

Nexus between foreign portfolio investment flows and the Egyptian stock exchange: Evidence from Egypt

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Keywords

EGX 30 Index, Exchange Rate Volatility, Foreign Portfolio Investment (FPI), Interest Rates.

Abstract

Purpose of the research: The study aims to examine the relationship between Foreign Portfolio Investment (FPI) flows and the stock market in Egypt from FY2004/05 to FY2023/24, focusing on the EGX 30 Index. Given Egypt's evolving economic landscape, understanding this relationship is crucial for policymakers, investors, and financial institutions seeking to manage market risks. By analyzing quarterly FPI & EGX30 data from the Central Bank of Egypt & Egyptian Exchange, the research aims to identify patterns, causality, and policy implications. The findings will contribute to academic discourse on emerging markets and enhance understanding of strategies for stabilizing Egypt's financial market amid global economic uncertainties.

Methodology: The research deploys an ARDL model to capture short and long-term effects of FPI, interest rates, and exchange rates on the EGX30 Index.

Results: In the short run, the EGX30 Index shows a strong and statistically significant relationship with its past values, indicating market momentum. Foreign portfolio investment has a positive but statistically insignificant effect on the stock market. Interest rates exhibit a positive and marginally significant impact, suggesting some influence on investor behavior. The exchange rate has a negative but statistically insignificant effect in the short term.

In the long run, foreign portfolio investment continues to show a positive yet statistically insignificant effect, reflecting volatility and external risk factors. Interest rates demonstrate a strong positive and marginally significant relationship with the stock market, while the exchange rate shows a strong, positive, and statistically significant long-term impact, highlighting the influence of currency depreciation on export-driven stocks.

Conclusion: Exchange rate depreciation had a strong positive impact, especially after the 2016 floatation and recent 2022–2024 devaluations, as it boosted export-driven stocks on the EGX. Foreign portfolio investment was unstable and statistically insignificant, reflecting Egypt's recent FPI volatility and the challenges of political and currency risks.

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Introduction

Egypt witnessed one of the most dramatic foreign portfolio investments (FPI) swings in emerging market history between Q1 2022 and Q4 2024—a \$29 billion freefall from +\$14.3 billion inflows to -\$14.7 billion outflows—as its currency collapsed 219% against the dollar. Yet, despite this turbulence, the EGX 30 Index surged 87% between 2020–2023, defying four currency devaluations and interest rates tripling to 27.25%. What explains this paradox of a thriving stock market amid catastrophic macroeconomic shocks?

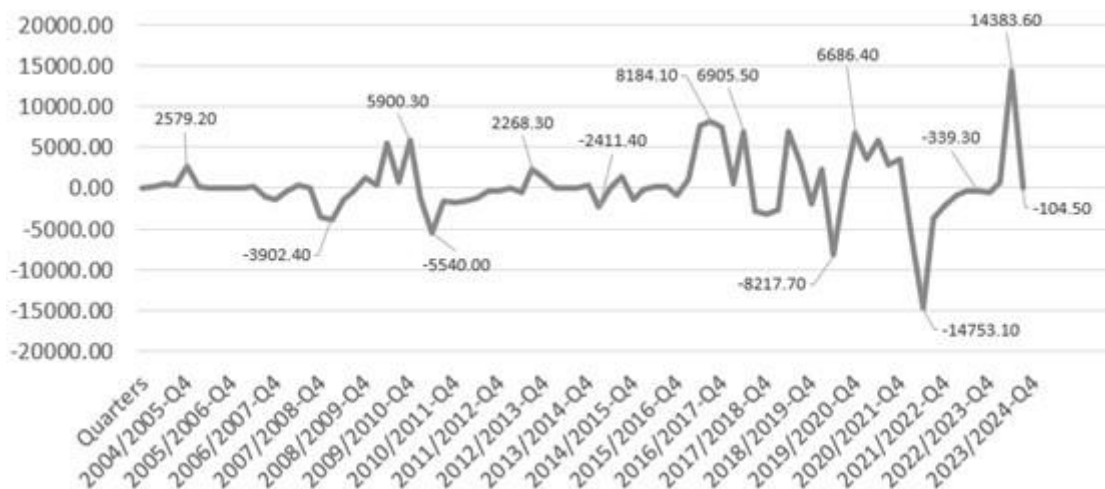


Figure 1: Trend of Foreign Portfolio Investment in Egypt (2004 - 2023)

Source: Balance of Payments - Central Bank of Egypt

As figure (1) illustrates the extreme volatility in FPI flows over the study period, with values expressed in thousands of USD, highlights the peak in Q3 FY2023/24 and trough in Q3 FY2021/22, framing Egypt's recent currency crisis.

