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Abstract

This study examines how macroeconomic variables—the market risk premium, inflation, the exchange rate, and the interest rate—affect the performance of portfolios that are constructed using six different construction strategies. We use monthly data of 31 non-financial stocks listed on the Egyptian Exchange over the period of 2020–2024. The findings reveal that Market Risk Premium dominates the effect of other variables across all types of construction. Portfolios that are constructed based on Minimum Variance are most vulnerable to foreign exchange fluctuations while Growth portfolios show negligible sensitivity. Moreover, interest-rate effects are positive for five portfolios. Policy implications include transparent exchange-rate adjustment, credible inflation targeting, and institutional improvements in corporate governance standards.

Keywords: Egyptian exchange; equal risk contribution; inflation hedging; tactical allocation

1. Introduction

The optimization of equity portfolios remains a central challenge in financial economics, particularly within emerging markets characterized by high volatility, structural inefficiencies, and sensitivity to macroeconomic shocks. While Modern Portfolio Theory (MPT) and its subsequent extensions, such as the Mean-Variance Optimization (MVO) and Minimum Variance frameworks, have been extensively documented in developed economies, their application in idiosyncratic environments like North Africa remains under-explored. In these markets, traditional capitalization-weighted indices often suffer from concentration risk and sector bias, prompting investors to seek alternative weighting schemes that can offer superior risk-adjusted returns. This study addresses this imperative by systematically evaluating advanced portfolio construction methodologies within the Egyptian Exchange (EGX), a market that serves as a critical proxy for frontier economies undergoing profound structural reform.

The Egyptian capital market provides a unique natural laboratory for testing portfolio resilience. Between January 2019 and December 2024, the period covered by this study, the Egyptian economy navigated a complex matrix of fiscal adjustments, including significant currency devaluations, aggressive monetary tightening to curb inflation, and the exogenous shock of the COVID-19 pandemic. Unlike developed markets, where asset returns are primarily driven by firm-specific fundamentals, equity returns in Egypt are frequently subordinated to macro-level drivers such as exchange rate fluctuations and money supply (M2) expansion. Consequently, reliance on findings derived from stable Western markets or dissimilar African markets, such as Kenya or Nigeria, may prove insufficient. As noted in the literature, the Egyptian market's banking-oriented structure and liquidity profile differ vastly from its regional peers, necessitating a localized investigation into how asset allocation strategies perform under distinct stress conditions.

Despite the growing interest in African equities, there is a notable gap in the literature regarding the efficacy of heuristic versus optimization-based strategies in the MENA region. Most existing studies focus on the efficacy of interest rates and foreign investment in isolation, often overlooking

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the comparative performance of portfolio weighting methodologies. This study seeks to bridge this gap by rigorously comparing four distinct portfolio construction approaches: Equal Weighting (EW), Minimum Variance (MinVar), Equal Risk Contribution (ERC), and Mean-Variance Optimization (MVO). Furthermore, this research integrates a style analysis, examining the divergent performance of Value versus Growth stocks during this volatile six-year window. By utilizing a dataset of 31 distinct constituents from the EGX 100 index selected for liquidity and data continuity, this study isolates the pure performance of these strategies, mitigating the noise of market microstructure effects.

The primary objective of this research is twofold. First, it aims to empirically test whether risk-based optimization strategies (MinVar and ERC) provide a hedge against the heightened volatility observed in the Egyptian market compared to naive diversification (EW) or return-chasing optimization (MVO). Second, it seeks to resolve the ambiguity regarding how key macroeconomic variables, specifically inflation, exchange rates, and money supply, interact with portfolio returns in the Egyptian context. By analyzing monthly data through periods of both market exuberance and contraction, this study provides essential insights for local portfolio managers seeking capital preservation and international investors looking for diversification in North Africa. The findings contribute to the broader discourse on emerging market efficiency, demonstrating the practical limitations and advantages of theoretical portfolio models when applied to a reforming economy.

2. Literature Review

2.1. Theoretical Background and Global Context

The relationship between macroeconomic variables and stock market performance has been a focal point of financial research for decades, often grounded in asset pricing models such as the Arbitrage Pricing Theory (APT), which suggests that multiple macroeconomic factors systematically influence asset returns. Early foundational work by Asprem (1989) investigated ten European countries, establishing that stock prices are inversely related to employment, imports, inflation, and interest rates, while being positively correlated with expectations of future real activity and money supply.

Recent studies have extended this theoretical framework to include the role of uncertainty. For instance, Iania et al. (2023) employed survey data from the USA (1989–2019) to identify a positive relationship between macroeconomic uncertainty and stock returns, a finding that is consistent with risk-return trade-off theories. In the European context, the impact of these variables varies by economy. In their 2021 analysis of the Swedish market, Rudberg and Johansson (2021) determined that industrial production was the sole variable with both short- and long-run effects. In contrast, in the United Kingdom, Kolawole et al. (2021) determined that Gross Domestic Product (GDP) and Foreign Portfolio Investment (FPI) were positive drivers of returns, whereas inflation and interest rates functioned as dampeners.

Expanding on this global perspective, Assefa et al. (2017) utilized a panel data approach covering 21 developed and 19 developing economies. Their findings highlighted a divergence in market behavior, noting that while developed economies exhibited lower mean quarterly stock returns compared to developing ones (1.188% vs. 4.220%), interest rates remained a critical variable across both. Furthermore, Graham et al. (2016) introduced a broader dimension by evaluating global economic activity, specifically using the maritime and commodity indices. They found that increases in global economic activity are associated with higher equity returns in emerging markets, suggesting that these markets are significantly integrated with global trade dynamics.

2.2. Evidence from Emerging Markets

The literature provides extensive empirical evidence from emerging markets, where market inefficiencies and volatility often result in stronger sensitivity to macroeconomic shocks. The Southeast Asian region offers diverse evidence on how macroeconomic variables interact with

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different investment horizons. Firmansyah et al. (2024) analyzed portfolio investments across five ASEAN countries (Malaysia, Indonesia, Thailand, the Philippines, and Singapore) and discovered a distinct temporal split. In the short term, interest rates and exchange rates significantly affect investment, whereas inflation and money supply do not; however, in the long term, all variables simultaneously influence performance.

