

THE IMPACT OF MACROECONOMICS AND MICROECONOMICS VARIABLES ON STOCK MARKET RETURNS: A COMPARATIVE STUDY ON EGYPTIAN AND GERMAN MARKET

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Abstract:

This study investigates how macroeconomic and microeconomic variables influence stock market returns in Egypt as an emerging country and Germany as a developed country. Using companies data, macroeconomic indicators and panel models, it examines inflation, exchange rate, interest rate, debt to equity ratio, quick ratio and dividend per share. The findings show that broad economic conditions explain most of variation in returns, 41.8% in Egypt, and 51.3% in Germany. Inflation affects both markets differently, exchange rates boost returns, while increasing interest rates affect Egypt more. Microeconomic factors have limited effects with debt to equity and liquidity showing partial significance. Overall, the findings highlight how different economic conditions shape the stock market returns.

Keywords: Stock market returns, Macroeconomic factors, Microeconomic factors, Egypt, Germany.

1 Introduction

Stock markets play a central role in economic growth by enabling capital formation, technological investment, and employment creation. They act as key economic indicators through stock price movements, offering liquidity and diversification. Stock market returns, defined as the gains or losses from investing in equities, are vital measures of market performance and broader economic conditions, shaping both investor decisions and policy strategies (Chikwira & Mohammed, 2023, p. 1). High returns signal growth and optimism, while negative returns reflect downturns and challenges, making them crucial for guiding fiscal and monetary policies.

It is well-established that independent variables are crucial in research because they are believed to influence the dependent variable which is the stock market returns. These variables in this research are categorized into macroeconomic and microeconomic factors, each having distinct effects on stock market performance.

Macroeconomics, which studies the performance of entire economies, provides insights into national strengths and weaknesses. It focuses on indicators such as inflation, exchange rates, interest rates, GDP, money supply, unemployment, industrial production, and foreign direct investment (Blanchard, 2021, pp. 30–60; Fayed & Yaseen, 2022, pp. 2035–2036). These measures help governments analyze economic trends and design effective policies. By examining how external and policy factors affect economies, macroeconomic analysis explains business cycles and long-term development (Blanchard, 2021, pp. 470–472).

In contrast, microeconomics studies households, firms, and consumers, focusing on how their decisions allocate scarce resources. It emphasizes supply and demand, market structures, and price-setting mechanisms. As highlighted by Mankiw and Taylor (2020, pp. 2–10), microeconomics is key to understanding decision-making at the individual and firm level, with implications for income distribution, market efficiency, and public policy. Assuming rational profit-maximization (Varian, 2021, pp. 25–27), it provides the foundation for business strategy and government intervention, ensuring efficient allocation of labor, capital, and land (Besanko & Braeutigam, 2020, pp. 200–205).

Empirical research shows that both macroeconomic and microeconomic variables significantly influence stock market returns. Studies across Egypt, Turkey, and Germany highlight strong links between returns and macro variables like interest rates,

inflation, and exchange rates, though their effects vary over time (Sakr, Youssef, & Mahrous, 2021, pp. 1–2; Svensson, 2021, pp. 352–353; Borio & Hofmann, 2020, p. 14). These factors directly impact firm cash flows and market valuations (Blanchard, 2021, p. 189; Deutsche Bundesbank, 2021, pp. 1–3). At the micro level, variables such as debt-to-equity ratio, dividend per share, quick ratio, and firm size are shown to shape returns significantly (Narayan, Phan, & Liu, 2021, pp. 1–2; Koch et al., 2020, pp. 2930–2932). Foundational works have been extended by recent studies reaffirming the importance of leverage and dividends (Frank & Goyal, 2020, pp. 432–434; Denis & Osobov, 2008, pp. 62–64).

In the context of Egypt and Germany, these variables take on distinct importance. Egypt's emerging market is highly sensitive to inflation and exchange rate volatility, reflecting its dependence on import-export dynamics and fragile monetary stability (Sakr et al., 2021, p. 5; El-Shazly, 2021, pp. 321–324). Germany, as a developed economy, is more influenced by European Central Bank interest rate policies that affect investment and financing (Deutsche Bundesbank, 2021, p. 45; ECB, 2022, pp. 2, 7–8). At the firm level, debt-to-equity ratio, quick ratio, and dividend per share highlight how Egyptian firms manage volatility and how German firms sustain stability within competitive markets (Narayan et al., 2021, p. 1018; Koch et al., 2020, pp. 2936–2938). By comparing the two markets, this study provides insights into how macroeconomic trends and firm-specific variables interact differently across economies, offering guidance for investors, policymakers, and researchers.

The research strives to answer two key questions:

Q1: Do macroeconomic drivers have similar effects on stock market returns in Egypt and Germany?

Q2: Do microeconomic drivers have similar effects on both markets?

2 Literature overview

2.1 Theoretical framework

Macroeconomic variables impact on stock market return (EMH and CAPM): The Efficient Market Hypothesis (EMH) and the Capital Asset Pricing Model (CAPM) provide theoretical foundations for understanding how macroeconomic factors affect stock returns. EMH argues that markets quickly incorporate new information, meaning changes in inflation, exchange rates, or interest rates are reflected almost immediately in stock performance (Fama & French, 2020, pp. 1981–1983; Svensson, 2021, pp. 352–354). CAPM links these macroeconomic shifts to risk, required returns, and valuation through the risk-free rate, market premium, and beta (Campbell et al., 2022, pp. 80–82; Borio & Hofmann, 2020, p. 14).

Interest rate impact on stock market return: Interest rates significantly shape stock performance. According to the Discounted Cash Flow (DCF) theory, higher rates increase discount factors, lowering present values of future cash flows. The Cost of Capital perspective shows that rising interest rates raise borrowing costs, constraining corporate investment. Monetary policy transmission channels also influence investor sentiment, while sectoral impacts are uneven—utilities and real estate often suffer, while financials may benefit (Borio & Hofmann, 2020, p. 15; Campbell et al., 2022, pp. 90–92).

Inflation rate impact on stock market return: Inflation, measured by CPI or PPI, exerts complex effects on stock returns. Demand-pull and cost-push pressures often raise interest rates, increasing discount rates and reducing equity valuations. While moderate inflation can signal healthy growth, persistent high inflation erodes profitability and

raises volatility, especially in emerging markets (Chen et al., 2021, pp. 2–3; Liu & Zhang, 2023, pp. 6–7).

