portfolio, using monthly data for ten Iraqi companies from 2015 to 2020. The study found that the portfolio based on the Telser model outperformed that of the Markowitz model.

Building investment portfolios using the Markowitz model with quadratic programming is one of the most common methods for determining the optimal investment portfolio. Some studies that have used the quadratic programming method include El-Attabi and Jaafar (2016) in Iraq, Badiar (2019), and Badiar and Bakreti (2018) in Morocco, Sarih, Battal, and Ali (2019) in the UAE, and Abdelkader and Benamor (2021) in Saudi Arabia.

In the study by El-Attabi and Jaafar (2016), the model was applied to a sample of four Iraqi commercial banks during the years 2008 to 2013. An optimal portfolio was built for a sample of 23 companies listed on the Casablanca Stock Exchange

during the period from 2008 to 2016 by Badiar and Bakreti (2018). In another study on the Casablanca Stock Exchange with the same sample, Badiar (2019) concluded that the portfolio constructed based on the Sharpe ratio maximization model provided better results than those based on the Markowitz model according to the Treynor measure. In addition, Abdelkader and Benamor (2021) used annual data from a sample of 11 Saudi banks during the period from 2014 to 2018 to construct the optimal portfolio. Sarih et al. (2019) also recommended using the quadratic programming method to determine the optimal portfolio for sectors of the Dubai Financial Market during the period from 2009 to 2014. The sample in their study included seven sectors comprising 47 companies.

Other studies have used some technical analysis methods to form optimal investment portfolios. Among these studies are the studies by Ne'ma and Mohammed (2020) and Faris et al. (2021) in Iraq, and the studies by Abd-Elmaged, AbouelKhair, and Al-Shami (2022). and El Saiid et al. (2023) in Egypt. In the study by Ne'ma and Mohammed (2020), the Williams Percentage Index was used, by selecting the top 10 companies in this index from 21 companies to be included in the optimal portfolio based on daily closing prices. The study concluded that the performance of this portfolio outperformed the market portfolio. In the study by Faris, Mahmood, and Al- Mayaahi (2021). a portfolio consisting of the top 10 companies in the weighted moving average from 24 companies was formed based on daily closing prices during and before the COVID-19 pandemic. They found that the portfolio's performance, measured by the Sharpe ratio during the crisis, was better than its performance before it due to the lower trading volume and sessions.

In Egypt during the period from 2004 to 2018, Abd-Elmaged et al. (2022) used monthly data to build investment portfolios. They employed the momentum (trend) and contrarian strategies. as technical analysis tools, within the framework of the Fama-French five-factor model. They concluded that using the contrarian strategy in building investment portfolios is important, with the need to consider the time dimension when forming these portfolios. In the study by El Saiid, Abdou, and Saleh (2023), technical analysis was also employed in the Egyptian stock market. They employed relative performance, momentum

(trend), and moving average strategies to form the optimal portfolio. They relied on daily data for 136 companies added during the semi-annual reviews of the Egyptian stock market index EGX30. They concluded that it is possible to build an investment portfolio based on the momentum and moving average strategies, which outperform the buy-and-hold strategy represented by the EGX30 index.

After discussing the studies applied to Arab financial markets, the next step is to discuss the key studies that sought to develop Shariah-compliant financial portfolios. Among the most important of these studies are those conducted by Masri (2018), Sandwick and Collazzo (2020), Abd Sukor and Abdul Halim (2022), Lim, Goh, and Lee (2023a), and Simoh, Alfallah, and El Kharrim (2024).

Masri (2018) presented an optimal model compliant with Shariah (Islamic law) for the Bahraini stock market during the period from December 24, 2015, to October 6, 2016, using weekly data. Goal Programming, Chance-Constrained constraints, and Recourse models were employed. He reached a portfolio that had a high ability to bear risk and yielded high returns. In addition, Sandwick and Collazzo (2020) compared Islamic and traditional global multi-asset portfolios, including investments in money markets, fixed-income securities, stocks, and alternative investments, as of December 31, 2017. The study found that multi-asset Islamic portfolios had return and risk characteristics that were at least equal to those of traditional counterparts, or in some cases, they outperformed them in certain aspects.

The study by Abd Sukor and Abdul Halim (2022) aimed to evaluate the performance of Islamic-compliant investment portfolios in the United States, compared to traditional portfolios. The results showed that traditional portfolios outperformed Islamic-compliant portfolios in most cases. However, the performance of Islamic portfolios during financial crises was close to, or even exceeded in sometimes, that of traditional portfolios. This indicates the relative stability of Islamic portfolios during financial crises.

In the study by Lim et al. (2023a), Islamic-compliant investment portfolios were formed for a sample of 154 financial securities in Malaysia, based on daily data from 2011 to 2020. The study aimed to construct the optimal Islamic portfolio using the Conditional Value-at-Risk (CVaR) model. The results indicated that

the Islamic compliance optimization model achieves effective diversification and enhances asset allocation efficiency. The accuracy of the predictions was verified using the Mean Absolute Percentage Error (MAPE) and the Mean Absolute Error of the Inverse Shadow Ratio (MAAPE).