This study aims to examine the relationship between Foreign Portfolio Investment (FPI) flows and the stock market in Egypt from FY2004/05 to FY2023/24, focusing on the EGX 30 Index. Given Egypt's evolving economic landscape, understanding this relationship is crucial for policymakers, investors, and financial institutions seeking to manage market risks. By analysing quarterly FPI & EGX30 data from the Central Bank of Egypt & Egyptian Exchange, the research aims to identify patterns, causality, and policy implications. The findings will contribute to academic discourse on emerging markets and enhance understanding of strategies for stabilizing Egypt's financial market amid global economic uncertainties.

The relationship between Foreign Portfolio Investment (FPI) flows and the stock market in Egypt is important due to the recent economic situation. Non-Egyptians trading over listed stocks accounted for 17% in 2023, a decrease from the previous year's figure of 31% in 2022, the year of 2021 was also 31% of total trading volume. However, the Egyptian capital market achieved remarkable performance despite challenges posed by geopolitical risks and tight monetary policies that negatively impacted Egypt and other emerging markets, triggering foreign portfolio outflows over the past two years. As foreign portfolio investment is a crucial factor in Egypt's economy due to its over-usage of "hot money". FPI has reached its trough in Q3 of FY2021/2022 (\$ -14.7 billion), and its peak in Q3 of FY2023/24 (\$14.3 billion), both periods were typically the start and the end of Egypt's currency crisis which included four

devaluations - from USD = 15.7 EGP to 50 EGP. The devaluations of EGP led to rapidly increasing inflation rates, therefore increasing interest rates, from 9.5 percent to 27.25 percent.

This study will help policymakers in managing FPI-driven effectiveness to enhance market stability, aligning with Egypt's economic goals. Investors and financial institutions can also benefit by gaining insights into market risks and trends, leading to more informed decision-making.

This study aims to answer the question of "How does Foreign Portfolio Investment (FPI) flow influence the stock market in Egypt from FY2004/05 to FY2023/24?", which links to another sub-question which is "What are the key macroeconomic factors that contribute to the stock market in Egypt, and how do they interact with FPI flows?"

The following hypotheses propose to examine the relationship between EGX 30 Index and other macroeconomic factors, as it follows:

H_0 = There is a positive relationship between Foreign Portfolio Investment, exchange rate, discount rate, with EGX 30 index in Egypt.

H_1 : There is a negative relationship between Foreign Portfolio Investment, exchange rate, discount rate, with EGX 30 index in Egypt.

The rest of the paper is structured as follows: Section 2 provides the literature review, synthesizing research on the nexus between FPI flows, stock markets, and macroeconomic variables, with a focus on Egypt and emerging economies. Section 3 outlines the research methodology, detailing the ARDL model specification and data sources. Section 4 presents the findings, covering stationary analysis, short-run and long-run results, diagnostic tests, and robustness checks. Section 5 offers discussions and conclusions, providing insights, followed by addressing limitations and directions for future research in Section 6.

Literature review

Foreign Portfolio Investment (FPI) serves as a vital source of capital for emerging markets like Egypt, influencing stock market performance and macroeconomic stability. However, its effects are often contingent on factors such as exchange rate volatility, interest rates, and economic shocks, particularly in contexts marked by political and financial instability. This literature review synthesizes existing research on the nexus between FPI flows, stock markets, and macroeconomic variables, with a particular emphasis on Egypt and other emerging economies, to provide a foundation for understanding the dynamics explored in this study. The literature reveals a complex interplay between FPI, stock markets, and macroeconomic factors in emerging economies. In Egypt, studies highlight the market's sensitivity to exchange rate volatility, political risk, and structural breaks, with mixed evidence on FPI's impact. Comparative research from other emerging markets underscores the role of liquidity and currency movements, though findings vary by context. However, most existing studies focus on pre-2016 dynamics or shorter periods, leaving the post-2016 era—marked by significant devaluations, geopolitical shocks, and FPI swings—underexplored. This study fills this gap by analyzing the EGX 30's response to FPI, interest rates, and exchange rates from FY2004/05 to FY2023/24, offering fresh insights into Egypt's stock market resilience amid recent economic challenges.