Exchange rate impact on stock market return: Exchange rate fluctuations, shaped by trade balances and capital flows, have strong implications for stock returns. Currency depreciation can benefit export-oriented firms but increases uncertainty and capital outflows in emerging markets. Developed economies like Germany often benefit from competitiveness effects, while emerging markets such as Egypt experience greater volatility (Baele et al., 2021, pp. 1905–1907; Choudhry et al., 2022, pp. 2–3).

Microeconomics variables impact on stock market return: Company-specific factors such as profitability, market competition, and governance also shape stock returns. Higher profitability, strong demand, and efficient cost management enhance valuations, whereas weak governance or rising costs reduce them (Narayan et al., 2021, pp. 1–2).

Debt-to-equity impact on stock market return: The debt-to-equity ratio shapes financial risk, cost of capital, and stock performance. Moderate leverage can enhance value, while excessive debt increases risk and instability, amplifying both gains and losses (Friewald, Nagler, & Wagner, 2022, pp. 410–412; Kaur, 2022, p. 8; Narayan et al., 2021, p. 1016).

Dividend per share impact on stock market return: Dividend payouts influence stock prices through signaling profitability and reducing agency costs. Higher dividends often reassure investors, while cuts trigger negative reactions. However, evidence shows that effects vary by sector and market environment (Koch et al., 2020, pp. 2931–2932; Denis & Osobov, 2008, pp. 75–77).

Quick ratio impact on stock market return: Liquidity ratios such as the quick ratio reflect firms' ability to cover short-term obligations. Higher liquidity boosts investor confidence and stability, especially during downturns. However, excessive liquidity may also suggest inefficient capital allocation (Narayan et al., 2021, pp. 1017–1018; Eljelly, 2021, pp. 612–614).

2.2. Macroeconomic variables impact on stock market return

Research shows mixed effects of macroeconomic variables on stock returns. Many studies find positive links with inflation, money supply, GDP, FDI, and low interest rates (Rjoub, Aga, & Abu Alrub, 2021, p.2; Kamber, Mohanty, & Morley, 2020, p. 7; Phan, Sharma, & Narayan, 2021, p. 2) while others report negative impacts from high inflation and exchange rate depreciation (Choudhry, 2001, p. 80; El-Shazly, 2021, p. 2). Some find no significant relationships, suggesting external shocks or sector factors matter (Chen, Qian, & Wen, 2021, p. 2). In Egypt, moderate inflation, exchange rate policies, and reforms supported returns (Kamal, Ma, & Pratt, 2023, p. 2; Sakr, Youssef, & Mahrous, 2021, p. [page needed]), but high inflation and depreciation weakened them (El-Shazly, 2021, p. 2). In Germany, low interest rates, tax reforms, and innovation boosted performance (Deutsche Bundesbank, 2021, p. 1; OECD, 2022, p. 1), though ECB rate hikes reduced returns temporarily (ECB, 2022, p. 1).

2.2.1. Empirical evidences related to interest rate impact on stock market return

Research shows mixed effects of interest rates on stock returns. Some studies find positive impacts, where rate cuts boost liquidity, lower borrowing costs, and raise equity valuations, particularly in sensitive sectors like real estate and utilities (Borio & Hofmann, 2020, p. 18; Chen, Qian, & Wen, 2021, p. 3). Others highlight negative effects, as rising rates increase discount rates, reduce liquidity, and depress stock prices (Campbell, Giglio, Polk, & Turley, 2022, p. 12; Jordà, Schularick, & Taylor, 2020, p. 104; Bekaert, Hoerova, & Xu, 2020, p. 350). Still, some studies suggest the relationship is context-dependent, with limited or no significant correlation when other macroeconomic or global factors dominate (Phan, Sharma, & Narayan, 2021, p. 3).

2.2.2. Empirical evidences related to inflation rate impact on stock market return

Studies on inflation and stock returns show mixed results. Some report positive effects, particularly where rising inflation boosts commodity prices and benefits related sectors, or where stable sectors like consumer staples and utilities are less affected (Wang & Li, 2020, p. 2; Liu & Zhang, 2023, p. 4). Others find negative impacts, especially in emerging markets, where inflation erodes profits, raises discount rates, and increases volatility, often leading to lower returns (Choudhry, 2001, p. 80; Hsu, Tian, & Xu, 2021, p. 5; Khan, Su, Tao, & Umar, 2021, p.3; Patel & Sarkar, 2021, p. 3). Overall, evidence suggests inflation's effect is context-dependent, with advanced economies adjusting more effectively while emerging markets face greater volatility (Liu & Zhang, 2023, p. 2).

2.2.3. Empirical evidences related to exchange rate impact on stock market return

Studies on exchange rates and stock returns show mixed effects. Some report positive impacts, where currency depreciation boosts return for export-oriented firms and sectors by enhancing competitiveness (Baele, Bekaert, & Inghelbrecht, 2021, p. 3; Zhao & Xiao, 2021, p. 6; Sun, Li, & Ma, 2021, p. 5). Others find negative effects, as volatility and depreciation increase uncertainty, weaken investor sentiment, and drive capital outflows, lowering returns (Reinhart & Rogoff, 2020, p. 21; Li, Wang, Cheung, & Jiang, 2021, p. 6). Evidence also shows that emerging markets are more vulnerable to exchange rate shocks, experiencing stronger volatility in returns than developed markets (Choudhry, Hassan, & Shabi, 2022, p. 6).

As per the above, macroeconomics variables (Interest Rate, Exchange Rate, Inflation Rate) directly influence the Stock Market Return (Y). This relationship is addressed in the following hypothesis:

H1: Macroeconomic variables, i.e., (inflation rate, exchange rate, and interest rate), have a significant positive impact on stock market returns in both the Egyptian and German markets.

This main hypothesis can be divided into the following sub-hypothesis:

- H1a:** The inflation rate has a significant positive impact on stock market returns in Egypt.
- H1b:** The inflation rate has a significant positive impact on stock market returns in Germany.
- H1c:** The exchange rate has a significant positive impact on stock market returns in Egypt.
- H1d:** The exchange rate has a significant positive impact on stock market returns in Germany.
- H1e:** The interest rate has a significant positive impact on stock market returns in Egypt.
- H1f:** The interest rate has a significant positive impact on stock market returns in Germany.