Simoh et al. (2024) presented a model for constructing optimal Islamic-compliant investment portfolios using genetic algorithms under uncertainty. The study was applied to the Casablanca Stock Exchange during 2021 and 2022, based on weekly data. They concluded that although Islamic-compliant portfolios offer lower returns at the same level of risk compared to conventional portfolios due to the restrictions on non-compliant investments, these Shariah constraints protect investors from high-risk assets.

After reviewing the previous related studies, it is clear that there is a variety of studies and optimization models used to construct optimal portfolios. Quadratic programming-based models are among the most common models used to achieve the optimal portfolio. According to Badiar's (2019) study, the portfolio constructed based on the Sharpe ratio maximization model produces better results than those relying on the Markowitz model. The Sharpe ratio maximization model is considered a nonlinear model, but it can be transformed into a quadratic programming model for simplicity. Additionally, Diob (2023) found that the portfolio built using the Sharpe model outperforms the market portfolio and the portfolios based on the Treynor and Jensen models.

It is also evident that there is a scarcity of studies focused on forming Islamic-compliant investment portfolios, and a lack of studies applied in the Egyptian stock exchange in this field. Therefore, the current study aims to fill this gap by forming and evaluating Islamic-compliant investment portfolios for stocks listed in the newly established EGX33 Shariah Index, relying on the Sharpe ratio maximization model as a risk-adjusted return measure, and applying the Treynor and Black models to derive the active and total portfolios.

4. RESEARCH HYPOTHESES

Based on the theoretical framework and literature review discussed in the previous section, the research hypotheses could be formulated in two main hypotheses as follows:

H1: The performance of the optimal risky portfolio that maximizes the Sharpe ratio outperforms both the Egyptian Shariah Index (EGX33) and the equally weighted naive diversification portfolio. This hypothesis could be divided into the following two sub-hypotheses:

- **H1(a):** The performance of the optimal risky portfolio that maximizes the Sharpe ratio outperforms the Egyptian Shariah Index (EGX33).
- **H1(b):** The performance of the optimal risky portfolio that maximizes the Sharpe ratio outperforms the equally weighted naive diversification portfolio.

H2: The performance of the optimal risky portfolio of undervalued active stocks based on the Treynor and Black model outperforms both the Egyptian Shariah Index (EGX33) and the equally weighted naive diversification portfolio. This hypothesis could be divided into the following two sub-hypotheses:

- **H2(a):** The performance of the optimal risky portfolio of undervalued active stocks based on the Treynor and Black model outperforms the Egyptian Shariah Index (EGX33).
- **H2(b):** The performance of the optimal risky portfolio of undervalued active stocks based on the Treynor and Black model outperforms the equally weighted naive diversification portfolio.

5. DATA AND SAMPLE

The Egyptian Shariah Index EGX33 was launched on June 12, 2024. The index was calculated starting from January 1, 2022, with a value of 1000 points, and a maximum weight limit of 15% for each company in the index. The index is reviewed semi-annually at the end of January and July, with changes to the companies made at the end of February and August. Therefore, the study will span from January 2022 to the end of January 2025, as this period includes the

same set of companies in the index. The sample includes all stocks listed in the EGX33 index during the study period, totaling 34 stocks. Although the index includes 33 companies, Faisal Islamic Bank of Egypt has two stocks, one in Egyptian pounds and the other in dollars, each with a different weight in the index, as shown in the appendix at the end of the paper.

The appendix shows the names and Reuter codes of the companies listed in the EGX33 index as of 1/8/2024, along with their weights in the index on that date. Stock price data was collected from the Egyptian Stock Exchange website (www.egx.com.eg). The weighted average annual returns of one-year Egyptian treasury bills (364 days) were used as a measure of risk-free returns. The source of the treasury bill returns is the official website of the Central Bank of Egypt (www.cbe.org.eg). Since Egyptian treasury bills of all categories (91 days, 182 days, 273 days, and 364 days) are issued weekly, weekly data frequency will be used in this research. Also, since the tax rate on the returns of Egyptian treasury bills is 20%, the return on treasury bills was multiplied by 80% to account for the tax rate and obtain the after-tax return. Regarding stocks capital gains, there is no tax imposed on them at the Egyptian Stock Exchange.

The purpose of relying on the risk-free rate of return in this research is to calculate the required rate of return on investment according to the Capital Asset Pricing Model (CAPM). Additionally, it is used as an investment in Egyptian treasury bills alongside investments in stocks to derive the investor's overall portfolio, assuming the investor does not see the investment in the Egyptian treasury bills as involving any form of usury (riba).

There is a difference of opinion among Islamic scholars regarding the permissibility of investing in treasury bills. The Egyptian Dar Al-Ifta (www.dar-alifta.org) views investment in these bills as free from the issues of riba (usury) and gharar (uncertainty), and considers it beneficial to the state for financing development plans and budget deficits[1]. However, as stated in the International Islamic Fiqh Academy (https://iifa-aifi.org/), which convened in Jeddah, Saudi

1 The fatwa number 1956 by the Mufti, Professor Dr. Ali Gomaa Mohamed, dated February 1, 2012.

Arabia, during its sixth conference held from March 14 to 20, 1990, ruled that treasury bills are considered forbidden and regarded them as a form of riba[1].