FPI and stock markets in Egypt

Research on Egypt highlights the intricate relationship between FPI and the stock market, shaped by the country's unique economic and political challenges. Salem and Walid (2025) employed an ARDL model to examine the impact of economic, financial, and political risks on FPI inflows in Egypt from 1998 to 2022. They found that economic and financial risks deter investment, while political risk paradoxically attracts short-term FPI but discourages long-term flows. This underscores the speculative nature of FPI in Egypt, especially during periods of unrest such as the 2011 revolution and the 2022–2024 currency crises, which are central to this study's timeframe.

Mohamed, Fayed, and Hassouba (2023) investigated the link between FPI inflows and inflation in Egypt, revealing that FPI exacerbates inflationary pressures, thereby challenging macroeconomic stability. This finding is pertinent given Egypt's recent experience with currency devaluations and rising interest rates from 2022 to 2024, suggesting that FPI's benefits to the EGX 30 may be offset by broader economic costs.

Alammar and Wardeh (2024) explored how macroeconomic variables, including exchange rates and interest rates, affect Egypt's stock market returns from 2010 to 2020. Using structural break analyses, they identified significant shifts—such as the 2016 currency flotation—that altered these relationships. Their emphasis on exchange rate volatility aligns with this study's focus on the post-2016 period, where depreciation has been a key driver of EGX 30 performance.

Otaify (2016) analyzed the Egyptian stock market's performance from 2002 to 2015, noting its sensitivity to external shocks like the 2008 Global Financial Crisis and domestic events like the 2011 revolution. This vulnerability persisted into the 2022–2024 period, where FPI outflows coincided with currency instability, providing context for this study's examination of market resilience.

Rady (2024) found a unidirectional causal link from exchange rates to real estate stock prices in Egypt from 2013 to 2023, moderated by interest rates. This supports the hypothesis that currency depreciation influences equity markets, a dynamic study extends to the broader EGX 30 Index.

El Kahky (2024) used Johansen cointegration and VECM to study the EGX 30, exchange rates, T-bill rates, and interest rates from 2010 to 2020. The study identified a significant long-run relationship pre-2016 flotation, which weakened post-flotation due to structural reforms and volatility. This temporal shift informs this study's analysis of the extended period up to FY2023/24, capturing recent devaluations.

FPI and stock markets in emerging economies

Comparative studies from other emerging markets offer valuable insights into FPI dynamics. Marozva and Makoni (2021) examined FPI in five African countries, including Egypt, from 2000 to 2020, finding that enhanced stock and bond market liquidity attracts FPI by lowering transaction costs. This suggests that Egypt's market infrastructure could mitigate FPI volatility, a consideration for policy implications in this study.

Ab Rahman, Nik Muhd Naziman, and Ab Rahman (2013) used Granger-causality tests in East Asian countries, revealing that exchange rates drive stock prices. This one-way causality mirrors Egypt's experience post-2016, where currency depreciation boosted export-driven EGX 30 stocks, supporting this study's long-run findings.

Pavabutr and Yan (2007) studied foreign flows in Thailand from 1995 to 2002, noting that foreign investors enhance liquidity during crises despite volatility. In contrast, Egypt saw FPI outflows during the 2022–2024 crisis, highlighting contextual differences that this study addresses.

Emenike and Amu (2019) applied a GARCH-X model in Nigeria from 2007 to 2017, finding that FPI significantly increases stock market volatility. While this contrasts with this study's insignificant short-run FPI effect on the EGX 30, it underscores the destabilizing potential of FPI in emerging markets.

Macroeconomic Factors and Stock Market Dynamics

Macroeconomic variables play a critical role in shaping stock market responses to FPI. Waqas, Hashmi, and Nazir (2015) found that economic instability heightens FPI volatility in South Asian countries, emphasizing the need for stable policies—relevant to Egypt's recent monetary tightening and currency shocks.

Stulz (1997) argued that portfolio flows do not inherently increase volatility, a view challenged by Otaify (2020), who identified volatility clustering in Egyptian equity portfolios, intensified by events like

the 2008 crisis and 2011 revolution. This sensitivity to shocks aligns with this study's context of recent macroeconomic turbulence.

Talaat, Amin, and Rady (2019) applied chaotic analysis to the EGX 30, uncovering deterministic patterns despite apparent volatility. This suggests that predictable dynamics underlie Egypt's market behavior, supporting the use of the ARDL model to capture long-run relationships in this study.