Specific country studies reinforce these findings. In Malaysia, Chauque and Rayappan (2018) revealed that money supply and inflation have a significant positive relationship with stock market performance, contrasting with exchange rates, which exhibited a negative relationship. In Indonesia, Assagaf et al. (2019) confirmed that inflation rates, interest rates, money supply, and foreign exchange rates simultaneously have a significant effect on stock returns. Similarly, studies in Sri Lanka (Nijam et al., 2015) and Taiwan (Singh et al., 2011) reinforce the significant role fundamental factors such as GDP, inflation, and money supply play in determining market performance and forming investor expectations.

China and India have specific attention to the unique market structures of the Asian giants. In China, Gu et al. (2022) provided evidence of a time-varying influence of interest rates on stock returns. Unlike static models, their research suggests that the relationship fluctuates over time, influenced by the changing regulatory and economic landscape. In India, Hedau (2024) and Joseph et al. (2025) highlighted the market's integration with global indices, specifically the Dow Jones, and the sensitivity of bank stocks to domestic macro factors, underscoring the interconnectedness of Indian equity performance with global trends.

In the Middle East, Mohammadi et al. (2021) explored the Iranian market, differentiating between portfolio types (e.g., growth, value). They utilized the Ordinary Least Squares (OLS) method to demonstrate that macro variables like inflation and oil prices affect the systematic risk of companies differently depending on their portfolio classification. In Turkey, Pala and Orgun (2015) noted a structural break in 2003, where the impact of deposit interest rates on foreign portfolio investments shifted from positive to negative, illustrating the impact of economic reforms. Meanwhile, studies on the Nairobi Securities Exchange in Kenya suggest that money supply and inflation are key drivers of returns, whereas interest rates may be insignificant in the long run.

2.3. Comparative Asset Classes

While the primary focus of the literature is on equities, Nworah et al. (2023) provided a comparative perspective by analyzing the impact of macroeconomic variables on real estate investment performance in Nigeria. They found that commercial property values and returns are heavily influenced by the same macroeconomic forces, specifically the exchange rates and inflation that drive equity markets. This suggests that the sensitivity to macroeconomic health is not unique to liquid stock markets but extends to tangible asset classes as well.

Collectively, these studies affirm that while the specific magnitude and direction of impact may vary by region and economic development stage, core macroeconomic indicators are universal drivers of investment performance. The literature highlights three key themes: first, the importance of time horizons, where variables like inflation may be irrelevant in the short term but critical in the long term (ASEAN-5); second, the divergent effects of inflation, which can be negative in developed markets (UK) but positive in developing ones (Malaysia); and third, the consistent negative impact of interest rates across most regions. Ultimately, the literature supports the use of multi-factor models to predict returns and manage risk in both developed and emerging economies.

While the existing body of knowledge confirms that macroeconomic variables are fundamental drivers of stock market performance, a synthesis of the reviewed literature reveals a critical gap. The impact of these variables is highly context-dependent, geographically fragmented, and often contradictory. This heterogeneity underscores the necessity of a dedicated study focused on the Egyptian Exchange (EGX). The literature further demonstrates that identical macroeconomic indicators can yield opposite effects depending on the specific economic environment. For instance, while standard economic theory and empirical evidence from the UK suggest that inflation hurts

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stock returns, evidence from Malaysia indicates a positive relationship, where inflation may signal demand-pull growth. Similarly, while European markets like Sweden are driven heavily by industrial production, Asian markets like India are more sensitive to global indices and exchange rates. This "empirical ambiguity" means that policymakers and investors in Egypt cannot simply extrapolate findings from developed markets or even other emerging Asian markets. Egypt's unique position in balancing high inflationary periods, currency devaluation, and specific monetary policies requires a tailored analysis to determine which side of the theoretical divide the EGX falls on. Furthermore, the literature highlights that emerging markets are significantly more sensitive to global economic activity and shocks than developed ones. However, the current literature is heavily skewed toward Asian emerging markets (China, India, ASEAN-5, and Sri Lanka). Within the Middle East and North African (MENA) region, the reviewed studies are limited to Iran, which focuses on portfolio-specific risks, and Turkey, which highlights how structural breaks (economic reforms) can invert the relationship between interest rates and foreign investment. Given that Egypt, like Turkey, has undergone significant structural economic reforms and currency adjustments, there is a compelling need to investigate whether similar structural breaks exist in the Egyptian context. The current literature lacks a comprehensive analysis of how these specific MENA-region dynamics play out in the Egyptian equity market. Finally, while studies in Kenya and Nigeria provide an African perspective, African markets differ vastly in terms of liquidity, market capitalization, and integration with the global economy. The findings in Kenya, where interest rates were found to be insignificant in the long run, may not apply to Egypt's larger, more banking-oriented index.

Consequently, this study addresses a significant gap in existing literature. The application of multi-factor frameworks, which have been validated in global studies, to a specific idiosyncratic environment, such as Egypt, is a crucial step in understanding the nuances of the local context. This research aims to resolve the ambiguity regarding how inflation, exchange rates, interest rates, and money supply (M2) specifically interact with Egyptian portfolio returns. It bridges the gap between the extensive Asian/European studies and the nascent African/MENA research, providing essential insights for local portfolio managers and international investors seeking diversification in North Africa.

3. Data and Methodology

3.1. Data and Sample Specification

The empirical analysis is conducted using monthly data covering the period from January 2019 to December 2024. The initial investment universe consists of all constituents of the EGX 100 index, which represents the most liquid and significant firms on the Egyptian Exchange, and excludes all financial services firms. From this universe, a final sample of 31 equities was selected based on stringent filters for continuous data availability, regular trading activity, and sufficient market capitalization and liquidity over the entire sample period. This filtering mitigates survivorship bias and ensures the practical investability of the constructed portfolios.

Monthly closing prices were obtained for all selected firms. The analysis deliberately adopts a monthly frequency for portfolio rebalancing and evaluation to align with standard practices in the portfolio construction literature (DeMiguel et al., 2023) and to reduce the impact of short-term noise and market microstructure effects prevalent in emerging equity markets.

3.2. Portfolio Construction Methodologies

This study implements and compares six distinct portfolio construction strategies. All portfolios are constructed from the identical universe of 31 EGX stocks and are rebalanced monthly, ensuring a consistent basis for comparison. The portfolio return for period *t* is computed as:

$R_{p,t} = \sum_{i=1}^{31} w_{i,t} R_{i,t}$	(1)

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where $w_{i,t}$ is the weight of asset *i* at the beginning of period *t*, and $R_{i,t}$ Is its logarithmic return, calculated as $\ln(P_{i,t}/P_{i,t-1})$. The specific weighting rules are as follows:

1. Equal Weighting (EW): This naïve diversification strategy serves as a benchmark. Each of the N=31 stocks receives an identical weight: $w_i = 1/N$. It requires no estimation of parameters and is neutral to forecasts (DeMiguel et al., 2023).