The average annual return on 365-day Treasury bills was approximately 22.19% before tax, which is equivalent to approximately 17.76% after tax. Additionally, the average annual return for the EGX33 Index was 59.72%, with a standard deviation of 2.18. Table (1) shows the main data for the annual returns of the stocks listed in the EGX33 Index.

Table 1: Annual Return Data for Stocks Listed in the EGX33 Index from January 2022 to January 2025

Reuter's Code	Mean	Standard Deviation σ	Beta β	Jensen's Alpha α	Standard Deviation of Residual Returns σ_{ei}
ABUK	131%	4.83	0.49	0.93	4.71
ACGC	364%	19.47	0.7	3.16	19.41
ADIB	393%	17.77	4.91	1.69	14.18
AMOC	139%	4.74	0.67	0.92	4.5
CLHO	102%	4.43	0.11	0.8	4.42
ECAP	8485%	1032.7	-5.39	86.93	1032.6
EFIC	210%	6.99	0.51	1.71	6.9
EFID	210%	13.03	0.24	1.82	13.02
EGAL	18977%	1473.5	54.06	166.91	1468.8
EGAS	630%	37.97	-0.36	6.28	37.96
EMFD	2695%	257.59	0.43	26.59	257.59
ETEL	107%	4.97	0.43	0.71	4.88
ETRS	1111%	51.18	3.86	9.31	50.48
FAIT	324%	26.71	2.75	1.91	26.03
FAITA	12%	0.59	-0.01	-0.05	0.59
GBCO	1735%	163.53	3.99	15.5	163.3
ISPH	537%	30.72	0.38	5.03	30.71
JUFO	2282%	169.8	-0.76	22.96	169.79
MASR	342%	16.52	2.42	2.22	15.65
MTIE	686%	46.99	0.13	6.63	46.99
OCDI	10045%	1046.1	-8.44	103.82	1046
OLFI	318%	21.88	0.29	2.88	21.88
ORAS	515%	42.05	1.27	4.44	41.96
ORHD	352%	11.2	2.64	2.24	9.61
ORWE	3939%	309.5	69.88	9.9	269.33
PHDC	417%	21.08	1.01	3.56	20.96
RACC	331%	13.69	1.03	2.7	13.51
RAYA	978%	101.22	1.33	9.04	101.18
RMDA	1387%	90.1	1.29	13.15	90.06

[1] International Islamic Fiqh Academy Journal (Issue 6, Volume 2, p. 1273, and Issue 7, Volume 1, p. 73), Decision No. 60 (11/6).

Reuter's Code	Mean	Standard Deviation σ	Beta β	Jensen's Alpha α	Standard Deviation of Residual Returns σ_{ei}
SAUD	84%	4.78	0.18	0.59	4.77
SKPC	249%	12.58	1.06	1.86	12.37
SWDY	8593%	1035.8	-5.44	88.03	1035.7
TALM	80%	4.6	0	0.62	4.6
TMGH	7756%	670.85	56.87	53.52	659.27

6. VARIABLES MEASUREMENT AND RESEARCH METHODS

The weekly stock returns are calculated using the simple method by dividing the difference between the current price and the previous price of the stock by its previous price. The logarithmic method was not used when calculating returns, as it is incorrect to calculate the portfolio return if individual stock returns are computed using the logarithmic method (Brooks, 2008). The annual returns of the Egyptian Treasury Bills for one year are used as a measure of the risk-free rate during the study period. Since the published returns for Treasury Bills are available annually, the weekly stock returns are converted into annual returns using the following formula:

$$\text{Annual Return} = (1+\text{Weekly Return})^{52}-1 \qquad \text{Equation (1)}$$

The Sharpe ratio maximization model is employed to determine the optimal portfolio using the Solver tool in Excel. The Sharpe ratio is also referred to as the reward-to-volatility ratio or the slope of the capital allocation line (CAL). The objective function in the Sharpe ratio maximization model (Sp) can be expressed as follows (Elton et al., 2014; Bodie et al., 2018):

$$\underset{Wi}{Max}\ S_P = \frac{\bar{r}_P - \bar{r}_f}{\sigma_P} = \frac{W'R - r_f}{(W'VW)^{0.5}} \qquad \text{Equation (2)}$$

The budget constraint is as follows: W′I=I, which means that the sum of the weights equals one.

Where:

- $\bar{r}_P$ is the average portfolio return, and $\bar{r}_f$ is the average risk-free rate measured by the annual return on Egyptian Treasury bills for one year.
- σ_p is the standard deviation of the portfolio returns.

- W′R represents the multiplication of the weight row by the return column.
- W′VW represents the variance of portfolio returns based on matrices, which is achieved by multiplying the weight row by the variance-covariance matrix V and the weight column.
- W′1 represents the weight row where each value is 1, corresponding to the number of stocks in the portfolio.

