

## Macroeconomic Factors of Stock Market Development (The Case of Saudi Arabia)

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### Abstract

Most economists recognize that a healthy capital market can enhance economic growth. In 2016, Saudi Arabia launched Vision 2030, and the Financial Sector Development Program is part of the Vision. The program aims to achieve economic diversification, reduce oil dependence, and trigger economic growth. Capital market development has an integral part to play in achieving Vision 2030 goals. For this reason, it is essential to investigate the factors that could influence it. The literature on the impact of macroeconomic factors on the stock market development is inconclusive; thus, it is difficult to generalize the outcome of previous studies. This research investigates the macroeconomic and institutional determinants of stock market development in Saudi Arabia from 2008 to 2021 by using a multiple linear regression approach. Following previous research, our analysis explores the impact of several factors, including Global Trade Openness, Market Depth, Macroeconomic Stability, Control of Corruption, Income level, Private capital flows, Financial intermediary development, Economic Development, Domestic Savings and investment. Among the nine evaluated factors, only four were significant. We find that the determinants of stock market development in Saudi Arabia are Economic Development, Income level, Control of corruption, and Market Depth.

**Keywords:** Stock market development, Macroeconomic Factors, Economic Growth, Saudi Arabia, Vision 2030

## 1. Introduction

Stock markets are essential to developing a country's financial system since the market acts as an investment channel that mobilizes the accumulated savings toward different instruments. A well-developed market fosters risk sharing among economic agents. Actually, stock markets improve capital allocation, provide liquidity, and reduce risk. Stock market development is essential to sustainable economic growth, and most economists recognize that a healthy capital market plays a vital part in a well-functioning financial system and can enhance economic growth. This view is supported by Levine & Zervos (1998), who argue that the development of the financial sector, particularly the stock market development, enhances economic growth. Numerous fundamental studies, such as (Mckinnon, 1973; Shaw, 1973; Roubini & Sala-I-Martin, 1992; King & Levine, 1993a; King & Levine, 1993b) have linked stock market development and long-run and short-run economic growth. The authors have documented a positive and statistically significant association. Therefore, the development of the overall financial sector within a country and the advancement of the performance of the stock markets is a strategic goal for developing and emerging countries, and Saudi Arabia is no exception.

In 2016, Saudi Arabia announced the Financial Sector Development Program, which is part of the Saudi Vision 2030. The Vision aims to achieve economic diversification and reduce oil dependence. In fact, capital market development is integral to achieving the Vision 2030 goals, and the plan consists of forming an advanced capital market with diversified asset classes. Over the past few years and since the announcement of the Saudi Vision, the Saudi Arabian capital market has been developing following the Vision's outlined plan. Sarah Al-Suhaimi, Saudi Tadawul Group's chairperson, states, "The future of the capital markets needs to be built, not to be anticipated." For this reason, it is essential to investigate and understand macroeconomic factors that contribute to stock market development in the context of Saudi Arabia. This can support policymakers in their decision-making process, as they will have a clear guide to creating necessary policies to enhance stock market development, which will trigger economic growth.

A considerable amount of literature has investigated the relationship between several macroeconomic factors and the developments of the stock market in developed and emerging economies around the world (for example, Forti et al., 2011; Phan & Vo, 2012; El-Nader & Alraimony, 2013; Shahbaz et al., 2016; Acquah-Sam, 2016; Thanh et al., 2017; and Batayneh et al., 2021).

However, researchers have no complete consensus on the robust determinants of stock market development. This implies that no specific universal set is known to enhance the development of stock markets.

Many investigated the impact of factors such as economic development, market stability, interest rate, exchange rate, stock market liquidity, and foreign direct investment. However, as discussed, the literature on the relationship between macroeconomic factors and the stock market is largely inconclusive. Therefore, it is difficult to generalize the findings of previous studies since different countries have different backgrounds, economic environments, social environments, rules, and regulations. Thus, outcome generalizing is difficult or impossible.