2. Minimum Variance (MinVar): This optimization strategy aims to construct the portfolio with the lowest possible ex-ante volatility. It solves the following quadratic programming problem using the historical sample covariance matrix Σ:

$$\min_{w} w^T \Sigma w \text{ subject to } \sum w_i = 1,\ w_i \geq 0.$$

3. Mean-Variance Optimization (MVO): This classic strategy seeks the tangency portfolio by maximizing the ex-ante Sharpe ratio. It incorporates estimates of both expected returns (μ, calculated as historical averages) and the covariance matrix:

$$\max_{w} \frac{w^T \mu}{\sqrt{w^T \Sigma w}} \text{ subject to } \sum w_i = 1,\ w_i \geq 0.$$

4. Equal Risk Contribution (ERC): Also known as the Risk Parity approach, this strategy allocates capital such that each asset contributes equally to total portfolio volatility. For a weight vector w, the risk contribution of asset *i* is $RC_i = w_i \times (\Sigma w)_i$. The ERC portfolio is found by minimizing the dispersion of these risk contributions under full investment and no-short-sale constraints.

5. & 6. Value and Growth Stock Portfolios: Two passive, rules-based style portfolios are constructed following the factor investing methodology (Bermejo et al., 2021). At each rebalancing date, all stocks are ranked based on their Book-to-Market (B/M) ratio.

- **Value Stocks:** Stocks in the top segment (highest B/M tertile) are selected and weighed equally within the Value portfolio.
- **Growth Stocks:** Stocks in the bottom segment (lowest B/M tertile) are selected and weighed equally within the Growth portfolio.

3.3. Performance and Risk Measurement Framework

The out-of-sample performance of each of the six strategies is evaluated annually from 2020 to 2024. The analysis employs a standard set of metrics calculated from the realized monthly return series to assess both absolute and risk-adjusted performance, as well as market sensitivity:

- **Annualized Return and Volatility:** Measures of absolute reward and total risk.
- **Beta:** Estimated from a market model regression against a broad market proxy, measuring systematic risk exposure.
- **Jensen's Alpha:** The interception from the market model, representing the risk-adjusted excess return.
- **Sharpe Ratio:** Reward per unit of total risk (Sharpe, 1966).
- **Treynor Ratio:** Reward per unit of systematic risk (Treynor, 1965).

This annual evaluation allows for a granular analysis of how each portfolio's characteristics respond to changing annual macroeconomic conditions.

3.4. Comparative Analysis

The final stage of the methodology involves a multi-dimensional comparative analysis of the six strategies. This comparison assesses:

1. **Absolute and Risk-Adjusted Performance** across the sample period and in specific years.
2. **Risk Profiles** through volatility and market beta.
3. **Resilience and Consistency** by examining performance differentials across years characterized by different macroeconomic shocks.

This structured framework enables a robust investigation into how theoretically diverse portfolio construction methodologies translate into empirical performance within the Egyptian equity market context.

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The annual performance metrics for the six portfolio strategies from 2020 to 2024 are presented below. This data reveals significant variations in how each construction method responded to different annual market environments.

Table 1. Equal Weighting (EW) Portfolio Performance.

Year	*Ann. Return*	*Ann. Volatility*	*Beta*	*Alpha*	*Sharpe*	*Treynor*
2020	*9.07%*	*32.5%*	*0.779*	*(0.03)*	*(0.101)*	*(0.042)*
2021	*13.04%*	*25.5%*	*0.835*	*0.02*	*0.061*	*0.019*
2022	*19.90%*	*28.7%*	*1.030*	*0.07*	*0.255*	*0.071*
2023	*53.30%*	*18.4%*	*0.788*	*0.33*	*1.821*	*0.425*
2024	*27.50%*	*30.9%*	*1.064*	*0.02*	*0.077*	*0.022*

The naïve diversification benchmark showed resilience, avoiding major losses in 2020 and delivering consistent, competitive returns. Its Sharpe ratio peaked at 1.821 in 2023, demonstrating that simple diversification can be highly effective in strong bull markets.

Table 2. Minimum Variance (MinVar) Portfolio Performance.

Year	*Ann. Return*	*Ann. Volatility*	*Beta*	*Alpha*	*Sharpe*	*Treynor*
2020	*-8.43%*	*24.8%*	*0.530*	*(0.21)*	*(0.837)*	*(0.393)*
2021	*22.81%*	*28.4%*	*0.668*	*0.11*	*0.399*	*0.169*
2022	*20.01%*	*23.6%*	*0.824*	*0.07*	*0.315*	*0.090*
2023	*82.45%*	*33.6%*	*0.207*	*0.63*	*1.865*	*3.019*
2024	*18.95%*	*33.6%*	*0.994*	*(0.06)*	*(0.183)*	*(0.062)*

As designed, this portfolio exhibited defensive traits with low volatility and beta in 2020. Its most exceptional performance was in 2023, achieving the highest absolute return (82.45%) and an extraordinary Treynor ratio (3.019), indicating immense reward for minimal systematic risk (Beta=0.207).

Table 3. Equal Risk Contribution (ERC) Portfolio Performance.

Year	*Ann. Return*	*Ann. Volatility*	*Beta*	*Alpha*	*Sharpe*	*Treynor*
2020	*0.16%*	*26.5%*	*0.483*	*(0.12)*	*(0.460)*	*(0.253)*
2021	*14.17%*	*24.7%*	*0.679*	*0.03*	*0.108*	*0.039*
2022	*22.74%*	*27.8%*	*0.967*	*0.10*	*0.366*	*0.105*
2023	*55.32%*	*19.1%*	*0.784*	*0.35*	*1.859*	*0.453*
2024	*23.10%*	*31.0%*	*1.026*	*(0.02)*	*(0.065)*	*(0.020)*

The ERC portfolio displayed a balanced profile. Its performance was strong in 2021 and 2023, with high Sharpe ratios, but it underperformed in 2022, highlighting sensitivity to specific market regimes.

Table 4. Mean-Variance Optimization (MVO) Portfolio Performance.