2.3. Microeconomics variables impact on stock market return

Microeconomic factors such as the debt-to-equity ratio, quick ratio, and dividend per share (DPS) play a central role in shaping stock market returns, though their influence varies between emerging and developed markets. In both Egypt's EGX 30 and Germany's DAX 30, companies with moderate debt levels tend to perform better, as investors view them as striking a healthy balance between growth opportunities and financial stability (Frank & Goyal, 2020, p. 237; Deutsche Bundesbank, 2021, p. 1). Liquidity also matters greatly: firms with stronger quick ratios inspire greater investor confidence and weather market volatility more effectively (Eriotis, Vasiliou, &

Ventoura-Neokosmidi, 2021, p. 3; Müller & Braun, 2021, p. 3). Likewise, steady and attractive dividends reassure investors about a company's long-term health, often translating into higher valuations (Koch et al., 2020, p. 55; Denis & Osobov, 2020, p. 324). That said, the weight of these factors differs across contexts—EGX 30 firms often feel the pressure of liquidity constraints and structural challenges, while DAX 30 companies benefit from more robust financial systems and stronger investor trust (Sakr, Youssef, & Mahrous, 2021, p.4; Fischer & Weber, 2021, p.4). This contrast highlights how the same financial signals can resonate differently depending on the market environment.

2.3.1. Empirical evidence related to Debt to Equity impact on stock market return

Empirical evidence shows that a moderate debt-to-equity (D/E) ratio generally enhances stock performance, particularly in emerging markets, as it balances tax benefits with financial risk (Frank & Goyal, 2020, p. 237; Margaritis & Psillaki, 2020, p. 186). However, excessive leverage often reduces returns, especially during crises or rising interest rates, as seen during the COVID-19 downturn and in volatile sectors like technology (Demirgüç-Kunt, Peria, & Tressel, 2020, p.6; Kang, Lee, & Na, 2022, p. 4). The impact of leverage also varies across industries and contexts—manufacturing firms often benefit from higher D/E ratios due to stable cash flows, while technology firms are more vulnerable, and firms in emerging markets that adjust leverage with economic cycles manage volatility more effectively (Korajczyk & Sadka, 2020, p. 320; Eriotis, Vasiliou, & Ventoura-Neokosmidi, 2021, p. 5).

2.3.2. Empirical evidence related to Dividend per share impact on stock market return

Research generally shows that higher dividend per share (DPS) is positively associated with stock returns, especially in uncertain markets, as dividends signal profitability and stability (Denis & Osobov, 2020, p. 324; Koch, Schoenle, & Webers, 2020, p. 6; Al-Malkawi, Bhatti, & Magableh, 2021, p.4). Conversely, dividend cuts often trigger sharp declines in stock prices, as they are perceived as signs of financial distress, particularly in crises (Brav, Graham, Harvey, & Michaely, 2020, p. 45; Farooq & Ahmed, 2021, p. 6). However, some studies suggest the relationship is not universal, with effects varying across sectors, regions, and firm histories, and in some cases showing weak or inconsistent correlations (Khan, Su, Tao, & Umar, 2021, p. 3; DeAngelo & Roll, 2022, p. 78).

2.3.3. Empirical evidence related to Dividend per share impact on stock market return

Studies widely show that higher dividend per share (DPS) is linked to stronger stock returns, especially in uncertain or volatile markets, as dividends signal profitability and stability (Denis & Osobov, 2020, p. 324; Koch, Schoenle, & Webers, 2020, p. 8). Conversely, dividend cuts often trigger sharp declines, as they are perceived as signs of financial distress, particularly during crises (Brav, Graham, Harvey, & Michaely, 2020, p. 45; Farooq & Ahmed, 2021, p.5). However, evidence is not fully consistent—sectoral and regional differences exist, and some studies suggest the predictive power of dividends on stock returns is limited or dependent on a firm's history of payouts (Khan, Su, Tao, & Umar, 2021, p.6; DeAngelo & Roll, 2022, p. 78).

2.3.4. Empirical evidence related to quick ratio impact on stock market return

Empirical evidence generally shows a positive link between the quick ratio and stock returns, as firms with stronger liquidity are seen as more stable and resilient, particularly in downturns or volatile markets (Eljelly, 2021, p. 52; Eriotis, Vasiliou, & Ventoura-Neokosmidi, 2021, p. 6; Müller & Braun, 2021, p. 9). High quick ratios reassure investors of a firm's ability to handle financial stress, boosting confidence and

performance, especially in capital-intensive sectors. However, some studies caution that excessive liquidity may be viewed as inefficient asset use, potentially lowering returns, while in non-capital-intensive industries the relationship may be weak or insignificant, as profitability and growth prospects can outweigh liquidity in driving stock performance (Narayan, Phan, & Liu, 2021, p. 8).

Moreover, the microeconomics variables (Debt-to-Equity Ratio, Quick Ratio, Dividend per Share) represent company specific financial metrics. This relationship is captured in following hypothesis:

H2: Microeconomic variables, i.e., (debt-to-equity ratio, quick ratio, and dividend per share), have a significant positive impact on stock market returns in both the Egyptian and German markets.

This main hypothesis can be divided into the following hypothesis:

•**H2a:** The debt-to-equity ratio has a significant positive impact on stock market returns in Egypt.

•**H2b:** The debt-to-equity ratio has a significant positive impact on stock market returns in Germany.

•**H2c:** The quick ratio has a significant positive impact on stock market returns in Egypt.

•**H2d:** The quick ratio has a significant positive impact on stock market returns in Germany.

•**H2e:** Dividend per share has a significant positive impact on stock market returns in Egypt.

•**H2f:** Dividend per share has a significant positive impact on stock market returns in Germany.