Although intensive research has been conducted on the determinants of stock market developments, there has been relatively little literature focusing on the development of stock markets in Saudi Arabia. In fact, to our knowledge, most available literature on the context of Saudi Arabia investigates the long-run and the short-run relationship between Macroeconomic Forces and Saudi stock market returns, such as Al Rasasi et al. (2019), Alshogheathri (2011), Kalyanaraman & Al Tuwajri (2014), and Mohanty et al. (2018).

This paper aims to conduct a detailed analysis and identify the most important determinants of stock market development in Saudi Arabia. We aim to test the statistical relationship between numerous macroeconomic factors and stock market development. The significance of this study is clear because it attempts to fill the gap in the literature and answers whether the most commonly investigated macroeconomic and institutional factors produce “positive” or “negative” effects on the development of the stock market in Saudi Arabia. We investigate the impact of several macroeconomic variables on the stock market development. The factors include Global Trade Openness, Market Depth, Macroeconomic Stability, Control of Corruption, Income level, Financial intermediary development, Economic Development, Private capital flows, and Domestic Savings and investment. This research paper answers the following essential questions:

- Whether current laws and legislation in Saudi Arabia support the stock market development?
- What are the macroeconomic determinants of stock market Development?
- What are the institutional determinants of stock market Development?
- What are the most important determinants of stock market development in Saudi Arabia?

To answer these questions, we use the (MLR) multiple linear regression model to analyze the adopted set of macroeconomic and institutional variables and investigate its impact from 2008 to 2021.

As for the research structure, this research paper is structured as follows: In section 2 we review previous literature and cover the theoretical framework that links the selection of variables to established economic theories. In section 3, we report the sample of data collected and the technique used to answer the research questions. Section 4 discusses the Descriptive statistics of the study variables and other performed tests. Finally, in section 5, we show and discuss our empirical evidence and conclude the research paper in section 6.

## 2. Literature Review

A considerable amount of literature has investigated the effects of macroeconomic and institutional factors on the stock market development in developed and emerging economies. Ho et al. (2017) summarize existing literature investigating stock market developments and the factors that could influence the development in numerous countries. The study classifies the determining factors of stock market development into (i) factors at the macroeconomic level and (ii) factors at the institutional level. As for the first group(i), they state that an increase in variables such as real income and income growth rate, interest rate, and private capital can enhance the development of the stock market. Meanwhile, market stability and exchange rates have a negative impact on stock market development. As for the second group (ii), numerous studies suggest that the development of stock markets is enhanced by providing legal protection for investors, trade openness, and financial liberalization.

Ho (2019) investigated the development of the stock market in South Africa. To better understand the determinants that could enhance market development, the author employed an ARDL bounds testing procedure. Their dataset incorporates information covering the period from 1975 to 2015. The researcher analyses the long-run associations between several factors at the macroeconomic level and the development of the stock market. They analyze the “banking sector development, interest rate, economic development, inflation rate, and trade openness.” The study findings confirm that factors such as “the development of the banking sector and higher economic growth” contribute to an increase in stock market development. On the other hand, factors such as the inflation rate and real interest rate constrain stock market development. Contrary to expectations,

this research shows that trade openness significantly and negatively impacts stock market development.

Similarly, others, such as Forti et al. (2011), report that trade openness can negatively impact the stock market development. The study examines factors affecting the stock market development in a unique sample of 50 Developed and emerging economies. The study is divided into two different phases: in the first phase, the researchers examined 60 potential determinants, while in the second phase of the analysis, they narrowed the list down to 12 factors. To achieve the study objectives, the researchers employed MLS multiple regression. They report a positive and significant impact of variables such as Stock Market Efficiency and Management Practices on the stock market development.

Thanh et al. (2017) investigated the determinants of stock market development in Vietnam and 36 other developing countries from 2003 to 2013. The researchers completed their investigation using two away Generalized methods of moments. They report a positive association between stock market development and economic growth, domestic credit, stock market liquidity, government effectiveness, and rule of law. However, they found that money supply and corruption negatively influence the development of stock markets.