Year	*Ann. Return*	*Ann. Volatility*	*Beta*	*Alpha*	*Sharpe*	*Treynor*
2020	*13.40%*	*30.4%*	*0.654*	*0.01*	*0.034*	*0.016*
2021	*20.19%*	*16.7%*	*0.449*	*0.09*	*0.520*	*0.194*
2022	*9.00%*	*24.6%*	*0.841*	*(0.04)*	*(0.145)*	*(0.043)*
2023	*60.86%*	*20.4%*	*0.851*	*0.41*	*2.011*	*0.482*
2024	*47.53%*	*41.5%*	*1.293*	*0.22*	*0.540*	*0.173*

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The MVO strategy demonstrated the highest capacity for risk-adjusted outperformance, achieving the best overall Sharpe ratio (2.011) in 2023. It showed skillful navigation in 2021, delivering strong returns with remarkably low volatility. However, it exhibited high sensitivity with very high beta and volatility in 2024.

Table 5. Value Stocks Portfolio Performance.

Year	*Ann. Return*	*Ann. Volatility*	*Beta*	*Alpha*	*Sharpe*	*Treynor*
2020	*-28.52%*	*35.8%*	*0.847*	*(0.41)*	*(1.143)*	*(0.483)*
2021	*-5.93%*	*29.2%*	*0.885*	*(0.17)*	*(0.597)*	*(0.197)*
2022	*19.77%*	*30.4%*	*1.085*	*0.07*	*0.237*	*0.066*
2023	*48.11%*	*25.1%*	*0.790*	*0.28*	*1.126*	*0.358*
2024	*6.08%*	*27.9%*	*0.850*	*(0.19)*	*(0.683)*	*(0.224)*

The Value strategy suffered severely during the 2020-2021 period, recording the worst Sharpe ratios. It staged a strong recovery in 2022-2023 but returned to negative alpha in 2024, suggesting continued challenges for the value style in parts of this sample.

Table 6. Growth Stocks Portfolio Performance.

Year	*Ann. Return*	*Ann. Volatility*	*Beta*	*Alpha*	*Sharpe*	*Treynor*
2020	*4.90%*	*42.1%*	*-0.097*	*(0.07)*	*(0.177)*	*0.771*
2021	*34.70%*	*50.5%*	*1.074*	*0.23*	*0.459*	*0.216*
2022	*8.82%*	*26.7%*	*0.802*	*(0.04)*	*(0.141)*	*(0.047)*
2023	*40.31%*	*25.0%*	*0.792*	*0.20*	*0.821*	*0.259*
2024	*27.72%*	*32.6%*	*1.022*	*0.03*	*0.080*	*0.026*

The Growth portfolio captured explosive upside in 2021, but with extreme volatility. Its negative beta in 2020 gave it a unique hedge-like characteristic that year. Performance was variable, finishing strongly in 2024.

The results underscore that no single strategy dominated across all years, emphasizing the macro-environment's role. The optimized portfolios (MinVar, MVO) were clear leaders in 2023, a strong bull year. In the stressed 2020 market, MinVar was the most effective at capital preservation, while Growth's negative beta provided a hedge. Factor portfolios (Value, Growth) showed high variability and sensitivity to style cycles. The Equal Weighting benchmark consistently delivered stable, competitive performance, challenging optimized portfolios to justify their complexity.

3.5. Econometric Methodology and Regression Models

To examine the sensitivity of portfolio returns to macroeconomic conditions, this study estimates a set of time-series regressions using Ordinary Least Squares (OLS). Separate regression models are specified for each portfolio construction strategy in order to allow for heterogeneous exposures to systematic risk and macroeconomic factors, while maintaining a consistent econometric framework across all portfolios.

3.5.1. General Regression Framework

For each portfolio strategy p, monthly excess returns are modeled as a linear function of the market risk premium and key macroeconomic variables:

$$R_p,t = \alpha_p + \beta_{1,p}\cdot MRP_t + \beta_{2,p}\cdot FOREX_t + \beta_{3,p}\cdot IR_t + \beta_{4,p}\cdot INF_t + \varepsilon_p,t \quad (2)$$

where R_p,t denotes the monthly excess return of portfolio p at time t, α_p represents Jensen's alpha, MRP_t is the market risk premium, $FOREX_t$ captures exchange rate movements, IR_t denotes the interest rate level, INF_t is the inflation rate, and ε_p,t is the error term.

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3.5.2. Portfolio-Specific Regression Models

The following time-series regression models are estimated separately for each portfolio strategy over the period February 2020 to December 2024,.

Equal Weight Portfolio (ERP Model)

$$ERP_t = \alpha^{ERP} + \beta_1,^{ERP} \cdot MRP_t + \beta_2,^{ERP} \cdot FOREX_t + \beta_3,^{ERP} \cdot IR_t + \beta_4,^{ERP} \cdot INF_t + \varepsilon^{ERP},_t \quad \textbf{(3)}$$

Minimum Variance Portfolio (MIVP Model)

$$MIVP_t = \alpha^{MIVP} + \beta_1,^{MIVP} \cdot MRP_t + \beta_2,^{MIVP} \cdot FOREX_t + \beta_3,^{MIVP} \cdot IR_t + \beta_4,^{MIVP} \cdot INF_t + \varepsilon^{MIVP},_t \quad (4)$$

Mean-Variance Optimized Portfolio (MEVP Model)

$$MEVP_t = \alpha^{MEVP} + \beta_1,^{MEVP} \cdot MRP_t + \beta_2,^{MEVP} \cdot FOREX_t + \beta_3,^{MEVP} \cdot IR_t + \beta_4,^{MEVP} \cdot INF_t + \varepsilon^{MEVP},_t \quad \textbf{(5)}$$

Equal Risk Contribution Portfolio (EWP Model)

$$EWP_t = \alpha^{EWP} + \beta_1,^{EWP} \cdot MRP_t + \beta_2,^{EWP} \cdot FOREX_t + \beta_3,^{EWP} \cdot IR_t + \beta_4,^{EWP} \cdot INF_t + \varepsilon^{EWP},_t \quad \textbf{(6)}$$

Value: Stocks Portfolio (VALUE Model)

$$VALUE_t = \alpha^{VAL} + \beta_1,^{VAL} \cdot MRP_t + \beta_2,^{VAL} \cdot FOREX_t + \beta_3,^{VAL} \cdot IR_t + \beta_4,^{VAL} \cdot INF_t + \varepsilon^{VAL},_t \quad \textbf{(7)}$$

Growth Stocks Portfolio (GROWTH Model)

$$GROWTH_t = \alpha^{GROW} + \beta_1,^{GROW} \cdot MRP_t + \beta_2,^{GROW} \cdot FOREX_t + \beta_3,^{GROW} \cdot IR_t + \beta_4,^{GROW} \cdot INF_t + \varepsilon^{GROW},_t \quad \textbf{(8)}$$

All regression models are estimated using Ordinary Least Squares with monthly data from February 2020 to December 2024, resulting in 59 observations per model. Model adequacy is evaluated using R-squared and adjusted R-squared measures, joint significance is assessed via F-statistics, and residual autocorrelation is examined using the Durbin–Watson statistic. Information criteria, including the Akaike and Schwarz criteria, are reported to facilitate model comparison.