Research Methodology

This study employs a quantitative method to investigate the relationship between foreign portfolio investment flows and the stock market, using the EGX30 index. Time-series analysis will be used of the period from FY2004/05 to FY2023/24, because it captures key economic events such as the Egyptian revolutions in 2011 and 2013, currency floatation in 2016, several currency devaluations and interest rate hikes from March 2022 to March 2024.

Model Specification

This study uses an Autoregressive Distributed Lag (ARDL) to analyze the long-run and short-run relationships between the selected time series variables, such as Foreign Portfolio Investment flows, interest rates, exchange rates, EGX30 index, each being measured quarterly. The ARDL model will be the most suitable for this paper if it handles a mix of I (0) and I (1), ensuring robust estimation of economic relationships over time.

$$EGX30_t = \alpha + \beta_1 FPI_t + \beta_2 InterestRate_t + \beta_3 ExchangeRate_t + \varepsilon_t$$

Where:

- $EGX30_t$: The dependent variable, representing the EGX30 stock market at time t .
- α : The constant term (intercept).
- $\beta_1, \beta_2, \beta_3$: Coefficients measuring the impact of each independent variable on $EGX30_t$.
- FPI_t : Foreign Portfolio Investment at time t .
- $InterestRate_t$: The prevailing interest rate at time t .
- $ExchangeRate_t$: The exchange rate at time t .
- ε_t : The error term

Data Source

Foreign Portfolio Investment flows data will be obtained from the Central Bank of Egypt, and EGX 30 Index which will be obtained from Egyptian Exchange databases, all variables measured quarterly.

Types	Variables	Data Sources
Dependent	EGX30 Index	Egyptian Exchange
Independent	Foreign Portfolio Investment	Central Bank of Egypt
Control	CBE Discount Rates	Central Bank of Egypt
Control	Exchange Rate (USD/EGP)	Central Bank of Egypt

Table 1: Data Sources and Variable Types

Findings/results

Stationary analysis

To check the Autoregressive Distributed Lag (ARDL) model's validity, the stationarity features of the variables - EGX 30 Index, Foreign Portfolio Investment (FPI), CBE Discount Rate, and Exchange Rate (USD/EGP) - were tested using the Augmented Dickey-Fuller (ADF) test. The ADF test determines whether each variable is stable at levels, I (0), or requires first differencing to reach stationarity, I (1). The ARDL model is only applicable if none of the variables are of order two, I (2). The tests were carried out using EViews 12, with the null hypothesis that the variable has a unit root (is non-stationary). The findings are shown in Table 2.

Variable	Level of Stationary	ADF test statistic	p-value
EGX 30	I(1)	-6.581592	0.0000
FPI	I(0)	-6.317081	0.0000
Interest Rate	I(0)	-3.880273	0.0179
Exchange Rate	I(1)	-8.414642	0.0000

Table 2: Augmented Dickey-Fuller (ADF) Stationary Test Results

These findings provide strong evidence against the null hypothesis of a unit root, indicating that the variables are stable. A p-value of <0.05 rejects the null hypothesis of a unit root. The Exchange Rate and EGX 30 are both non-stationary at levels, but become stationary after first difference, I (1), with an ADF test statistic of -8.414642 and a p-value of 0.0000, and -6.581592 and a p-value of 0.0000, respectively. Because none are I (2), the results allow for robust estimates of both short-run and long-run correlations between the variables.

Short run results

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
EGX_30(-1)	0.862568	0.118528	7.277367	0.0000
EGX_30(-2)	-0.273159	0.112110	-2.436533	0.0174
FPI	0.062482	0.040121	1.557342	0.1239
USD_EGP	55.19786	72.93914	0.756766	0.4517
USD_EGP(-1)	-6.107758	88.63558	-0.068909	0.9453
USD_EGP(-2)	158.5350	79.30024	1.999174	0.0495
INTEREST_RATE	133.4908	73.46181	1.817145	0.0735
C	182.2443	542.0785	0.336195	0.7377

Table 3: Short Run Results

The Autoregressive Distributed Lag (ARDL) model's short-run results offer several key observations about the direct relationships among Foreign Portfolio Investment (FPI), interest rates, exchange rates, and the EGX 30 index. The selected model, ARDL (2, 0, 0, 2), indicates that the dependent variable, EGX 30, is influenced by its own lagged values and current and lagged values of the explanatory variables.