El-Nader et al. (2013) investigated the stock market development in Jordan, and their analysis covered the period between 1990 and 2011. In order to achieve the study objectives, the authors employed a “multivariate cointegration and variance decomposition analysis.” The researcher concludes that many variables positively impact the development of the stock market, namely money supply, market liquidity, inflation, gross capital formation, and credit to the private sector. Contrary to expectations, the researcher argues that the gross domestic product (GDP) has a statistically negative impact on the development of Jordan’s stock markets.

Likewise, Batayneh et al. (2021) investigated the factors impacting the development of the financial sector in Jordan from 1993 to 2018. They analyze the long-run along with the short-run impacts of inflation and economic growth. In their analysis, the authors adopt an “auto-regressive distributed lag-bound testing approach.” Their results confirm that higher inflation is negatively associated with the financial sector development in the long- and short-run. On the other hand, they conclude that there is a statistically significant association between economic growth and the financial sector performance in the long- and short-run.

Others, such as Matadeen (2017), build on previous research and contribute to the existing literature by examining the macroeconomic factors that contribute to the development of the stock market in Sub-Saharan Africa. The researcher employed a dynamic Panel Vector Error Correction Model. The study concludes that “economic growth, banking sector development, stock market liquidity, and market stability” are essential to the development of the stock market in sub-Saharan Africa.

In general, theories do not provide a clear path regarding selecting variables to be included in economic models. Several theories suggest diverse factors that influence stock market development. The most common factors under investigation are economic development, market stability, interest rate, exchange rate, stock market liquidity, foreign direct investment, domestic investment, money supply, Control of corruption and global trade openness (Greenwood & Smith, 1997; Boyd et al., 2001; Jeffus, 2004; Ake, 2010; Forti et al. 2011; Niroomand et al. 2014; Şükrüoğlu et al. 2014; Fufa & Kim, 2018; and Ho et al. 2017; Ho, 2018).

With respect to economic development, in theory, there is a positive relationship between stock market development and economic growth. The establishment of capital markets depends on economic growth. Researchers believe that the real GDP level and its growth positively impact financial market development. When financial intermediaries are created, huge fixed costs are incurred. However, an increase in economic development will reduce these costs, leading to an increase in the number of market participants. This indicates that more people and investors can benefit from the services (Greenwood & Smith 1997; Boyd & Smith 1998).

A considerable amount of literature has been published on the link between the Stock market development and economic growth. There is a general consensus among researchers that a positive reciprocal association exists between the variables. Several studies have revealed a significantly positive association (Atje & Jovanovic, 1993; Levine & Zervos, 1998b; Arestis et al., 2001; Enisan & Olufisayo, 2009; Shahbaz et al., 2008; Adjasi & Biekpe, 2006; Akinlo & Akinlo, 2009; Ake, 2010; Forti et al., 2011; Ngare et al., 2014; Fufa & Kim, 2018; and Ho, 2018; Batayneh et al., 2021).

As for the private capital inflow that is represented by Foreign direct investment, there are two contrasting views. Hausmann & Fernández-Arias (2000a) and Hausmann & Fernández-Arias (2000b) support the view that Foreign direct investment can act as a substitute for stock markets,

particularly in weak financial markets. FDI inflows are higher in underdeveloped and riskier economies. Thus, this implies that a negative association exists between FDI and stock market development. Others, such as Raza & Jawaid (2014) and Wang (2009) support this view.

On the other hand, Claessens et al. (2001) argue that FDI promotes stock market development. Foreign direct investment inflows are higher in developed and institutionally strong economies. Several studies, such as (Abdul Malik & Amjad, 2013; and Raza et al., 2015), have documented the positive relationship between Foreign Investment and stock market development.

Similar to Private capital flows, the literature on the link between Financial intermediary development and the stock market development is mixed. Authors argue that as a financial intermediary develops, it can act as a substitute for stock markets. Others, on the other hand, support the view that the financial intermediary's development is essential to the development of the stock market since it is a crucial component of the overall financial system.