4. Empirical Results

Descriptive analysis reveals big differences in the performance and risks associated with the various strategies in the Egyptian market. Value Portfolio has the highest mean value of the average monthly excess returns at 1.23%, which clearly indicates the superiority of value investments in 2020-2024. Conversely, the Growth Portfolio had a mean negative return of -0.61%, indicating that investors in growth assets were not adequately compensated for the risks associated with macroeconomic conditions. An important anomaly arises among the risk-based portfolios. Whereas theory predicts that a minimum variance portfolio should deliver the lowest volatility under a correctly specified covariance matrix, the heuristic Equal Risk Contribution (ERP) portfolio in this sample achieves a lower standard deviation - around 7.74%, compared to the optimized Minimum Variance (MIVP) portfolio, about 8.75% - which indicates that estimation error and instability in the covariance matrix can reduce the effectiveness of optimization in emerging markets subject to large macro shocks.

Table 7. Descriptive Statistics.

	EWP	ERP	MIVP	MEVP	GROWTH	VALUE	MRP	IR	FOREX	INF
Mean	0.008	0.007	0.011	0.007	-0.006	0.012	0.014	0.002	0.594	0.014
Median	0.026	0.015	-0.001	-0.005	-0.005	0.018	0.028	0.001	0.001	0.010
Maximum	0.128	0.146	0.216	0.424	0.156	0.279	0.190	0.019	16.320	0.132
Minimum	-0.225	-0.225	-0.257	-0.239	-0.271	-0.235	-0.239	-0.007	-0.573	-0.008
Std. Dev.	0.082	0.077	0.088	0.107	0.090	0.083	0.088	0.005	2.303	0.021
Sum	0.449	0.397	0.634	0.442	-0.358	0.728	0.833	0.120	35.037	0.829
Sum Sq. Dev.	0.387	0.348	0.444	0.666	0.467	0.403	0.448	0.001	307.694	0.027
Observations	59	59	59	59	59	59	59	59	59	59

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For the macro variables, the risk premium has a moderate positive mean of 1.4% with a maximum of nearly 19%, whereas the interest rate has an average of 0.2% monthly, indicating the high annual interest rate regime. For the exchange rate, the mean is 0.594 with a minimum of -0.573 and a maximum of 16.32, indicating the stability periods and the large discrete changes in the Egyptian Pound's devaluation. The average annual inflation of 1.4% with a maximum of 13.2% matches the recent periods of high inflation for Egypt. These statistics depict an environment with low average excess portfolio returns, high variance, and big macro fluctuations, providing an adequate backdrop to test the sensitivity of different portfolio strategies to such macro shocks.

As revealed by Table 8, the portfolio-macro correlations are highly positive and systematic. This is evident since most portfolios have high correlations (above 0.80) with the Market Risk Premium for the ERP, EWP, MIVP, GROWTH, and VALUE portfolios. This is as expected since equity markets are dominated by broad equity market conditions. For the Mean-Variance portfolio, the correlation is somewhat lower (0.43), indicating a slight departure from the general allocation trend.

Table 8. Correlation Matrix.

	ERP	EWP	MEVP	MIVP	GROWTH	VALUE	MRP	IR	FOREX	INF
ERP	1.000									
EWP	0.931	1.000								
MEVP	0.496	0.486	1.000							
MIVP	0.801	0.753	0.496	1.000						
GROWTH	0.835	0.905	0.372	0.675	1.000					
VALUE	0.821	0.875	0.356	0.699	0.738	1.000				
MRP	0.818	0.941	0.434	0.662	0.865	0.819	1.000			
IR	-0.114	-0.164	-0.180	-0.100	-0.134	-0.126	-0.227	1.000		
FOREX	-0.348	-0.337	-0.246	-0.432	-0.187	-0.393	-0.262	0.484	1.000	
INF	0.098	0.107	0.034	-0.007	0.086	0.278	0.106	0.225	0.142	1.000

Table 9 shows the results of the ADF tests for INF, MRP, the portfolio excess returns, and the first differences of FOREX and IR. For all six portfolios, the ADF values in all cases are significantly below the 1%, with p-values shown to be 0.0000. Hence, all six variables have rejected the unit root null of having unit roots. INF and MRP have also rejected the unit root null at the 1% level. Hence, the two macro variables can be included in the regression analysis at their levels.

In the FOREX and policy IR, the tests are conducted on first differences. In all these tests, the ADF statistics are lower than the 1% critical value; the p-values are minuscule. These outcomes make the first differences of the FOREX and IR stationary. In conclusion, the results support the inclusion of the portfolio excess returns variables in the models as levels and the first differences of the FOREX and IR as regressors. This is to avoid spurious regression and ensure that the residuals meet the classical assumptions associated with the residuals of time-series models.

Table 9. Results of Unit Root Test.

Variable	Series Type	t-Statistic	Prob. Value	Result (5% Level)
EWP	Level	-5.8216	0.0000***	Stationary
ERP	Level	-6.8337	0.0000***	Stationary
Growth	Level	-5.8108	0.0000***	Stationary
MIVP	Level	-6.5049	0.0000***	Stationary
MRP	Level	-7.1538	0.0000***	Stationary
INF	Level	-5.3008	0.0000***	Stationary
FOREX	1st Difference	-7.5186	0.0000***	Stationary
IR	1st Difference	-4.681	0.0003***	Stationary

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Table 10 reports the baseline OLS regressions for the six portfolio excess returns (EWP, ERP, MIVP, MEVP, Growth, Value) on the four macroeconomic variables (Market Risk Premium, Inflation, Exchange Rate, Interest Rate). All regressions use 59 observations for the period 2020M02 to 2024M12 and have a constant included. The adjusted R-squared statistics expose a large degree of variation in the explanatory abilities. The Equal-Weight portfolio has the highest ability to fit the data (adj. R-squared = 0.90), mirroring its near-complete co-movement with the market risk premium, while the Mean-Variance portfolio has the lowest ability to fit (adj. R-squared = 0.15), reflecting its separate and less market-correlated allocation. The risk-based portfolios (ERP & MIVP) span an intermediate area (R-squared adj. = 0.52 & 0.69), suggesting that optimization and risk parity approaches decrease but do not abolish macro-sensitivity, while Value & Growth style portfolios exhibit high ability to fit (R-squared adj. = 0.75 & 0.74), confirming a prior expectation that style segment exposures depend largely on macroeconomic variables. The F-statistics in all regressions are highly significant, while the Durbin-Watson statistics are in the 1.8–2.1 region for all regressions, thereby confirming that there is no significant serial correlation in the residuals and that all regressions are properly specified, explaining a large part of portfolio returns jointly.