The lag 1 coefficient of EGX 30 (EGX_30(-1)) is 0.8626 and significant at the 1% level, reflecting a high persistence in stock market performance. This implies that the previous values of the EGX 30 index have a very high positive impact on its current value. The second lag (EGX_30(-2)), on the other hand, carries a negative coefficient (-0.2732) and is significant at the 5% level, which shows that the impact of past stock market performance reduces and becomes negative over time.

FPI has a positive coefficient (0.0625) that is, however, not significant (p-value = 0.1239). This means that while FPI inflows will exert a weak positive effect on the EGX 30 index, this effect is not strong in the short run. The interest rate (I) possesses a positive and marginally significant coefficient of (133.4908, p-value = 0.0735), and this implies that as interest rates increase, the stock market might be able to attract investment on the premise of higher returns on equity than other assets. In contrast, the current exchange rate (EGP) and its first lag are insignificant in the short run, positive and negative respectively. Yet, the second lag (EGP (-2)) is significant and positive (158.5350, p-value = 0.0495). This indicates that exchange rate shocks have delayed impacts on the stock market with depreciations having the propensity to push stock prices higher in the long run, possibly in conjunction with increased export competitiveness.

The constant (C) is insignificant, which suggests that there exists no fixed EGX 30 level regardless of the variables specified. The model has a high R-squared value (0.9471), indicating that the explanatory variables account for approximately 94.7% of the EGX 30 index variation, suggesting a good fit.

Long run results

Variable	Coefficient	Std. Error	t-Statistic	p-value
FPI	0.152175	0.105087	1.448090	0.1521
I (Interest Rate)	325.1185	167.8854	1.936550	0.0568
EGP (Exchange Rate)	505.6736	89.25879	5.665253	0.0000
C (Constant)	443.8584	1311.890	0.338335	0.7361

Table 4: Long Run Results

The coefficient on FPI (0.1522), which is not significant (p-value = 0.1521) and that on the rate of interest (325.1185) which is marginally significant (p-value = 0.0568) in the long-run equation are positive. It indicates that persistent rises in FPI and interest rates can have a positive long-run impact on the EGX 30 index. The exchange rate (EGP) also carries an extremely significant positive coefficient (505.6736, p-value = 0.0000), suggesting that the depreciation of the Egyptian pound is associated with the stock market's rising performance in the long term. This could be because of the competitive advantage of the exporting business listed on the EGX, as having a weak currency is favorable.

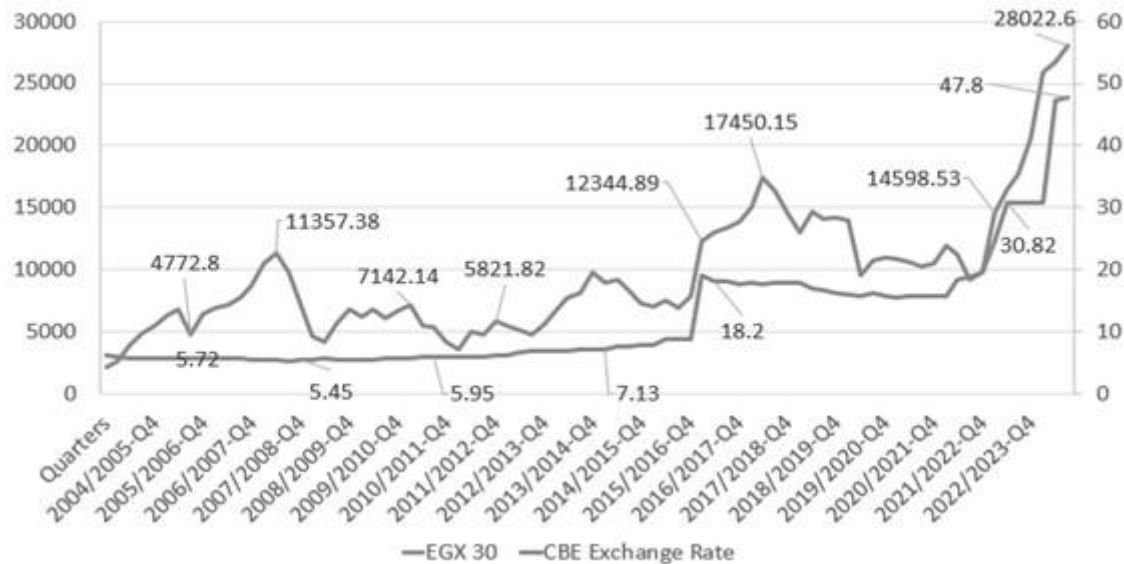


Figure 2: Trends of EGX30 and USD/EGP Exchange Rate (2004 – 2023)

Source: Central Bank of Egypt

This figure shows the co-movement of the EGX 30 Index and the USD/EGP exchange rate, underscoring the positive long-run impact of depreciation on stock performance.