In order to determine the total portfolio of the investor, which includes both the stocks of the EGX33 index and the Egyptian treasury bills with a 364-day maturity as a measure of the risk-free return, the weights of the investment must be distributed between the optimal risky stock portfolio and the risk-free investment (WF) within the total portfolio, as shown in equation (3).

$$W_P^* = \frac{\bar{r}_P - \bar{r}_F}{A\sigma_P^2} \qquad \text{Equation (3)}$$

The weight of the optimal risky portfolio within the investor's total portfolio (W_P^*) is determined by dividing the excess return of the portfolio over the risk-free rate of return by the product of the portfolio's variance (σ^2_P) and the investor's risk aversion coefficient (A). This coefficient must be positive as long as the investor is risk-averse. The higher the investor's degree of risk aversion, the higher the value of this coefficient, meaning the greater the weight of the investment in the risk-free asset and the lower the weight of the investment in the risky stock portfolio. There is no upper limit to the risk aversion coefficient, but it typically does not exceed 10 for risk-averse investors (Cochrane, 2005; Bodie et al., 2018). In this research, values of 1, 4, and 7 will be used to represent varying levels of risk aversion.

In order to apply active portfolio management, Jensen's Alpha must be calculated by finding the difference between the average portfolio return and the required return according to the CAPM using the following equation (Bodie et al., 2018):

$$\alpha_P = \bar{r}_P - \left[\bar{r}_f + \beta_P\left(\bar{r}_M - \bar{r}_f\right)\right] \qquad \text{Equation (4)}$$

Where α_P is the Jensen's Alpha of the portfolio, $\bar{r}_P$ is the average portfolio return, $\bar{r}_f$ is the average risk-free return measured by the return on the Egyptian treasury bills for one year, β_P is the portfolio beta coefficient, and $\bar{r}_M$ is the average market portfolio return measured by the EGX33 index.

According to the Treynor-Black Model, the active portfolio is formed exclusively from stocks with positive alpha coefficients because these stocks are underpriced (Undervalued), meaning they generate abnormal returns. The optimal risky portfolio is then formed by distributing the portfolio components between the active portfolio and the passive market portfolio. Finally, the total portfolio for the investor is obtained by combining the optimal risky portfolio with the risk-free investment (Bodie et al., 2018).

In the current study, only the first and third steps of the Treynor-Black model will be applied to make it simpler for implementation. The active portfolio will be built from the active stocks with a positive alpha coefficient, followed by optimal allocation of the stocks within the portfolio. Then, the total portfolio for the investor will be constructed by combining the active stock portfolio with the risk-free investment, taking into account the investor's risk aversion level.

It is worth noting that the Sharpe ratio for the optimal risky portfolio does not differ from this ratio in the investor's total portfolio after considering the investor's risk aversion by adding the risk-free investment to the optimal risky portfolio.

The weight of each stock within the active portfolio is calculated using Equation (5). This is done by dividing the alpha of each stock (α_i) by the variance of the stock's residual returns ($\sigma^2(e_i)$), and then dividing the result by the sum of the ratios of alpha to residual variance for all n stocks (Bodie et al., 2018). After that, Equation (3) is applied to allocate the investor's total portfolio between the active portfolio and the risk-free investment.

$$w_i = \frac{\alpha_i / \sigma^2(e_i)}{\sum_{i=1}^{n} \alpha_i / \sigma^2(e_i)} \qquad \text{Equation (5)}$$

After calculating the return and risk of each portfolio, they will be compared to the return and risk of the passive strategy. The passive strategy is expressed in this study by both the EGX33 market index portfolio, and the equally weighted portfolio. Then, the Sharpe ratio, Modigliani and Modigliani's M-Square measure, Treynor ratio, and the Information Ratio will be applied (Elton et al., 2014; Bodie et al., 2018). All these measures are risk-adjusted return metrics, and their higher values are preferred.

The calculation of the Sharpe Ratio has already been explained. The Modigliani and Modigliani measure, known as the M-Square measure, is calculated by multiplying the difference between the portfolio Sharpe Ratio and the Sharpe Ratio of the market portfolio by the standard deviation of the market portfolio's returns. The Treynor Measure is similar to the Sharpe Ratio, but instead of using the portfolio's standard deviation as a risk measure, it uses the portfolio's beta. However, relying on the Treynor Measure is not recommended if beta is negative, as it may lead to misleading results. Finally, the Information Ratio is calculated by dividing alpha by the standard deviation of the residual returns.

7. RESULTS

Tables (2) and (3) show the stock allocation weights within the optimal risky portfolio when employing the Sharpe ratio maximization model, in the cases when short selling is allowed and not allowed, respectively.

Table 2: Stock Allocation Weights Within the Optimal Risky Portfolio Based on the Sharpe Ratio Maximization Model When Short Selling is Allowed

Reuter's Code	Weight	Reuter's Code	Weight	Reuter's Code	Weight
ABUK	6.89%	ETRS	-0.54%	ORWE	-0.54%
ACGC	3.88%	FAIT	7.44%	PHDC	3.66%
ADIB	5.20%	FAITA	-27.58%	RACC	4.19%
AMOC	1.19%	GBCO	0.26%	RAYA	-1.09%
CLHO	15.28%	ISPH	3.49%	RMDA	-0.02%
ECAP	-0.08%	JUFO	0.45%	SAUD	10.75%
EFIC	12.82%	MASR	-1.51%	SKPC	4.04%
EFID	-4.31%	MTIE	1.06%	SWDY	0.06%
EGAL	0.05%	OCDI	0.07%	TALM	18.76%
EGAS	2.65%	OLFI	2.81%	TMGH	-0.21%
EMFD	0.81%	ORAS	3.28%		
ETEL	12.50%	ORHD	14.29%		