As for domestic saving and investment, several theoretical studies have documented that domestic savings and investment positively impact stock market development. As domestic savings increase, more capital will be mobilized through stock markets toward projects (Garcia & Liu, 1999).

Moreover, when we talk about the income level, several theoretical studies have documented that financial market development increases as the income level increases within a country. A general consent exists in the existing literature, arguing that the real income level has a positive impact on financial market development (Garcia & Liu, 1999; Yartey, 2010; and Dinh et al., 2017).

With respect to trade openness, several studies have documented a positive. It is expected that trade openness enhances the developments in stock markets. According to Levine & Zervos (1998a), the liquidity of stock markets tends to increase with fewer restrictions. When restrictions are eased, stock markets tend to grow larger and become internationally integrated. Trade openness benefits the development of stock markets through both the demand side and the supply side. Studies investigating the impact of market openness yield mixed results. Studies such as Niroomand et al. (2014) and Vazakidis & Adamopoulos (2009) report a positive impact. Others, such as Forti et al. (2011) and Ho (2019), found that trade openness negatively impacts stock market development.

Regarding the market depth, it measures how liquid a market is. It measures the speed by which an investor can turn his investment into cash (Garcia & Liu, 1999). Same as financial intermediaries, stock markets connect savings to investment. Liquid markets are expected to improve the process of capital allocation and investment in the long run (Levine & Zervos, 1996). A liquid stock market reduces the risk and costs associated with investment portfolios, allowing investors to change their portfolios quickly and without delay (Garcia & Liu, 1999). Thus, increased liquidity in the stock market can lead to stock market development.

As for macroeconomic stability, the theoretical prediction indicates that higher instability negatively impacts the market. Higher inflation rates tend to reduce the market size and liquidity; therefore, higher inflation is associated with smaller markets. According to Boyd et al. (2001), the real rate of return is reduced by higher rates of inflation; in turn, agents are less willing to lend and more likely to borrow. This will reduce the amount of loanable funds and will lead to an increase in credit market frictions. This means fewer loans, inefficient resource allocation, and reduced capital investment. In the end, this will negatively impact the market performance. Numerous studies have found that the inflation rate has a negative and significant effect on the development of financial markets (Batayneh et al., 2021; Huybens & Smith, 1998; Huybens & Smith, 1999; Azariadas & Smith, 1996; Choi et al., 1996; Boyd et al. 2001).

Many developed and emerging countries usually embark on privatization, market deregulation and global trade openness to improve market outcomes. However, corruption, such as illegal payments, can act as a barrier to market efficiency (Bardhan, 1997). A high level of corruption is associated with operational inefficiencies. Chowdhury et al. (2023) state that “corruption forces firms to incur an additional fixed cost before they can operate and list on the stock market, a cost that could be thought of as necessary to pay bribes or overcome excessive red tape.” According to Chowdhury et al. (2023), who use a panel data set of 87 countries from 1995 to 2017, a reduced level of corruption increases the stock market development, especially in developed economies; however, the relationship is insignificant in developing countries. Corruption could affect various aspects of the stock market. For example, according to Lakshmi et al. (2021), increased corruption in Brazil reduces stock market returns.

An opposing view supports that corruption improves investment activity, particularly when the quality of economic institutions are weak and the growth potentials are high (Huntington, 1968). In general, encouraging investment activity and attracting potential investors is essential for the



stock market and economic development. In fact, corruption could hasten private capital mobilization. When the legal framework is weak, corruption can aid in avoiding delays in required business practices, for example, obtaining permissions and licensing activities (Leff, 1964; Lui, 1985). Studies such as Krammer (2019) have lent support to this argument.

As discussed, the results in previous studies are still inconclusive since different countries have different backgrounds, economic environments, rules, and regulations. Thus, one cannot generalize the findings of previous studies. Therefore, it is essential to understand what actually are the determining factors of stock market development in Saudi Arabia. Thus, we need to bridge this gap by examining the impact of several factors at both the macroeconomic level and the institutional level in Saudi Arabia.