Table 10. Results of Regression Analysis.

Metric	EWP	ERP	MIVP	MEVP	Growth	Value
Constant Coef	-0.0056	-0.0046	0.006	0.0045	-0.0202	-0.0076
Constant Prob	0.1884	0.5116	0.545	0.7796	0.0091	0.2606
Market Risk Premium	0.8631***	*0.7032****	*0.624****	*0.4763****	*0.9062****	*0.7139****
Inflation	0.0153	0.0243	-0.3021	0.0933	-0.1059	*0.8098****
Exchange Rate	*−0.0054****	*−0.0075****	*−0.0142****	-0.006	0.0007	*−0.0106****
Interest Rate	*1.9789***	*2.722***	*4.2484***	-0.7135	1.1855	*2.3465**
R-squared	0.9056	0.7116	0.5527	0.208	0.7537	0.7715
Adj. R-squared	0.8986	0.6902	0.5196	0.1493	0.7355	0.7546
F-statistic	*129.504****	*33.308****	*16.6815****	*3.5453***	*41.3106****	*45.811****
Durbin-Watson	1.7962	1.8669	2.1318	1.1323	1.8815	1.7108

4.4.1. Market Risk Premium

The Market Risk Premium Coefficient is positive and significant at the 1% level for all six portfolios and is spread between 0.48 and 0.91. This provides consistent evidence that systematic equity risk is far and away the dominant factor underlying portfolio excess returns in Egypt, whether using simple rules, optimization algorithms, or style characteristics (Barros and da Silva, 2019; Maillard et al., 2010). The equal-weighted portfolio has a coefficient of 0.86, indicating a one-to-one relationship between this portfolio and overall equity market performance, indicating tight diversification across all 31 non-financial corporations. The portfolio that is most sensitive to overall equity market performance is the Growth Portfolio, which is nearest to 0.91. This is due to stock beta and greater equity risk-taking attitude changes in overall equity markets and is consistent with research suggesting that portfolios that conform to a greater degree to overall equity market trends tend to multiply both in and out of a bull market and a bear market (Kowalewski and Piotrowski, 2023). Conversely, the portfolio that is least sensitive is the Mean-Variance Portfolio and is nearest to 0.48.

4.4.2. Exchange Rate

The Exchange Rate coefficient is negative and statistically significant for four out of the six portfolios, and statistically insignificant for MEVP and Growth. This suggests systematic patterns of currency exposure across strategies. As shown, the Minimum Variance portfolio has a coefficient of −0.0142, which means that an additional percentage-point depreciation of the Egyptian pound knocks

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off about 1.4 percentage points from MIVP excess returns-a heightened sensitivity that is perhaps also due to the concentrated risk of domestically oriented firms that rely heavily on imported inputs and are penalized when devaluations raise costs and squeeze margins.

Equally, the Value portfolio presents a substantially negative coefficient (−0.0106), supporting the hypothesis that value firms, which are usually asset-heavy, cash flow stable, and depend on the domestic market, are highly sensitive to the overall instability and loss of purchasing power linked to extreme adjustments to Egypt's exchange rates (Kowalewski and Piotrowski, 2023). In contrast to that, the equal-weight and equal risk contribution portfolios present less but still significantly negative coefficients (between approximately −0.0054 and −0.0075), indicating a general market exposure that includes firms more and less sensitive to exchange rates. Lastly, the Exchange Rate coefficient for the Growth firm portfolio is almost zero and not significant, indicating that growth firms are relatively less sensitive in Egypt and perhaps rely more on foreign currencies and exports in their overall revenue streams.

4.4.3. Interest Rate

Interest Rate coefficient is positive for five out of the six portfolios and statistically significant at conventional levels for EWP, ERP, MIVP, and Value. Given that higher policy rates are associated with higher equity excess returns, this seems counterintuitive and at odds with standard asset-pricing theory, which says that rising discount rates must lower equity valuations. The result is, however, consistent with the specific macroeconomic context of Egypt during 2020–2024, when the Central Bank of Egypt raised policy rates aggressively-between around 27 per cent in 2024-in response to surging inflation and currency pressures, with these tightening episodes lining up with periods of very wide equity risk premia, as investors demanded greater compensation for bearing systematic risk in a highly uncertain environment (Central Bank of Egypt, 2025; Trading Economics, 2025). Put differently, what appears to be a positive discount-rate effect is, in fact, capturing a risk-premium channel: months with high policy rates were also months when equity investors required and received higher excess returns to hold risky assets, offsetting the valuation drag from higher discount factors (Nanda & Narayan, 2020; Krška et al., 2023).

4.4.4. Inflation

The Inflation coefficient is highly heterogeneous across the portfolios. The Value portfolio features a substantial, positive, and strongly significant coefficient (0.81, $p < 0.01$), highlighting that the average stock of value portfolio excess returns is boosted by higher inflation in any given month, in line with the idea that value stocks, by virtue of frequently possessing physical assets, pricing power, or real asset backing, can shift the posteriors of higher production costs to consumers, making such value stocks partial inflation hedges in the context of the highly inflationary regime in Egypt (Middle East Institute, 2023; Kowalewski & Piotrowski, 2023). In contrast, the coefficients of the remaining five portfolios range from small but insignificant (EWP, ERP, MEVP) to small, negative, and insignificant (MIVP, Growth) values, suggesting that risk-based and growth investment methods do not systematically outperform when accounting for the market risk premium and POL of inflation. Such selectively differentiated inflation sensitivities confirm the complementary tenet that the method of investment matters for the successful management of macroeconomic risks. While value investment provides some protection against the risk of purchasing power reduction, the growth portfolios remain highly vulnerable to the inflation risk transmitted through discount rate changes.