Table 3: Stock Allocation Weights Within the Optimal Risky Portfolio Based on the Sharpe Ratio Maximization Model When Short Selling is Not allowed

Reuter's Code	Weight	Reuter's Code	Weight	Reuter's Code	Weight
ABUK	6.29%	ETRS	0.00%	ORWE	0.00%
ACGC	3.53%	FAIT	1.66%	PHDC	2.43%
ADIB	3.47%	FAITA	0.00%	RACC	2.53%
AMOC	2.19%	GBCO	0.27%	RAYA	0.00%
CLHO	13.68%	ISPH	1.70%	RMDA	0.00%
ECAP	0.00%	JUFO	0.30%	SAUD	8.15%
EFIC	10.13%	MASR	0.00%	SKPC	4.12%
EFID	0.00%	MTIE	1.07%	SWDY	0.05%
EGAL	0.04%	OCDI	0.00%	TALM	15.39%
EGAS	2.10%	OLFI	2.21%	TMGH	0.00%
EMFD	0.25%	ORAS	0.95%		
ETEL	11.91%	ORHD	5.58%		

By examining Tables (2) and (3), it is evident that the stock of Taaleem Management Services (TALM) ranked first in terms of investment weight within the optimal portfolio, followed by Cleopatra Hospital Company (CLHO). Additionally, the stocks of Egyptian Financial & Industrial Company (EFIC) and Telecom Egypt (ETEL) were among the top five weighted stocks, regardless of whether short selling was allowed or not.

Comparing the investment weights obtained from the Sharpe ratio maximization model with the investment weights of the EGX33 index, as shown in the appendix, reveals significant differences. For instance, Talaat Moustafa Group Holding (TMGH) had the highest permissible stock weight in the EGX33 index at 15%, followed by Abou Kir Fertilizers and Chemical Industries (ABUK) at 9.82%. However, under the Sharpe ratio maximization model, the weight of Talaat Moustafa Group was -0.21% when short selling was allowed and zero when it was not allowed. Additionally, Abou Kir Fertilizers and Chemical Industries was not among the top five weighted stocks. These results suggest that the performance of the portfolio constructed based on the Sharpe ratio maximization model is expected to differ from that of the Shariah-compliant Egyptian portfolio, represented by the EGX33 index.

The first step in constructing the Treynor-Black model is to build the active portfolio using only stocks with positive Jensen's alpha values, as these stocks are undervalued and expected to generate abnormal returns. Referring to Table (1), all stocks have positive alpha values except for Faisal Islamic Bank of Egypt - in US Dollars, which will therefore be excluded from the active portfolio. Table (4) presents the stock weights in the active portfolio according to the Treynor-Black model. The weights differ from those derived using the Sharpe ratio maximization model, as well as from the market index weights. While Cleopatra Hospital Company (CLHO) remains among the top five weighted stocks, as in the Sharpe ratio maximization model, the highest weight is assigned to Abu Dhabi Islamic Bank – Egypt (ADIB) at 12.08%, followed by Abou Kir Fertilizers and Chemical Industries (ABUK) at 11.1%.

Table 4: Stock Allocation Weights Within the Active Portfolio Under the Treynor-Black Model

Reuter's Code	Weight	Reuter's Code	Weight	Reuter's Code	Weight
ABUK	11.10%	ETEL	7.89%	ORHD	6.42%
ACGC	2.23%	ETRS	0.97%	ORWE	0.04%
ADIB	2.23%	FAIT	0.75%	PHDC	2.15%
AMOC	12.08%	GBCO	0.15%	RACC	3.93%
CLHO	10.85%	ISPH	1.41%	RAYA	0.23%
ECAP	0.02%	JUFO	0.21%	RMDA	0.43%
EFIC	9.48%	MASR	2.40%	SAUD	6.83%
EFID	2.85%	MTIE	0.79%	SKPC	3.22%
EGAL	0.02%	OCDI	0.03%	SWDY	0.02%
EGAS	1.15%	OLFI	1.59%	TALM	7.72%
EMFD	0.11%	ORAS	0.67%	TMGH	0.03%

Several risk-adjusted return measures are used to compare the performance of the alternative portfolios, including the Sharpe ratio maximization portfolios (both with and without short selling), the active portfolio from the Treynor-Black model, the naive diversification equally weighted portfolio, and the EGX33 Shariah-compliant stock market index portfolio. These measures include Sharpe ratio, Modigliani and Modigliani measure (M-Square or M^2), Treynor ratio, and Information Ratio, as shown in Table (5).

Table 5: Comparison of Alternative Portfolios Performance Using Different Evaluation Criteria during the Period from January 2022 to January 2025

No.	Portfolio	Sharpe Ratio	M-Square	Treynor ratio	Information Ratio
1	The Sharpe ratio maximization portfolio- Short Selling is Allowed	0.74	1.20	3.88	0.45
2	The Sharpe ratio maximization portfolio- Short Selling is not Allowed	0.71	1.13	3	0.70
3	Active Portfolio Based on Treynor-Black Model	0.77	1.27	2.67	0.84
4	Equally Weighted Naïve Diversification Portfolio	0.25	0.13	3.84	0.27
5	EGX33 Index Portfolio	0.19	0	0.42	0