### 3. Data and Research Methodology

Due to the nature of the study problem, we rely on historical data in our analysis. A comprehensive dataset has been collected to understand the macroeconomic factors of the stock market development in Saudi Arabia. The data analysis is executed using Stata statistical software. The sample incorporates annual time series information covering ten variables between 2008 and 2021. The selection of variables and the study period have been dictated by data availability. Apart from availability, we rely on variables identified in previous research. The macroeconomic determining factors of Stock Market development have been assembled using three sources: (i) UNCTAD, (ii) the World Development Indicators of the World Bank, and (iii) the Saudi Central Bank (SAMA) statistical report. A summary of the descriptive statistics for the sample under investigation can be found in **Table 2**.

Numerous studies investigating the Macroeconomic factors of stock market development employ a cross-sectional approach to assess the relationship, and the equation can be written in the following form:

$$Y_i = \alpha + \sum_{i=1}^n \beta_i X_i + \varepsilon_i, \quad (1)$$

where  $Y_i$  the dependent variable vector that refers to the Stock Market Development,  $X_i$  refer to the list of explanatory variables under examination,  $\beta_i$  denotes the coefficients on the explanatory variables,  $i$  denoted countries,  $\alpha$  is a constant and  $\varepsilon$  is the error term.

Studies such as (Forti et al., 2011; El-Nader et al., 2012; La Porta et al., 1997, 1998) used multiple regression to investigate factors impacting the stock market development. Various methods have been proposed to address this problem, such as (ARDL bounds testing procedure and Time-series VAR model). However, in this research paper, we adopt an MLR multiple linear regression model to analyze the set of macroeconomic variables. We use equation 1 to explain factors that enhance the stock market development. In our analysis, we follow studies such as (Forti et al. 2011; El-Nader et al. 2012).

The theoretical and empirical literature guide the model specification. The variables included in this study have been investigated in previous literature that focuses on emerging and developed markets. The robustness of those variables has already been established, but not in the context of Saudi Arabia. Thus, in this study, we examine the impact of 9 factors on the development of the Stock market in Saudi Arabia. In connection with the previous discussion, the empirical model is expressed as follows:

$$Y_i = \alpha + \beta_1 X_{i1} + \beta_2 X_{i2} + \beta_3 X_{i3} + \beta_4 X_{i4} + \beta_5 X_{i5} + \beta_6 X_{i6} + \beta_7 X_{i7} + \beta_8 X_{i8} + \beta_9 X_{i9} + \varepsilon_i$$

Where,

$Y_i$ : Stock Market Development

$X_{i1}$ : Global Trade Openness

$X_{i2}$ : Stock Market Depth

$X_{i3}$ : Macroeconomic stability

$X_{i4}$ : Control of corruption

$X_{i5}$ : Income level

$X_{i6}$ : Private capital flows

$X_{i7}$ : Financial intermediary development (Money supply)

$X_{i8}$ : Economic development

$X_{i9}$ : Domestic Saving and investment

In the multiple regression model, Stock Market Development SMD is the dependent variable, while the remaining variables are explanatory. The variables under examination are Global Trade Openness, Market Depth, Macroeconomic Stability, Control of Corruption, Income level, Private capital flows, Financial intermediary development, Economic Development, Domestic Savings

and investment. Following Yartey (2008), we use market capitalization as a percentage of GDP as the dependent variable and a proxy for the Stock Market development. This measure is considered a good proxy since it consists of stock market size and liquidity. Whereas Table 1 presents the set of explanatory variables under examination.