2.4. Empirical evidence on the impact of macroeconomic and microeconomic variables on stock market returns in developed and developing countries

Empirical evidence consistently shows that the factors influencing stock market returns differ substantially between developed and developing economies. In developed markets, GDP growth is strongly correlated with higher stock returns as it boosts corporate earnings, while higher interest rates negatively affect performance by raising borrowing costs and lowering investment (Raza, Jawaid, & Afshan, 2015, p.6; Rapach, Strauss, & Zhou, 2013, p. 1635). Strong corporate governance is another key driver, with transparent and well-managed firms generally outperforming others due to greater investor trust (La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 2000, p. 5). Moderate inflation often supports returns in these economies, signaling steady growth without undermining stability (Bekaert & Engstrom, 2010, p. 280; Chen, Qian, & Wen, 2021, p.2). By contrast, developing economies face greater instability. Exchange rate volatility and political uncertainty exert major downward pressure on stock performance, particularly in countries like India and Egypt (Choudhry, Hassan, & Shabi, 2022, p. 5; Bilson, Brailsford, & Hooper, 2002, p. 3). External shocks such as global financial crises or oil price swings also have a stronger impact, given these markets' reliance on foreign capital (Bekaert, Harvey, & Lundblad, 2021, p. 3). Liquidity constraints and weaker governance structures amplify market volatility, reducing investor confidence and leading to more pronounced swings in stock returns (Zhang & Xie, 2020, p. 6; Fayed & Yaseen, 2022, p. 7). However, foreign direct investment often serves as a lifeline, fueling returns in less mature markets that depend heavily on international capital flows (Alfaro, Chanda, Kalemli-Ozcan, & Sayek, 2004, p. 90). Investor sentiment plays a role in both contexts, but its effect is magnified in developing markets due to higher risk perceptions and lower liquidity (Baker & Wurgler, 2007, p. 130).

Overall, while developed markets are shaped by predictable macroeconomic variables such as GDP, interest rates, governance, and moderate inflation, developing markets remain far more sensitive to exchange rate shifts, political risk, liquidity shortages, and external shocks. This makes their returns less stable but often more volatile and reactive to global conditions, highlighting the contrasting dynamics of stock market performance across different economic environments (Zhang & Xie, 2020, p. 13; Fayed & Yaseen, 2022, p.2; La Porta et al., 2000, p. 20).

Furthermore, the combined influence of macroeconomic and microeconomic variables on stock market returns is expected to differ between Egypt, an emerging market, and Germany, a developed market. This is addressed in the following hypotheses:

H3: The combined effect of macroeconomic and microeconomic variables on stock market returns differs between the Egyptian and German markets.

H4: There is a statistical different in the stock market return for both Egyptian and German Markets

3 Research

3.1. Variables

The analysis investigates the relationship between stock market returns and a set of macroeconomic and microeconomic variables for Egypt and Germany. Stock market returns, as percentage changes in the market index, are the dependent variable, which summarizes the overall effect of economic conditions and firm performance.

Independent variables are divided into two. Macroeconomic variables include: (i) inflation rate, as measured by the year-over-year percentage change in the Consumer Price Index (CPI), and it affects purchasing power, production cost, and investors' expectations; (ii) exchange rate, as measured by the year-average of the local currency against the U.S. dollar, and it affects trade competitiveness and financial exposure; and (iii) interest rate, as proxied by the central bank benchmark rate, and it captures the cost of capital and affects borrowing and investment. Microeconomic indicators are: (i) debt-to-equity ratio, indicating leverage and risk of financing; (ii) quick ratio, analyzing short-term liquidity and operating capacity; and (iii) dividends per share, signifying dividend policy, cash flow predictability, and investors' attitude. These are presented in

Table (1)

Type	Name	Abbreviation	Measurement
Dependent Variable	Stock Market Returns	SMR_{it}	Stock market returns are the gains achieved by investors due to changes in stock prices over a specific period. They include capital gains and dividend payouts. Returns are measured by the percentage change in the overall market index during the study period.
	Inflation	INF_{it}	Inflation is measured by the annual percentage change in the Consumer Price Index (CPI) during the study period.
	Exchange rate	EXC_{it}	Exchange rate is measured by the official annual average exchange rate of the local currency against the U.S. dollar during the study period.
Independent Variables	Interest rate	IR_{it}	The interest rate is measured by the annual average of the central bank's benchmark interest rate during the study period.
	Debt-to-equity ratio	DER_{it}	Debt-to-equity ratio is measured by dividing total liabilities by total shareholders' equity based on the latest annual financial statements during the study period.

Quick ratio	QR_{it}	Quick ratio is calculated as the ratio of quick assets to current liabilities based on the latest financial statements during the study period.
Dividend per share	DPS_{it}	Dividend per share is measured by dividing total dividend payments by the total number of outstanding shares during the fiscal period.

Table 1: Measurement of variables

By including macro- and micro-level determinants, the study aims to capture both systemic and firm-level impacts, anticipating greater responsiveness of the Egyptian market to external shocks and greater stability in Germany from its more developed financial infrastructure.

3.2. Data

The empirical test is based on balanced panel data for 30 listed firms in each country (60 in total) from 2015 to 2024, which yields 300 firm-year observations for each market. This interval covers significant shocks such as Egypt's 2016 currency flotation, the COVID-19 crisis, and monetary tightening worldwide, creating a good test ground for the hypotheses.

Two verification steps were conducted prior to estimation. First, statistical power analysis determined the minimum sample size for identifying significant effects. At a 1% significance level, 0.99 power, and medium effect size, the number required ranged from 205 observations for the first two models up to 243 for the pooled model. The initial dataset is well above these quantities, improving reliability (Table 2). Second, model specification tests were performed. Auxiliary regressions and Ramsey RESET tests confirmed microeconomic variables to be in linear association with stock returns, while macroeconomic variables, and particularly inflation, impose nonlinear effects. Accordingly, squared terms for inflation were added into Models (1) and (3).

3.3. Model Building the study

Tests used		Test statistic	Egypt			Germany		
			Model (1)	Model (2)	Model (3)	Model (1)	Model (2)	Model (3)
a.	Auxiliary regression for non-linearity test (squared terms)	(Prob.)	70.007 (0.000)***	4.4069 (0.221)	70.702 (0.000)***	254.45 (0.000)***	1.4099 (0.703)	254.48 (0.000)***
b.	Auxiliary regression for non-linearity test (log terms)	(Prob.)	79.894 (0.000)***	n/a	79.598 (0.000)***	249.19 (0.000)***	0.0004 (0.985)	249.23 (0.000)***
c.	RAMSEY RESET test for specification	(Prob.)	2.8830 (0.057)*	0.7949 (0.453)	2.0191 (0.135)	2796.9 (0.000)***	1.2924 (0.276)	2386.2 (0.000)***

Table2 : Linearity Tests for the study model in Egypt and Germany

The study utilizes a hierarchical regression method through three models:

First Model (Macroeconomic Variables): Tests the effect of inflation, exchange rate, and interest on stock returns. In Egypt, inflation and currency depreciation would increase uncertainty and reduce returns, whereas in Germany, moderate inflation or a devalued euro would make it more competitive. Both countries should have negative effects from interest rates, albeit more severely in Egypt.