By examining the data in Table (5), it is evident that the Sharpe ratio maximization portfolios outperform both the EGX33 Shariah-compliant index portfolio and the equally weighted portfolio. These results confirm the acceptance of the study's first hypothesis (H1) and its two sub-hypotheses (H1a & H1b). It is also noted that both the Sharpe ratio and the M-Square measure are higher when short selling is allowed compared to when it is not, as expected. Allowing short selling better optimizes the objective function of maximizing the Sharpe ratio. Additionally, the M-Square measure and the Information Ratio for the market portfolio must be equal to zero.The table also shows that the best-performing portfolio is the active portfolio based on the Treynor-Black model, according to all evaluation criteria except for the Treynor measure. Its performance significantly surpasses that of both the EGX33 Shariah-compliant index portfolio and the equally weighted portfolio. This supports the acceptance of the study's second hypothesis (H2) and its two sub-hypotheses (H2a & H2b).

If investors wish to allocate their funds between a risk-free investment and a risky portfolio to reduce overall portfolio risk, they can apply Equation (3) to determine the optimal allocation. It is important to note that the Sharpe ratio, which represents the slope of the Capital Allocation Line (CAL), remains the same for both the risky portfolio and the overall portfolio. This implies that the

research hypotheses (H1 & H2) are also valid when forming the investor's overall portfolio. The only difference lies in the expected return and risk levels, which depend on the investor's degree of risk aversion.

Table (6) presents the allocation between the risky portfolio and 364-day Treasury bills, which used as a measure of the risk-free investment, for different values of the risk aversion coefficient (A). The sum of these two allocation percentages must always equal 100%. The table shows that as an investor's risk aversion increases, their allocation to the risk-free investment increases, while their investment in the risky stock portfolio decreases. To determine the stock allocation weights within the investor's overall portfolio, the proportion allocated to the risky portfolio within the total portfolio (W*P) is multiplied by the stock allocation weights in the risky portfolio, as previously detailed in Tables (2), (3), and (4).

Table 6: Composition of the Investor's Overall Portfolio between the Risky Stock Portfolio and the Risk-Free Investment at Different Risk Aversion Coefficients

No.	Portfolio	Risk Aversion Coefficient (A)	Weight of Risky Portfolio (W^*_P)	Weight of T-Bills (W_F)
1	The Sharpe ratio maximization portfolio- Short Selling is Allowed	1	20.5%	79.5%
		4	5.1%	94.9%
		7	2.9%	97.1%
2	The Sharpe ratio maximization portfolio- Short Selling is not Allowed	1	23.8%	76.2%
		4	6%	94%
		7	3.4%	96.6%
3	Active Portfolio Based on Treynor -Black Model	1	26.9%	73.1%
		4	6.7%	93.3%
		7	3.8%	96.2%
4	Equally Weighted Naïve Diversification Portfolio	1	0.29%	99.71%
		4	0.07%	99.93%
		7	0.04%	99.96%
5	Index Portfolio EGX33	1	%8.8	91.2%
		4	2.2%	97.8%
		7	1.3%	98.7%

In order to check the results robustness, the study will be repeated using different sampling period, starting from the actual launch of the EGX33 Shariah-compliant stock index until the end of its first review period. The EGX33 index was introduced on June 12, 2024, with its values calculated retrospectively from January 1, 2022. Although the index undergoes semi-annual reviews in early

February and August, the constituent companies and their weights remained unchanged from January 2022 until the end of January 2025. The first actual review of the index took place on February 1, 2025. Therefore, the study will be repeated using a sub-sample that covers the actual period from the index launch on June 12, 2024, until the end of January 2025. Table (7) presents the evaluation measures outputs for different portfolios during this period.

Table 7: Comparison of Alternative Portfolios Performance Using Different Evaluation Criteria during the Period from June 12, 2024, to January 31, 2025.

No.	Portfolio	Sharpe Ratio	M-Square	Treynor ratio	Information Ratio
1	The Sharpe ratio maximization portfolio- Short Selling is not Allowed	1.18	0.84	1.46	0.98
2	Active Portfolio Based on Treynor-Black Model	0.37	0.15	0.96	0.32
3	Equally Weighted Naïve Diversification Portfolio	0.48	0.24	0.94	0.40
4	EGX33 Index Portfolio	0.20	0	0.17	0

By comparing the results presented in Table (7) with the previously obtained results, it becomes evident that the performance of the Sharpe ratio maximization portfolio without short selling significantly surpasses all other portfolios based on all evaluation criteria. This finding strongly supports the acceptance of the study's first hypothesis (H1) and its two sub-hypotheses (H1a & H1b), which state that this portfolio outperforms both the equally weighted portfolio and the market index portfolio.

Additionally, the performance of the active portfolio under the Treynor-Black model is significantly better than that of the market portfolio, reinforcing the acceptance of the first sub-hypothesis of the second main hypothesis (H2a). However, the equally weighted portfolio outperforms the Treynor-Black portfolio based on all evaluation criteria except for the Treynor measure, where the Treynor-Black portfolio demonstrates superior performance. Therefore, the second sub-hypothesis of the second main hypothesis (H2b) can be accepted only when relying on the Treynor measure. The superior performance of the

equally weighted portfolio over the Treynor-Black active portfolio may be attributed to the shorter evaluation period, which covered only 33 weeks compared to 160 weeks in the full sample.