Variable	Coefficient	Std. Error	t-Statistic	p-value
EC	-0.410591	0.079146	-5.187762	0.0000

Table 5: Error Correction Term

The error correction term (EC), derived from the long-run equation, is negative (-0.4106) and statistically significant ($p\text{-value} = 0.0000$). This confirms the presence of a stable long-run relationship and indicates that approximately 41.06% of any short-run deviations from equilibrium are corrected within one period. This adjustment mechanism underscores the dynamic interplay between short-run fluctuations and long-run equilibrium in the Egyptian stock market.

Diagnostic and robust test results

The Breusch-Godfrey test was conducted in this paper to be able to assess the existence of autocorrelation in the residuals up to 4 lags, which could bias standard errors and affect the reliability of hypothesis tests. The test results show that an F-statistic of 0.502177 with a $p\text{-value}$ of 0.7342 indicates no evidence of serial correlation ($p > 0.05$). This confirms that the ARDL (2, 0, 0, 2) model adequately captures dynamic relationships among the variables, supporting the validity of the short-run dynamics and long-run relationships.

The Breusch-Pagan-Godfrey test was employed to evaluate the presence of heteroskedasticity in the residuals, which could affect the precision of standard errors. The test results indicate an F-statistic of 2.156071 with a $p\text{-value}$ of 0.0487, providing marginal evidence of heteroskedasticity at the 5%

significance level. However, the Obs*R-squared p-value of 0.0542 suggests approximate homoskedasticity.

The CUSUM test was conducted to assess parameter stability, critical given Egypt's economic shocks. The test result shows that the CUSUM statistic remains within the 5% significance bounds throughout the sample period, indicating parameter stability. This ensures that the model's coefficients remain consistent across periods of economic turbulence, such as the 2016 currency floatation, validating the reliability of both short-run and long-run estimates and the error correction mechanism ($EC = -0.4106$, $p = 0.0000$, Table 5).

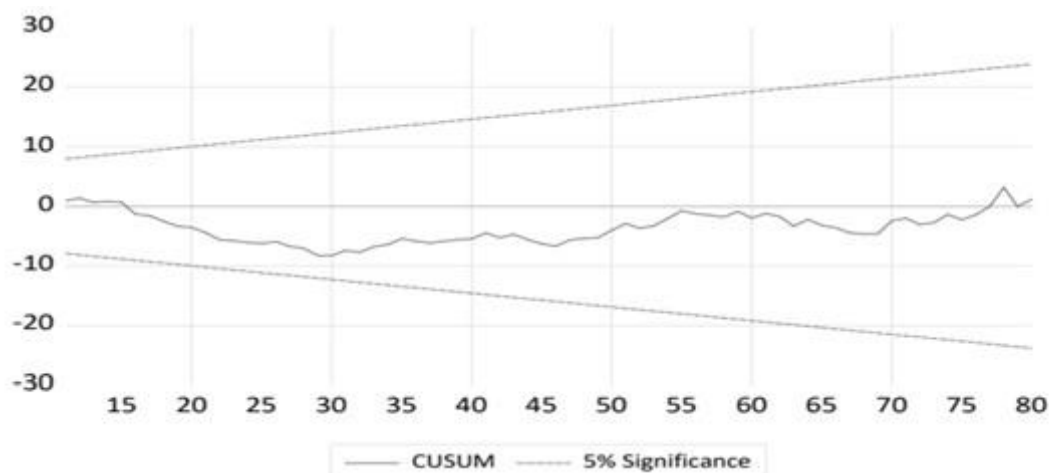


Figure 3: CUSUM Test for Parameter Stability

In conclusion, the diagnostic and robustness tests collectively affirm the validity of the ARDL model. The absence of serial correlation, approximate homoskedasticity (with robust standard errors applied), confirmation of long-run cointegration, and stability of parameters ensure that the model's estimates are reliable despite Egypt's economic volatility. These results strengthen the study's findings, particularly the significant long-run impact of exchange rate depreciation on the EGX 30 index (Table 6). However, the identification of two cointegrating relationships suggests that future research could explore additional long-run dynamics, potentially incorporating other macroeconomic factors such as inflation.