**Table 1: List of Explanatory Variables**

<b>Variable</b>	<b>Expected Relationship</b>	<b>Definition</b>
<b>Global Trade Openness</b>	(+)	It is measured by exports plus imports over GDP.
<b>The Market Depth</b>	(+)	Refers to the market depth and liquidity and refers to the capability to buy and sell shares quickly. It is measured by the total value of shares traded in percentages of GDP
<b>Macroeconomic Stability</b>	(-)	This is measured by the inflation rate.
<b>Control of Corruption</b>	(+)	Corruption estimates of a country. Refer to regulations to control corruption, corruption refers to the degree by which power is exercised for private gain.
<b>Income level</b>	(+)	It is measured by gross domestic product divided by population. GDP Per capita refers to the income level earned.
<b>Private capital flows</b>	(+)	Measured by Foreign direct investment inflows (FDI)
<b>Financial intermediary development</b>	(+)	It is measured by domestic credit to the private sector and broad money supply.
<b>Economic Development</b>	(+)	It is measured by the GDP. Refer to the profitability and productivity of a country.
<b>Domestic Savings and investments</b>	(+)	Measured by Gross domestic savings and investment

#### 4. Descriptive Statistics of the Study Variables

A summary of the descriptive statistics for the entire sample under investigation is clearly presented in Table 2. The table reports statistics for all variables under examination (Global Trade Openness, Market Depth, Macroeconomic Stability, Control of Corruption, Income level, Private capital flows, Financial intermediary development, Economic Development, Domestic Savings and investment.), along with means, min, max and Kurtosis and Skewness. The descriptive statistics, as seen in Table 2, indicate that there is no randomness in the data. Moreover, unit root tests are performed (Dickey and Fuller, 1979; 1981) before Ordinary Least Square (OLS) regression. Table 3 shows the results for the augmented Dicky fuller test, and it indicates that the null hypothesis is rejected and all data are stationary. Thus, we can proceed with our analysis and investigate the impact of the macroeconomic factors on the stock market development using multiple regression.

**Table 2: Descriptive Statistics for the stock Market Development and macroeconomic variables**

Variable	Mean	Kurtosis	Skewness	Minimum	Maximum
<i>Stock market development</i>	113.6585746	0.628327184	1.573249799	47.43007827	330.818153
<i>Global Openness</i>	274530.6571	-1.364504246	0.172154576	173864	388369.6
<i>The Market Depth</i>	55.7817178	-0.508566035	0.332454748	26.32864566	100.679085
<i>Macroeconomic Stability</i>	3.145604518	1.479812362	0.448792976	-2.093333333	9.87024791
<i>Control of Corruption</i>	0.109154827	-0.055609315	-0.468893219	-0.312528074	0.3592267
<i>Income level</i>	80279.68051	0.230229491	-0.873906132	56492.3673	90658.4367
<i>Financial intermediary development</i>	60.24185293	-1.186264339	0.039998932	48.10371	72.3704423
<i>Economic Development</i>	6.96753E+11	-0.01735685	-0.729850864	4.29098E+11	8.6859E+11

<i>Private capital flows</i>	14358589710	0.110505786	1.157728186	1418843614	3.9456E+10
<i>Domestic Savings and investment</i>	2.8038E+11	-1.264093783	-0.032754771	1.76077E+11	3.8486E+11

**Table 3: The Results of Unit Root Test for macroeconomic variables**

Variable	ADF Unit Root test
<i>Global Openness</i>	-2.774
<i>Stock Market Depth</i>	-3.109
<i>Macroeconomic Stability</i>	-4.058
<i>Income level</i>	-4.208
<i>Private capital flows</i>	-6.478
<i>Financial intermediary development</i>	-2.513
<i>Domestic Savings and investment</i>	-3.536
<i>Economic Development</i>	-3.330

Note: MacKinnon's (1996) critical values of 1%, 5% & 10% for ADF are -2.5742 and -1.9410 and -1.6164, respectively.

## 5. Empirical Evidence and Discussion

Table 4 summarizes statistics for all variables under examination, including Global Trade Openness, Market Depth, Macroeconomic Stability, Control of Corruption, Income level, Private capital flows, Financial intermediary development, Economic Development, Domestic Savings and investment, along with R-squared, Adjusted R-squared and Durbin Watson statistics.