The previous results indicate that the study's first hypothesis, which states that the Sharpe ratio maximization portfolio outperforms both the EGX33 Shariah-compliant stock index portfolio and the equally weighted portfolio, has been accepted in all cases.

Additionally, the Treynor-Black portfolio has consistently outperformed the market index portfolio in all scenarios. It has also outperformed the naïve diversification equally weighted portfolio based on the Sharpe ratio, Modigliani-Modigliani measure, and information ratio when using the full sample data. However, it has only shown superior performance based on the Treynor measure when using the sub-sample data.

8. CONCLUSION AND DISCUSSION

Constructing an optimal investment portfolio has attracted the attention of both academics and practitioners alike. Harry Markowitz is one of the earliest contributors to modern portfolio theory. Various models have been employed to determine the optimal investment portfolio, with Markowitz's quadratic programming model being one of the most renowned.

Other models have also been utilized, including those based on linear programming, value at risk (VaR) and conditional value at risk (CVaR), technical analysis-based models, machine learning techniques, and genetic algorithm models. Among the effective models for constructing an optimal investment portfolio are the Sharpe ratio maximization model and the Treynor-Black model.

Some studies have focused on determining the optimal investment portfolio that complies with Islamic principles. Although a large number of studies have explored optimal investment portfolios, relatively few have specifically targeted Shariah-compliant portfolios. Moreover, the number of studies that have examined optimal investment portfolios in the Egyptian market is relatively limited compared to those conducted in other Arab countries. Additionally,

most studies on the Egyptian market have relied on technical analysis models for portfolio construction.

The Egyptian Stock Exchange launched the EGX33 Index, which includes companies that comply with Islamic principles, on June 12, 2024, with its initial calculation starting on January 1, 2022, at a base value of 1,000 points. This development motivated the researcher to apply active strategy-based models for constructing the optimal portfolio, specifically the Sharpe ratio maximization model (both with and without short selling) and the Treynor-Black model, using the stocks of the Egyptian Shariah-compliant index.

The performance of these two portfolios was then compared with two passive portfolios: the EGX33 Shariah Index portfolio and the naïve diversification equally weighted portfolio. Four evaluation metrics were employed: The Sharpe ratio, the M-Square measure by Modigliani and Modigliani, the Treynor measure, and the Information Ratio.

To the best of the researcher's knowledge, this study is the first study to apply modern investment strategies in constructing an optimal Islamic investment portfolio using stocks from the EGX33 Shariah Index. This is particularly significant given the extreme scarcity of applied research on companies whose activities comply with Islamic principles.

It is concluded that the performance of the two active strategy-based portfolios—the Sharpe ratio maximization model and the Treynor-Black model—outperformed both the EGX33 Shariah Index and the equally weighted naïve diversification portfolio, which were used as passive strategies.

The outstanding performance of the Sharpe ratio maximization portfolio aligns with the findings of Diob (2023) in the Damascus Securities Exchange, which demonstrated the superiority of the Sharpe ratio-based portfolio over both the market portfolio and those constructed using the Treynor and Jensen models. Similarly, Badiar (2019) found that the Sharpe ratio maximization portfolio in the Casablanca Stock Exchange yielded better results than other portfolios in the study.

To verify the robustness of the results, the study was repeated from the actual inception of the EGX33 index in June 2024 until the end of its first review period in January 2025. The findings reaffirmed the superiority of the Sharpe ratio maximization portfolio over both the market index and the equally weighted portfolio. Additionally, the active portfolio based on the Treynor-Black model was confirmed to outperform the market index according to all evaluation criteria and to surpass the equally weighted portfolio based on the Treynor measure.

9. RECOMMENDATIONS FOR FUTURE RESEARCH

The results of this study could benefit investors, portfolio managers, and academics when constructing the optimal Islamic investment portfolio by employing the Sharpe Ratio Maximization Model or the Treynor and Black Model. Future research can be conducted through several areas that contribute to expanding the understanding of constructing Shariah-compliant portfolios and continuously improving performance. These include:

- Applying other methods to the Egyptian Shariah-compliant companies when constructing investment portfolios, such as the Value at Risk approach, Conditional Value at Risk, Machine Learning techniques, and Genetic Algorithms.

- Reapplying the Treynor and Black model to construct the investor's total portfolio through its three steps, by incorporating the second step of the model into the analysis. This can be done by using one of the investment funds that track the EGX33 Shariah Index as a proxy for market portfolio. These funds include Azimut Equity Opportunity Fund –"AZ - Shariah Opportunities", Misr Index Sharia Equity – CIAM Fund, and Beltone Multi-Edition Investment Fund (Fortunes) - "Wafra". These funds were approved by the Egyptian Stock Exchange on July 10, 2024 (Egyptian Exchange [EGX], 2025).

- Conducting comparative studies between Shariah-compliant portfolios in different markets across similar countries.
- Conducting comparative studies between Shariah-compliant portfolios and traditional portfolios in the Egyptian context.
- Studying the impact of macroeconomic factors such as inflation, interest rates, and economic growth on the performance of Shariah-compliant investment portfolios.
- Using different Treasury Bills maturity to represent risk free investment, such as three, six, or nine months, instead of one-year treasury bills.
- Using daily or monthly data instead of weekly ones.