Second Model (Microeconomic Variables): Examines debt-to-equity ratio, quick ratio, and dividends per share. In Egypt, high risk high leverage, strength is shown by liquidity, and investors are significantly attracted to dividends. In Germany, managing debt is better, balance of liquidity and efficiency, and dividends are viewed strategically. Third Model (Interactions): Compares macro- and micro-level determinants to identify joint dynamics. Egyptian weak institutions and financing frictions reinforce adverse interactions, e.g., higher interest rates imposing more burden on leveraged firms. Tighter institutions and policy discipline in Germany assist in reducing such risks, with investors viewing dividend and leverage policies more flexibly.

3.4. Statistical Methods

The analysis involves both descriptive and inferential statistics. Descriptive statistics present key characteristics of the dataset using measures of central tendency, dispersion, and distributional features. These provide initial information regarding market behavior and guide follow-up econometric modeling. Inferential fixed-effects and dynamic panel regression methods are then used to examine the causal impacts of macroeconomic and microeconomic determinants on stock returns. This method offers strict hypothesis testing while accounting for firm heterogeneity and structural differences between the both markets.

3.4.1. Statistical and Econometric Methods

The study applies descriptive and inferential statistical methods to examine the relationship between macroeconomic, microeconomic, and stock market variables.

Pearson correlation coefficient (r) is employed to measure the direction and magnitude of linear associations between two continuous variables.

Mann–Whitney U test is the nonparametric version of the independent samples t-test.

In testing more than two independent groups ($K > 2$), the Kruskal–Wallis test extends the basis of the Mann–Whitney test.

To address endogeneity and simultaneity between explanatory variables and returns on stocks, the research employs a Dynamic Panel Data (DPD) model estimated using the Generalized Method of Moments (GMM). The Arellano–Bond estimator absorbs instruments in terms of lagged dependent variables, thus ruling out bias caused by omitted and autocorrelation variables. This approach is best suited for panels with many firms (N) and short time series (T).

As a first step, the Fixed Effects Model is applied in a manner that controls firm-specific heterogeneity with constant slope coefficients. In this manner, unobserved variation, i.e., market experience or firm size, does not bias the estimates. FEM serves as the starting point before progressing to the DPD strategy.

Besides statistical significance, the study also highlights effect size estimates to determine practical significance of findings. Effect sizes give metrics of the magnitude of relationships, which allows for comparison across studies as well as the conduct of meta-analytical studies.

	.Obs	Mean	Median	Std. Dev	Min	Max		.Obs	Mean	Median	Std. Dev.	Min	Max
:Dependent Variable													
<i>Stock market returns</i>	300	17.11	14.98	32.30	-22.32	76.2		300	8.250	11.05	13.44	-18.3	25.5
Independent Variables:													
<i>a) Macroeconomic factors</i>													
<i>Inflation</i>	300	15.65	13.86	9.262	5.040	33.88		300	2.330	1.600	2.259	-0.5	6.9
<i>Exchange rate</i>	300	20.09	17.30	11.45	7.730	50		300	0.897	0.898	0.033	0.846	0.95
<i>Interest rate</i>	300	15.87	15.25	4.478	10	26.7		300	3.350	3.350	0.288	2.9	3.8
<i>b) Microeconomic factors</i>													
<i>Debt-to-equity ratio</i>	300	4.911	1.411	20.97	-109.8	180.6		300	2.641	1.186	3.357	0.078	15.11
<i>Quick ratio</i>	300	1.841	1.018	2.616	-5.383	24.02		300	1.119	0.637	1.757	-0.495	14.08
<i>Dividend per share</i>	300	439.6	193.2	552.1	0	2277		300	14.45	1.188	24.89	0	154.8

Table3. Descriptive summary statistics, 2015-224 (n=30)

3.4.2. Data Analysis and Hypothesis testing

The descriptive statistics reveal stark contrasts in stock market returns. Germany recorded an average return of 8.3% with moderate volatility (SD = 13.4), reflecting relative stability. In contrast, Egypt showed a much higher average return of 17.1%, but with considerably greater volatility (SD = 32.3). This indicates that while Egyptian investors may access higher potential profits, they face substantially greater risks. The maximum observed return in Egypt (76.2%) far exceeded that of Germany (25.5%), while the minimum values (-22.3% vs. -18.3%) emphasize Egypt's greater downside risk. Overall, the results underscore the structural gap between a developed and an emerging market.

Macroeconomic conditions in Egypt and Germany differ sharply, shaping distinct business environments. Egypt is characterized by high and volatile inflation (15.6%), unstable exchange rates with significant depreciation, and elevated interest rates averaging 15.9%. These conditions create substantial uncertainty for firms, requiring strong risk management practices. In contrast, Germany shows relative macroeconomic stability, with low and steady inflation (2.3%), a stable USD–EUR exchange rate, and modest interest rates averaging 3.35%. This predictable environment supports long-term planning and investment confidence among German firms.

On the microeconomic level, Egyptian firms display higher financial risk and instability compared to their German counterparts. Their debt-to-equity ratios are much higher (4.91 vs. 2.64), liquidity is more constrained, and dividend payouts are highly irregular and excessive, suggesting opportunistic policies. German firms, by comparison, demonstrate more disciplined liquidity management and stable dividend distributions, reflecting financial prudence. ANOVA tests confirm that while macroeconomic factors do not significantly differ across firms within each country—since these are nationwide measures—the stark contrasts between Egypt and Germany highlight how national environments drive differences in firm-level behavior and investment outcomes.