Test	Statistic	p-value	Conclusion
Breusch-Godfrey (LM)	$F = 0.502177$	0.7342	No serial correlation
Breusch-Pagan (Het)	$F = 2.156071$	0.0487	Approximate homoskedasticity
CUSUM	Within bounds	-	Parameter stability

Table 6: Diagnostic and Robustness Test Results

Discussions and conclusions

The study examined how the Egyptian stock market (EGX 30 Index), interest rates, currency rates and the flow of foreign portfolio investment (FPI) interacted throughout two decades of economic instability.

Geopolitical shocks, currency crises and extensive economic changes occurred during fiscal years 2004–05 and 2023–24.

An Autoregressive Distributed Lag (ARDL) model was used for the research, which provided important new information on how these factors interact in Egypt's unstable financial environment. The study found that the Egyptian pound's depreciation presented a significant long-term positive relationship with the EGX 30 Index. This showed that the companies at the EGX became more competitive, even though the currency devaluation was first causing some market instability. Contrary to expectations, FPI flows had only a small long-term impact and no meaningful short-term effect, highlighting Egypt's exposure to volatile "hot money" and investor uncertainty during times of crisis. It also showed higher interest rates and slightly increased equity investment over the long term, likely because of carry trade opportunities; however, sharp rate hikes after 2022 worsened foreign portfolio investment outflows. The EGX 30 Index showed a strong short-term bounce, suggesting that investors relied heavily on past trends when facing macroeconomic uncertainty.

The study suggests that a comprehensive approach focused on coordinated policy initiatives is necessary for both macroeconomic stability and sustainable capital inflows. To lessen short term market volatility and boost long term export competitiveness, exchange rate management should entail moderate transparent changes to the Egyptian Pound (EGP) backed by steady forward guidance. The Central Bank of Egypt (CBE) must carefully balance the need to preserve investor confidence and the resilience of the equities market with the requirement to manage inflation while setting interest rates. Temporary tax breaks and helpful regulations can act as buffers to keep foreign portfolio investors and reduce the risks of capital flight during times of monetary tightening. Together these policy tools can enhance market stability and promote steady, long-term investment flows examines the effects of capital flows and macroeconomic shocks on Egypt's equities market offering insightful information to investors and regulators. Egypt can enhance market resilience and sustain long term economic stability in a world that is becoming more unpredictable by tackling issues like foreign portfolio investment, currency rate volatility, monetary policy improvement, and regulatory openness.

Limitations and direction for future research

The EGX 30 index, interest rates, Foreign Portfolio Investment (FPI) and the USD/EGP exchange rate from FY2004/05 to FY2023/24 may all be studied using the Autoregressive Distributed Lag (ARDL) model. Nevertheless, a few restrictions may impact on the outcomes and their generalizability. The models set up the data utilized, and Egypt's economic circumstances are the causes of these problems.

First, the study uses quarterly data from the Central Bank of Egypt and the Egyptian Exchange. While this works for spotting medium-term trends, it might hide short-term ups and downs that matter during crises. The 90-day EGX 30 calculation smooths out quick changes and official data might miss unofficial money flows, which could affect FPI and stock market performance in Egypt's shaky economy.

Second, only FPI, interest rates, and exchange rates are included in the model. Although these are important considerations, omitted variable bias may result from excluding variables such as inflation, political stability, world oil prices, or foreign direct investment (FDI). These variables were excluded due to constraints in data availability and the need to maintain a focused scope within the model's framework. Although a good fit is indicated by the high R-squared (0.9471), this does not imply that factors that are not included are not significant. Finally, because the study only looks at 20 years, it may not capture longer-term shifts or global financial cycles that have an impact on Egypt's stock market, even though it does include significant events. The findings' applicability to other time periods or conditions may be limited by the quarterly focus and rolling window, which may not be suitable for monthly or annual data.

These limitations point to ways to improve future research. Adding higher-frequency data or variables like inflation and political risk could make the model more complete. Testing with robust standard errors or splitting the data around key events could tackle heteroskedasticity and stability issues. In addition to studying a longer period or comparing Egypt with other emerging markets could also give broader insights into FPI and stock market trends.

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