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APPENDIX

Names and Reuter Codes of Companies Listed in the Egyptian Shariah EGX33 Index

Reuter Code	Company Name	Weight on the 1st of August 2024
FAIT.CA	Faisal Islamic Bank of Egypt - In EGP	1.45%
FAITA.CA	Faisal Islamic Bank of Egypt - In US Dollars	4.11%
SKPC.CA	Sidi Kerir Petrochemicals - SIDPEC	5.25%
ABUK.CA	Abou Kir Fertilizers	9.82%
EFIC.CA	Egyptian Financial & Industrial	1.14%
EGAL.CA	Egypt Aluminum	1.97%
ECAP.CA	El Ezz Porcelain (Gemma)	0.24%
ORAS.CA	Orascom Construction PLC	3.56%
TALM.CA	Taaleem Management Services	2.11%
AMOC.CA	Alexandria Mineral Oils Company	4.14%
EFID.CA	Edita Food Industries S.A.E	4.21%
JUFO.CA	Juhayna Food Industries	2.46%
OLFI.CA	Obour Land For Food Industries	0.88%
RMDA.CA	Tenth Of Ramadan Pharmaceutical Industries & Diagnostic- Rameda	1.03%
ISPH.CA	Ibnsina Pharma	1.15%
CLHO.CA	Cleopatra Hospital Company	2.04%
ETEL.CA	Telecom Egypt	9.45%
RACC.CA	Raya Contact Center	0.25%
SWDY.CA	ELSWEDY ELECTRIC	5.94%
GBCO.CA	GB Corp	3.17%
RAYA.CA	Raya Holding For Financial Investments	1.09%
MASR.CA	Madinet Masr For Housing and Development	2.60%
PHDC.CA	Palm Hills Development Company	2.57%
OCDI.CA	Six of October Development & Investment (SODIC)	1.05%
EMFD.CA	Emaar Misr for Development	1.91%
TMGH.CA	T M G Holding	15.00%
ORHD.CA	Orascom Development Egypt	1.91%
ETRS.CA	Egyptian Transport (EGYTRANS)	0.27%
ACGC.CA	Arab Cotton Ginning	0.60%
ORWE.CA	Oriental Weavers	2.96%
MTIE.CA	MM Group For Industry And International Trade	0.63%
EGAS.CA	Natural Gas & Mining Project (Egypt Gas)	0.35%
SAUD.CA	Al Baraka Bank Egypt	0.45%
ADIB.CA	Abu Dhabi Islamic Bank- Egypt	4.22%
		100.00%

Source: The Egyptian Exchange Website (www.egx.com.eg)

بناء المحفظة الإستثمارية الإسلامية المثلى من شركات مؤشر الشريعة المصري EGX33 بالإعتماد على الإستراتيجيات النشطة والساكنة

د عصام الدين محمد الجبالي

ملخص البحث باللغة العربية

يهدف هذا البحث إلى التوصل للمحفظة الاستثمارية الإسلامية المثلى بتوظيف نموذج تعظيم نسبة شارب، ونموذج ترينور وبلاك، بالتطبيق على شركات مؤشر الشريعة المصري EGX33. ثم مقارنة أداء هاتين المحفظتين بأداء مؤشر الشريعة المصري EGX33 وأداء المحفظة متساوية الأوزان المعتمدة على التنويع الساذج. وتم الاعتماد على عدة معايير للتقييم تمثلت في مقياس نسبة شارب، ومقياس M-Square لمودجلياني ومودجلياني، ومقياس ترينور، ومقياس نسبة المعلومات. واعتمد الباحث على بيانات أسبوعية امتدت من بداية نشر المعلومات عن المؤشر في الأول من شهر يناير عام 2022 حتى نهاية شهر يناير عام 2025 قبل حدوث المراجعة الأولى للمؤشر. تم كذلك بيان المحفظة الكلية للمستثمر التي تشتمل على كل من المحفظة الخطرة للأسهم المتوافقة مع الشريعة، والاستثمار الخالي من المخاطرة مقاسًا بالاستثمار في أذون الخزانة المصرية لمدة عام (364 يوم). وأظهرت النتائج تفوق المحافظ التي طبقت الاستراتيجية النشطة بنموذجي تعظيم نسبة شارب، وترينور وبلاك، على المحافظ التي طبقت الاستراتيجية الساكنة متمثلة في كل من محفظة مؤشر الشريعة المصري EGX33 والمحفظة متساوية الأوزان. وتم تأكيد هذه النتائج عند تغيير فترة المعاينة. ويفيد البحث كل من الممارسين والأكاديميين المهتمين بتشكيل المحفظة الاستثمارية الإسلامية المثلى. ويمكن عمل بحوث مستقبلية بتوظيف نماذج أمثلية أخرى، أو عمل دراسات مقارنة مع دول أخرى مشابهة، أو استخدام بيانات يومية أو شهرية بدلاً من الأسبوعية، أو استخدام أذون الخزانة بتاريخ استحقاق خلاف العام.

الكلمات الدالة: المحفظة الاستثمارية الإسلامية المثلى، الاستراتيجيات الساكنة والنشطة، نموذج تعظيم نسبة شارب، نموذج ترينور وبلاك، مؤشر الشريعة المصري EGX33، السوق المصري.

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