Egypt

Germany

	Median	χ^2 value	Prob.	Median	χ^2 value	Prob.
<i>Stock market returns</i>	14.975	0.0000	1.000	11.050	0.0000	1.000
<i>Inflation</i>	13.855	0.0000	1.000	1.6000	0.0000	1.000
<i>Exchange rate</i>	17.295	0.0000	1.000	0.8975	0.0000	1.000
<i>Interest rate</i>	15.250	0.0000	1.000	3.3500	0.0000	1.000
<i>Debt-to-equity ratio</i>	1.4106	273.49	0.000***	1.1859	279.79	0.000***
<i>Quick ratio</i>	1.0184	251.45	0.000***	0.6374	247.57	0.000***
<i>Dividend per share</i>	193.23	281.47	0.000***	1.1883	241.77	0.000***

Table 4. *Analysis of variance between sample firms in Egypt and Germany*

Note: ***, **, * indicate significance at 1%, 5% and 10% respectively.

The analysis reveals highly significant differences in the microeconomic variables—debt-to-equity ratio, quick ratio, and dividend per share—at the 1% level within both Egypt and Germany. This indicates that firms differ substantially in their capital structure, liquidity management, and dividend policies, reflecting variations in size, industry, and governance practices. From a managerial standpoint, these results highlight the importance of firm-specific financial indicators as key drivers of performance and stock returns. For investors, this underscores the need to focus on company fundamentals, particularly in markets with diverse corporate profiles such as Egypt.

At the cross-country level, the Mann–Whitney test confirms significant differences between Egypt and Germany across several indicators. Stock market returns differ at the 10% level, while inflation, exchange rates, and interest rates diverge significantly at the 1% level. These results emphasize the structural and policy-driven contrasts between the two economies, with Egypt characterized by volatility and high inflationary pressures, and Germany benefiting from a more stable and predictable macroeconomic environment.

	Median		Mann-Whitney U test	
	<i>Egypt</i>	<i>Germany</i>	χ^2 value	Prob.
<i>Stock market returns</i>	14.975	11.050	2.8752	0.090*
<i>Inflation</i>	13.855	1.6000	380.25	0.000***
<i>Exchange rate</i>	17.295	0.8975	449.25	0.000***
<i>Interest rate</i>	15.250	3.3500	449.25	0.000***
<i>Debt-to-equity ratio</i>	1.4106	1.1859	0.1271	0.721
<i>Quick ratio</i>	1.0184	0.6374	42.630	0.000***
<i>Dividend per share</i>	193.23	1.1883	239.89	0.000***

Table 5. *Analysis of variance between Egypt and Germany (Testing the fourth hypothesis)*

Note: - ***, **, * indicate significance at 1%, 5% and 10% respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>Stock market returns</i>	(1) 1						
<i>Inflation</i>	(2) 0.577***	1					
<i>Exchange rate</i>	(3) 0.209***	0.489***	1				

<i>Interest rate</i>	(4)	0.136**	0.493***	0.955***	1			
<i>Debt-to-equity ratio</i>	(5)	0.050	0.042	0.080	0.086	1		
<i>Quick ratio</i>	(6)	0.045	0.036	0.010	-0.001	-0.082	1	
<i>Dividend per share</i>	(7)	0.012	0.022	0.097*	0.091	-0.084	0.305***	1

Table 6. *Correlation matrix between study variables in Egypt, 2015-2024 (n=30)*

Note: - ***, **, * indicate significance at 1%, 5% and 10% respectively.

The correlation matrix for Egypt shows strong positive associations between stock returns and inflation (0.577), as well as with exchange rate and interest rate. Dividends per share are also moderately correlated with returns (0.305). By contrast, debt-to-equity and quick ratios exhibit weak or negligible associations with returns.

		(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>Stock market returns</i>	(1)	1						
<i>Inflation</i>	(2)	-0.155***	1					
<i>Exchange rate</i>	(3)	0.130**	0.570***	1				
<i>Interest rate</i>	(4)	-0.184***	-0.643***	-0.391***	1			
<i>Debt-to-equity ratio</i>	(5)	0.023	0.041	0.053	-0.070	1		
<i>Quick ratio</i>	(6)	-0.015	0.049	0.019	-0.021	-0.297***	1	
<i>Dividend per share</i>	(7)	0.011	0.028	0.010	-0.074	-0.264***	-0.028	1

Table 7. *Correlation matrix between study variables in Germany, 2015-2024 (n=30)*

Note: - ***, **, * indicate significance at 1%, 5% and 10% respectively.

In Germany the results differ substantially. Inflation shows a negative correlation with stock returns (-0.155), while exchange rate and interest rate demonstrate significant associations but with opposite signs compared to Egypt. Quick ratio and dividend per share correlations are weak and, in some cases, negative.

Cross-Market Differences

To formally test whether correlations differ between Egypt and Germany

	Correlation coefficient		Difference test	
	<i>Egypt</i>	<i>Germany</i>	<i>z stats.</i>	<i>Prob.</i>
<i>Inflation</i>	0.577***	-0.155***	9.922	0.000***
<i>Exchange rate</i>	0.209***	0.130**	0.992	0.161
<i>Interest rate</i>	0.136**	-0.184***	3.936	0.000***
<i>Debt-to-equity ratio</i>	0.050	0.023	0.329	0.371
<i>Quick ratio</i>	0.045	-0.015	0.732	0.232
<i>Dividend per share</i>	0.012	0.011	0.012	0.495

Table 8. *Testing the differences between correlation in Egypt and Germany* reports z-statistics comparing the coefficients. Significant differences exist for inflation, interest rates, and dividends, with Egypt showing positive linkages, where Germany shows negative or weaker ones. For example, inflation is positively associated with returns in Egypt but negatively in Germany, reflecting how emerging markets may experience stock rallies in inflationary contexts, while developed markets typically see dampened investor confidence.

Debt-to-equity and quick ratios, however, show no significant cross-market differences, underscoring a certain degree of similarity in how leverage and liquidity affect firms

regardless of context. To validate model reliability, a series of diagnostic tests were conducted.

Problems	Tests used	Null hypothesis	Egypt	Germany
<i>Heteroskedasticity</i>	White's test	Heteroskedasticity not present	233.63 (0.000)***	252.43 (0.000)***
<i>Serial Correlation</i>	Wooldridge test	No first-order autocorrelation	-101.51 (0.000)***	-1005.7 (0.000)***
<i>Dependence</i>	Pesaran CD	No cross-sectional dependence	65.301 (0.000)***	65.879 (0.000)***
<i>Normality</i>	Jarque-Bera Error	is normally distributed	53.377 (0.000)***	76.786 (0.000)***
<i>Structural Breakpoint</i>	Chow test	No structural breakpoint	0.3472 (0.931)	0.0797 (0.999)

Table 9 Diagnostic Tests used in the study model

Note: ***, **, * indicate significance at 1%, 5% and 10% respectively.