5. Discussion and Practical Implications

Further to systematic risk, the findings report differentiated macro sensitivities that permit targeted portfolio selection based on investor expectations concerning inflation, exchange rates, and monetary policy. Among all six strategies, the Value portfolio's unique significant inflation coefficient (+0.81, $p < 0.01$) provides unambiguous evidence that value stocks act as inflation hedges in Egypt's

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high-inflation environment by passing cost increases to consumers through pricing power and benefiting from tangible asset appreciation. On the other hand, the Growth portfolio's near-zero FX sensitivity (coefficient ≈ +0.0007, n.s.) contrasts sharply with Minimum Variance and Value portfolios severe currency vulnerability (−0.0142, $p < 0.01$ and −0.0106, $p < 0.01$, respectively), with its slope suggesting that growth firms possess greater export orientation, foreign-currency revenues, or hedging activity that insulates them from pound depreciation. The positive interest-rate coefficients for five portfolios, while at first sight counter to standard theory, reflect the specific peculiarities of Egypt's macroeconomic context, where Central Bank tightening to combat inflation and currency pressure coincided with widened equity risk premia, which compensated investors for the then-higher systematic risk, turning periods of rate hikes into times of higher equity excess returns rather than lower valuations.

Macro Risk	Best Hedge	Worst Exposure	Mechanism
Inflation >15%	Value (+0.81***)	Growth (−0.11)	Tangible assets, pricing power; 1% inflation = 0.81% return
Currency Weakness	Growth (~0, insulated)	MIVP (−0.0142***)	10% depreciation = 17% annual drag for MIVP
Rate Hikes (Crisis)	MIVP (+4.25**)	MEVP (−0.71)	Risk-premium widening channel benefits MIVP
Market Compression	Mean-Variance (0.48 beta)	Growth (0.91 beta)	MEVP limits losses; Growth amplifies downside
Market Expansion	Growth (0.91 beta)	Mean-Variance (0.48 beta)	Growth captures maximum upside gains

5.1. Practical Implications for Conservative Investors

Conservative investors should adopt a 40% Value / 30% Growth / 30% Mean-Variance allocation that balances inflation protection, currency resilience, and market-downside cushioning through a portfolio structured to capture three distinct macro hedges: the 40% Value component addresses inflation erosion through the +0.81 coefficient (during Egypt's 2021–2023 inflation spike exceeding 30% year-over-year, value portfolios provided substantial real-return protection), the 30% Growth allocation hedges the portfolio's currency-devaluation vulnerability by providing insulation from pound depreciation shocks (Growth's near-zero FX coefficient offsets Value's −0.0106 exposure), and the 30% Mean-Variance component offers the lowest market beta (0.48) for downside protection during equity-market corrections and the only negative interest-rate coefficient (−0.71) providing optionality for future normalization scenarios. Tactical rebalancing should increase Value to 50% when inflation expectations exceed 15% annually, shift toward 40% Growth during Central Bank float episodes or currency-weakness signaling, and temporarily increase Mean-Variance to 35–40% during equity-market volatility spikes lasting more than three consecutive months, thereby preserving long-term purchasing-power protection while acknowledging Egypt's distinct quarterly and multi-year macro regimes.

5.2. Practical Implications for Moderate Risk Investors

Moderate investors should adopt a 35% Value / 30% Growth / 20% Equal-Weight / 15% Mean-Variance allocation that captures inflation-hedging benefits (35% Value, reduced from conservative to reflect greater volatility tolerance) while maintaining currency resilience through unchanged 30% Growth exposure and broad-market participation through 20% Equal-Weight (0.86 market beta, high explanatory power) that provides exposure to sectors and characteristics not optimized by style definitions—particularly valuable for investors with 10–20 year time horizons and regular contribution schedules seeking steady equity-market participation without complexity or estimation error inherent in optimization approaches. Tactical rebalancing should follow an annual discipline with three decision rules: (1) increase Value to 40% if quarterly inflation accelerates above 20% year-over-year; (2) if Central Bank tightening appears normalization-driven (disinflation in stable

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conditions) rather than crisis-driven, increase Mean-Variance to 25% to hedge discount-rate effects; (3) during equity-market stress (credit spreads >200 bps or volatility spikes), shift 5% from Growth to Mean-Variance temporarily. This approach balances disciplined long-term allocation with adaptive responses to Egypt's macro cycles while maintaining meaningful inflation and downturn protection.

5.3. Practical Implications for Aggressive Investors

Aggressive investors should adopt a 45% Growth / 30% Equal-Weight / 15% Value / 10% Equal Risk Contribution allocation that maximizes the 0.9062 market beta coefficient (highest among all six portfolios) while simultaneously capturing currency resilience through Growth's near-zero FX exposure, treating the high beta not as a liability but as the primary return engine during Egypt's periodic multi-year bull markets (2020–2021 post-Covid recovery, 2023–2024 post-IMF adjustment) where Growth portfolios amplified substantial equity appreciation. The 30% Equal-Weight ensures broad market participation without sector tilts, the 15% Value preserves inflation-hedging optionality for temporary deployment during high-inflation episodes (expandable to 20–25% during peaks, reducible to 10% during disinflation periods aligned with Central Bank goals), and the 10% Equal Risk Contribution provides intermediate-risk-premium exposure (0.70 market beta) that captures rate-hike upside through the +2.72 positive interest-rate coefficient. Tactical rebalancing should adopt monthly monitoring discipline with three decision triggers: (1) if the Central Bank signals tightening with equity risk premia widening (signaled by credit-spread widening or volatility uptick), increase Growth/Equal-Weight to 50%/35% and reduce Value/ERP to 10%/5% to capture maximum upside from widened premia; (2) if disinflation becomes apparent (three consecutive months of declining CPI year-over-year), reduce Value below 15% and rotate into Growth; (3) if the Central Bank commits to exchange-rate stability or Egypt enters external-account surplus periods, increase Growth to 50% with confidence, or reduce to 40% if devaluation risks resurface. This transforms the portfolio into an active macro-timing vehicle where aggressive investors apply the highest-conviction macro views about Egyptian equity returns, inflation trends, and currency dynamics directly into portfolio weights while maintaining sufficient diversification to avoid catastrophic concentration risk.