It is apparent from Table 4 that the Durbin-Watson statistic is equal to 2.4, which is within the acceptable range of 1.5 to 2.5; therefore, the OLS estimation is efficient. Moreover, it is evident that only four were significant among the nine evaluated factors. Overall, our study findings reveal that the determinants of stock market development in Saudi Arabia are Economic Development, Income level, Control of corruption, and Market Depth. The calculated coefficients of Economic Development, Income level, Control of corruption, and Market Depth are significant at 1%, 5%, and 10%, respectively, While the remaining variables are insignificant.

The results, as shown in Table 4, indicate that there is a positive correlation between Economic growth and stock market development. It is evident that the coefficients are positive and highly significant at the 1% level. The positive coefficient indicates that as GDP increases in Saudi Arabia, the stock market development increases as well. As the economy grows, investors and firms increase their participation in the stock markets. Our findings are consistent with the findings of numerous studies (Atje & Jovanovic, 1993; Levine & Zervos, 1998b; Arestis et al., 2001; Enisan & Olufisayo, 2009; Shahbaz et al., 2008; Adjasi & Biekpe, 2006; Akinlo & Akinlo, 2009; Ake, 2010; Forti et al., 2011; Ngare et al., 2014; Matadeen, 2017; Fufa & Kim, 2018; Ho, 2018; and Batayneh et al., 2021)

As for trade Openness, the results obtained are contrary to our expectations. The results show a negative, insignificant association between trade openness and development in the Saudi stock market. Our findings are consistent with Forti et al. (2011) and Ho (2019). The negative coefficient validates the economic protectionism approach (Aaken & Kurtz, 2009; Hill, 2010) and contradicts the free trade theory (Smith, 1776; Ricardo, 1817; and Leamer, 1995). Economic protectionism is a trade policy developed or underdeveloped countries use to restrict international trade to help domestic industries. However, extreme economic protection might harm the country in the long term since it will impact a particular country's ability to compete in international trade.

Moreover, the test statistics show that the Market Depth coefficients are statistically significant and positive. Indicating that as the market liquidity increases, the Saudi stock market's development also increases. Liquidity is an important function in a stock market, and it reduces investment risk, since investors can alter and change their investment portfolios quickly and with less costs. According to Levine and Zervos (1996), market liquidity can enhance capital allocation and investment in the long run. This, in turn, could promote development in stock markets. The positive link between Market Depth and stock market development tends to support (John et al., 2010; Greenwood & Smith, 1997; Matadeen, S., 2017; Chiad et al., 2022)

As for the macroeconomic stability that is measured by the inflation rate, our findings suggest that Macroeconomic Stability has a negative and insignificant association with stock market development. This finding is expected and validates the findings of Boyd et al. (2001) and Matadeen (2017). As discussed, smaller and less liquid markets are associated with higher inflation rates. Inflation reduces the rate of return, incentives to lend, and the availability of loanable funds.

Consequently, this reduces the number of loans made, less efficient allocation, and activity within the financial sector. This, in turn, will negatively impact stock market performance.

This research did not find a positive impact on stock market development regarding corruption control. Contrary to expectations, this research records a statistically significant and negative correlation between corruption control and stock market development. A very common example of corruption is illegal payments. The common view is that high corruption is associated with operational inefficiencies and can act as a barrier to market efficiency (Bardhan, 1997). Thus, a positive link is expected with the rules that controls corruption. Control of corruption refers to regulations to control and minimize private gain by exercising power.

However, our finding supports Krammer's (2019) and Lui's (1985) arguments. Corruption can enhance investment activity in the presence of weak institutions and high growth (Huntington, 1968). Corruption could promote private capital mobilization, since it can aid in avoiding delays in business practices, for example, licensing processes (Leff, 1964; and Lui, 1985). Investors can see this as an opportunity to avoid excessive rules and regulations.