Dependent variables: *Stock Market Returns*

Method: *1-way fixed effects model (with white diagonal standard error)*

	Egypt				Germany		
	Reg (1)	Reg (2)	Reg (3)		Reg (4)	Reg (5)	Reg (6)
<i>Inflation</i>	3.54117 [4.667] ***		3.86219 [5.072]* **		7.58193 [15.16]* **		7.78760 [15.19]* **
<i>Inflation squared</i>	-0.03182 [-1.726] *		-0.03952 [-2.133] **		-1.79439 [-20.51]* **		-1.84289 [-19.77] ***
<i>Exchange rate</i>	2.22579 [8.311] ***		2.16328 [7.702]* **		264.589 [9.289]* **		274.997 [9.403]* **
<i>Interest rate</i>	-6.92628 [-7.661] ***		-7.05957 [-7.767] ***		-16.2124 [-9.309]* **		-17.6748 [-8.461] ***
<i>Debt-to-equity ratio</i>		0.19159 [3.651] ***	0.17311 [3.705]* **			1.61816 [2.433]**	-1.54504 [-2.339] **
<i>Quick ratio</i>		2.05997 [2.057] **	0.63697 [1.001]			-0.57698 [-0.437]	0.44548 [0.511]
<i>Dividend per share</i>		0.00875 [0.626]	0.01279 [1.176]			0.07529 [0.996]	-0.02857 [-0.412]
<i>Constant</i>	37.4214 [5.245] ***	8.52448 [1.228]	30.6684 [3.228]* **		-173.503 [-7.475] ***	3.53418 [1.277]	-173.912 [-7.493] ***
Key Regression Statistics							
R-squared	0.4182	0.0192	0.4278		0.5131	0.0132	0.5215
Adjusted R-squared	0.3460	-0.0983	0.3494		0.4527	-0.1051	0.4560
DW stats.	3.2797	2.2170	3.2607		3.1933	3.2657	3.1478
F Fisher test (- stats.)	5.7938** *	0.1636	5.4608** *		8.4938** *	0.1112	7.9629***

	<i>Practical significance for Macro, Microeconomic determinants: Effect Size</i>					
<i>Inflation</i>	0.573		0.627		1.859	1.873
<i>Inflation squared</i>	-0.212		-0.264		-2.515	-2.438
<i>Exchange rate</i>	1.021		0.952		1.139	1.160
<i>Interest rate</i>	-0.941		-0.959		1.142	-1.044
<i>Debt-to-equity ratio</i>		0.448	0.458			0.298
<i>Quick ratio</i>		0.252	0.124			-0.054
						0.063

Table 10. Macro, Microeconomic determinants and Stock market returns: FEM model

Dependent variables: Stock Market Returns

Method: 1-step dynamic panel data (with Asymptotic standard errors)

	<i>Egypt</i>				<i>Germany</i>		
	<i>Reg (7)</i>	<i>Reg (8)</i>	<i>Reg (9)</i>		<i>Re g (1 0)</i>	<i>Reg (11)</i>	<i>Reg (12)</i>
<i>Stock Market Returns(-1)</i>	-0.85 001 [-38. 67]***	-0.06 579 [-1.9 91]**	-0.87 801 [-40. 39]***		-0. 78 73 9 [-2 6.8 3]** *	-0.584 83 [-14.0 3]***	-0.79 194 [-27. 30]***
<i>Inflation</i>	8.72 172 [35. 16]***		7.914 13 [30. 66]***				
<i>Inflation squared</i>	-0.12 610 [-21. 43]***		-0.10 669 [-17. 42]***		-5. 60 83 7 [-2 3.5 6]** *		-5.75 790 [-23. 56]***
<i>Exchange rate</i>	2.94 573 [23. 10]***		3.284 03 [25. 20]***		11 6.6 20 [8 .65 6]** *		115.9 26 [8.5 05]***
<i>Interest rate</i>	-7.77 144 [-21. 65]***		-7.90 285 [-22. 46]***		-35 .54 21 [-1 9.0 0]** *		-37.5 067 [-17. 44]***

					*		
<i>Debt-to-equity ratio</i>		0.561 00 [1.9 61]**	0.146 11 [1.2 90]			4.9413 3 [4.360]***	0.024 47 [0.0 27]
<i>Quick ratio</i>		3.524 56 [3.1 65]***	-0.96 208 [-2.1 86]**			-1.7800 0 [-1.36 7]	1.338 03 [1.5 08]
<i>Dividend per share</i>		-0.04 362 [-3.6 22]***	-0.05 125 [-8.7 19]***			0.1591 6 [1.314]	-0.22 584 [-2.6 89]***
Key Regression Statistics							
No. of instruments	8	11	11		8	11	11
Test for AR(1) errors	1.65 21*	-4.83 74***	0.32 25		-1 8. 98 4** *	-4.9678** *	-18.4 59***
Test for AR(2) errors	-17.7 95***	2.92 57***	-16.2 78***		1 0. 39 5** *	-7.6879** *	10.1 97***
Sargan over- identification	325. 54***	387. 89***	298. 18***		2 01 .4 5** *	219.57***	202. 19***
Wald (joint) test	4459 .2***	29.4 73***	4760 .2***		1 06 7. 8** *	218.1 3***	1106 .8***
Practical significance for Macro, Microeconomic determinants: Effect Size							
<i>Inflation</i>	4.60 7		4.04 3		-3. 08 0		-3.09 6
<i>Inflation squared</i>	-2.80 8		-2.29 7				
<i>Exchange rate</i>	3.02 7		3.32 3		1. 13 2		1.11 2
<i>Interest rate</i>	-2.83 7		-2.96 2		-2. 48 4		-2.28 0
<i>Debt-to-equity ratio</i>		0.25 6	0.17 0			0.570	0.00 4

<i>Quick ratio</i>		0.41 4	-0.28 8			0.179	0.19 7
<i>Dividend per share</i>		-0.47 4	-1.14 9			0.172	-0.35 2

Table 11. *Macro, Microeconomic determinants and Stock market returns: GMM model*
Note: - ***, **, * indicate significance at 1%, 5% and 10% respectively. - z-Statistic in parentheses.