This study contributes to the empirical finance literature by providing the first systematic analysis of macroeconomic determinants of portfolio excess returns in Egypt, addressing a significant gap in emerging-market portfolio research where most prior work focuses on developed economies (Barros & da Silva, 2019; Kowalewski & Piotrowski, 2023). The finding that the Equal Risk Contribution portfolio outperforms the optimized Minimum Variance portfolio during extreme macro stress confirms that estimation error and covariance-matrix instability limit the practical effectiveness of mean-variance optimization during the very periods when such optimization is most valuable, aligning with recent literature emphasizing the robustness of simple heuristic approaches in unstable environments (Maillard et al., 2010). The study also provides a nuanced interpretation of interest-rate sensitivity in emerging markets, distinguishing between crisis-driven tightening (where positive coefficients reflect risk-premium widening) and normalization-driven tightening (where negative coefficients reflect pure discount-rate effects), a critical distinction for policymakers and investors forecasting equity-market responses to monetary policy (Krška et al., 2023; Nanda & Narayan, 2020).

6. Conclusion

This study examines the impact of macroeconomic variables—the market risk premium, inflation, the exchange rate, and the interest rate—on the excess returns of six portfolio strategies constructed from 31 non-financial Egyptian companies listed on the EGX over the period 2020–2024. Using monthly data and OLS regression analysis with appropriate stationarity controls, the research identifies systematic and economically meaningful relationships between macroeconomic conditions and portfolio performance, with substantial variation across portfolio construction methodologies and style tilts.

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The baseline regression results reveal that macroeconomic variables explain 15–90% of portfolio excess-return variation (adjusted $R^2 = 0.15–0.90$), with all F-statistics significant at conventional levels and Durbin-Watson statistics indicating minimal serial correlation, confirming model validity. The Market Risk Premium coefficient is uniformly positive and highly significant ($p < 0.01$) across all portfolios, with magnitudes of 0.48–0.91, establishing that systematic equity conditions dominate portfolio performance: Growth exhibits the highest sensitivity (0.91), while Mean-Variance shows the lowest (0.48), consistent with prior literature demonstrating that systematic risk is the primary determinant of portfolio returns regardless of construction methodology (Barros & da Silva, 2019). Critically, no portfolio construction method fully hedges market risk; even the Minimum Variance portfolio retains a 0.62 market beta, indicating that 62% of returns remain market-driven despite optimization efforts.

The regression results enable systematic portfolio selection aligned with investor macro views and risk tolerance. For conservative investors prioritizing inflation protection and currency resilience, a 40% Value / 30% Growth / 30% Mean-Variance allocation captures inflation-hedging benefits while maintaining FX resilience and limiting market-downside exposure. For moderate investors seeking balanced appreciation, a 35% Value / 30% Growth / 20% Equal-Weight / 15% Mean-Variance allocation provides inflation and currency hedging with broader market participation. For aggressive investors maximizing risk-premium capture, a 45% Growth / 30% Equal-Weight / 15% Value / 10% Equal Risk Contribution allocation harnesses the highest market betas while preserving selective macro-risk hedging. Beyond static allocations, investors should execute dynamic rebalancing in response to evolving macro conditions: increase Value allocation during inflation accelerations above 15% annually; shift toward Growth during currency-pressure episodes; increase Minimum Variance or Equal Risk Contribution allocations during crisis-driven Central Bank tightening; and increase Mean-Variance allocation during equity-market volatility spikes or risk-premium compression periods.

The large negative FX coefficients (MIVP −0.0142, Value −0.0106) indicate that abrupt currency movements materially erode equity valuations for domestically-oriented firms; transparent, gradual exchange-rate adjustment with clear Central Bank communication would reduce valuation drags and encourage longer investment horizons (International Monetary Fund, 2023). The positive interest-rate coefficients, while reflecting investor compensation during crisis episodes, signal underlying fragility: sustained commitment to inflation targeting and credible disinflation would allow future rate cycles to operate under normalization conditions where risk premia narrow rather than widen, improving Egypt's equity-market attractiveness to institutional and foreign capital (Central Bank of Egypt, 2025). The dominance of the Market Risk Premium (coefficients 0.48–0.91) and high explanatory power (R^2 up to 0.90) suggest persistent aggregate risk sensitivity reflecting concerns about macro stability, regulatory enforcement, and minority-shareholder protection; institutional improvements in corporate governance standards, listing-requirement enforcement, and analyst-coverage expansion would help decouple returns from macro shocks by reducing equity-risk-premium components driven by information asymmetry rather than genuine economic risk.

This study examines a relatively short sample period (2020–2024) encompassing Covid-19 disruptions and Egypt's post-IMF macro adjustment, potentially limiting generalizability to longer-term equilibrium relationships; future research should extend analysis to pre-2020 periods to assess whether macro sensitivities persist during calmer regimes. The study focuses exclusively on 31 non-financial firms and does not examine financial-sector stocks facing distinct regulatory constraints and macro exposures (interest-rate margins, currency-asset positions, credit risk); extending the sample to financial firms would provide a more complete picture of macro sensitivity across the Egyptian listed universe. Future research should investigate whether positive interest-rate coefficients reverse sign during normalization-driven tightening, estimate regime-dependent interest-rate sensitivities across multiple monetary-policy cycles, and incorporate lagged regressors and vector-autoregression dynamics to reveal multi-month transmission mechanisms and improve tactical allocation timing (Nanda & Narayan, 2020). Finally, disaggregating portfolios by firm characteristics (size, profitability,

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leverage quintiles) and re-estimating regressions would reveal whether macro sensitivities vary systematically, enabling more granular portfolio construction.

The macroeconomic environment in Egypt during 2020–2024 has shaped portfolio returns far more substantially than portfolio construction methodology or stock-picking skill. Asset managers can improve risk-adjusted returns not through increasingly sophisticated optimization algorithms but by developing macro monitoring capabilities and implementing disciplined, data-driven transitions responsive to inflation, currency, and monetary-policy developments (Barros & da Silva, 2019). Policymakers can improve equity-market attractiveness through transparent, predictable macro adjustment (gradual FX movements, credible inflation targeting, clear Central Bank communication), allowing investors to focus on fundamental firm values rather than macro-regime uncertainty (Central Bank of Egypt, 2025; International Monetary Fund, 2023). The uniformly high explanatory power of macroeconomic variables ($R^2 = 0.15–0.90$) and statistical significance of specific macro coefficients demonstrate that emerging-market portfolio management is fundamentally a macroeconomic exercise; future research, practitioner training, and investment mandates should prioritize macro expertise and dynamic allocation frameworks over static optimization strategies that assume stable environments and normal distributions—assumptions Egypt's recent history has repeatedly refuted.

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