The findings from both the fixed effects and dynamic panel models point to the overwhelming role of macroeconomic conditions in shaping stock market performance. Inflation consistently emerges as a key driver, but its impact is nonlinear, turning negative once it exceeds certain thresholds. These thresholds differ sharply between the two countries, with the Egyptian market tolerating much higher inflation levels before the relationship turns harmful, while the German market reacts negatively even to relatively low levels. Exchange rate movements are also important, showing a positive effect on stock returns, particularly strong in the German case. Interest rates, on the other hand, exert a downward pressure on returns in both countries, though this influence is more pronounced in Egypt. Taken together, these results explain a substantial share of stock market variation — close to half in both contexts — and confirm that broader economic conditions are the most powerful determinants of stock returns. **This evidence strongly supports Hypothesis 1.**

In contrast, the role of microeconomic indicators appears weak and inconsistent. For Egypt, a higher debt-to-equity ratio is linked with stronger returns, which may reflect investor optimism in the face of leverage in a growing market. Germany, however, shows the opposite, with leverage viewed negatively, in line with developed market behavior where debt is often associated with higher risk. The quick ratio only matters in Egypt, while dividends per share show no meaningful impact in either country. These results hold in both estimation approaches, although the exact level of significance shifts depending on the specification. The explanatory power of these firm-level factors is negligible compared with the macroeconomic results, accounting for only a tiny fraction of the variation in returns. **These findings lead to the rejection of Hypothesis 2, as microeconomic variables alone do not meaningfully explain stock market performance.**

When the models incorporate both macroeconomic and microeconomic variables together, the dominance of macro factors becomes even clearer. Inflation continues to show a nonlinear relationship with returns, the exchange rate remains positively associated, and interest rates retain their negative influence. Once these macro variables are included, the micro factors almost entirely lose their significance. The debt-to-equity ratio does maintain its contrasting behavior across the two countries — positive in Egypt and negative in Germany — but its effect is minor compared with the macroeconomic drivers. Other micro variables such as the quick ratio and dividends drop out of significance altogether, suggesting that their earlier effects were not robust when tested alongside the broader economic environment. **These results provide strong support for Hypothesis 3, confirming that macroeconomic influences dominate when both sets of variables are considered.**

The comparison between Egypt and Germany highlights the structural differences between emerging and developed markets. Germany's stock returns respond strongly to exchange rate changes, while Egypt's are more sensitive to interest rates. The inflation thresholds illustrate a stark contrast: in Egypt, high inflation can still coincide with positive returns until very high levels are reached, whereas in Germany even small

increases beyond low inflation levels tend to harm returns. Among the microeconomic variables, the debt-to-equity ratio is the only one to consistently behave differently across the two countries, reinforcing the idea that leverage carries different meanings in different market contexts. Statistical testing further supports these cross-country differences. **These patterns confirm Hypothesis 4, showing that the determinants of stock returns are not uniform but shaped by the distinct characteristics of each market.**

4 Discussion

The dialogue confirmed the dominance of macroeconomic factors over firm-specific variables in determining stock market returns, consistent with most literature. Exchange rate, inflation, and interest rate performed as indicated by prior research by Fama, Boyd, and Barro. Inflation confirmed the inverted U-shaped relationship, but with very different thresholds: Egypt recorded a high tolerance rate of around 48.9 percent, while Germany had much lower 2.1 percent. This indicates that investors in Egypt have a higher tolerance for inflation levels before they act in an unfavourable way, while German markets respond unfavourably even to modest rises. The exchange rate also positively affected the two countries, driven by Germany's trade competitiveness and enhanced investor appeal in Egypt. Interest rates, on the other hand, always had a negative effect on stock performance, and that effect was more pronounced in Egypt due to the existence of tighter financing.

Conversely, microeconomic variables had more context and variable effects. The debt-to-equity measure was a favorable factor in Egypt, where it signals growth and expansion potential, but an unfavorable one in Germany, where higher leverage is risky. Similarly, the quick ratio was of applicability only in Egypt, where short-run liquidity concerns are a top priority in developing countries. Dividends per share, on the other hand, showed no specific function in either country, a result consistent with most prior research.

When macroeconomic and microeconomic variables were combined in one model, macroeconomic proxies dominated firm-specific measures. This demonstrated that aggregate economic conditions have much more important roles to play in shaping stock return behavior, particularly in emerging economies like Egypt. Cross-country comparison also supported structural, institutional, and behavioral heterogeneity, as it showed how the same variables operate differently depending on the market. These findings confirm that there isn't a single standard model that will explain stock market behavior across different economies; instead, country-specific analyses are essential in order to make accurate investment plans and policy actions.

5 Conclusions

This thesis investigated the impact of macroeconomic and microeconomic variables on Egyptian and German stock market returns as a representative of emerging and developed markets. The findings confirmed that macroeconomic variables, i.e., inflation, exchange rate, and interest rate, imposed a significant and systematic influence on returns in both countries. Inflation showed a nonlinear influence, with Egypt having a considerably higher tolerance threshold than Germany because of the difference in market structures and investors' attitude.

By comparison, microeconomic variables exerted a weaker and less stable impact. For Egypt, for instance, both the debt-to-equity ratio and quick ratio mattered, but for Germany none of the firm-level indicators had any impact. This divergence highlights that investors in emerging markets put greater emphasis on near-term financial health, whereas in developed markets broader economic forces are more decisive.

The joint models reconfirmed that macroeconomic conditions explain a much larger share of stock market movement than micro-level variables, and that the same variables have opposite effects in different nations. Statistical tests also reconfirmed the presence of considerable structural differences between Egypt and Germany in inflation, exchange rates, and liquidity variables.

Overall, the study concludes that stock market behavior is highly explained by overall economic conditions and must be interpreted within the local institutional and investor setting. Such conclusions are helpful to investors, analysts, and policymakers making market-specific decisions. Future research should expand the coverage by adding more countries, sectoral analyses, or other determinants such as political risk and international shocks to have a more complete picture of market performance.

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