In contrast to earlier findings, our finding suggests a significant and inverse association exists between Income level and stock market development. A possible explanation for this result is that low-income levels tend to increase physical capital investment, which can impact economic growth and development of markets in a positive way (Chen, 2022)

Our results on the banking sector development indicate a positive relationship between Financial intermediary development and stock market development; however, the coefficients are insignificant. Our study supports the view that the financial intermediary's development is essential to the development of the stock market since it is an important component of the overall financial system. Our results are consistent with the work of (Garcia & Liu 1999, Yartey 2007, 2010; Ho, 2018; Matadeen, 2017).

As for Private capital flows, the greater the savings, the higher the flow to stock markets. Looking at the coefficients of Private capital flows and Domestic Savings and investment, it is obvious that both factors positively correlate with stock market development; however, both are insignificant. The findings in the present study are consistent with the findings of (Raza et al., 2012; Abdul Malik & Amjad, 2013; Raza et al., 2015; El-Nader & Alraimony, 2013; Shahbaz et al., 2016; Raza et al., 2015; and Acquah-Sam, 2016)

These findings suggest that Private capital flows and Domestic Savings and investment promote development in stock markets. As domestic savings and FDI increase, more capital will be mobilized through stock markets toward projects, which will enhance participation and liquidity. Foreign direct investment inflows are higher in institutionally strong countries. Private capital flows can enhance the development of capital markets by improving firms' involvement in capital markets and increasing the market liquidity (Claessens et al. 2001). Several studies have revealed that FDI can enhance capital market development and trigger economic growth. For example, Vehorn & Vasarevic (2011) find that Private capital flows and Domestic Savings and investment significantly and positively impact economic growth. To attract foreign direct investment inflows, Saudi Arabia is undergoing economic reforms and setting new policies and regulations to increase income and enhance competitiveness. Saudi Arabia aims to increase Foreign direct investment to reach 5.7% of GDP by 2030.

**Table 4: Summary of estimation of the impact of the factors under investigation.**

<i>Variable</i>	<i>Coefficients</i>	<i>t Stat</i>	<i>P-value</i>
<i>Global Openness</i>	-0.00086	-0.56	0.608
<i>The Market Depth</i>	2.7325	1.94*	0.125
<i>Macroeconomic Stability</i>	-8.6765	-0.72	0.509
<i>Control of corruption</i>	-313.52	-1.94*	0.125
<i>Income level</i>	-4195.6	-2.51**	0.066
<i>Private capital flows (FDI)</i>	31.212	1.17	0.306
<i>Financial intermediary development</i>	1.8342	0.14	0.894
<i>Economic Development</i>	3866.6	3.32***	0.029
<i>Domestic Savings and investment</i>	20.956	1.13	0.321
<i>constant</i>	-58806	-3.06	0.038
<i>R-squared</i>	0.9141		
<i>Adjusted R-squared</i>	0.7208		
<i>Durbin-Watson d-statistic</i>	2.4		

Note: \*denotes that coefficients are significant at the 10% level, \*\* denotes that coefficients are significant at the 5% level, and \*\*\* denotes that coefficients are significant at the 1% level.



## 6. Conclusion

Many investigated the impact of several macroeconomic and institutional factors on the development of stock markets; however, the literature is largely inconclusive. Therefore, it is difficult to generalize the findings of previous studies since different countries have different backgrounds, economic environments, social environments, rules, and regulations. Despite the extensive research conducted in recent years investigating forces that enhance the development of stock markets, there has been relatively little literature focusing on Saudi Arabia; thus, there is room to improve the existing literature.

This research explores the robust macroeconomic factors of stock market development in the context of Saudi Arabia with its unique economic, market, and social environments. This study builds on previous studies and contributes to the existing literature by identifying the most important forces that enhance the stock market development in Saudi Arabia. We investigate the impact of Global Trade Openness, Market Depth, Macroeconomic Stability, Control of Corruption, Income level, Private capital flows, Financial intermediary development, Economic Development, Domestic Savings and investment. We employ (MLR) multiple linear regression model between 2008 and 2021 to analyze the adopted set of macroeconomic and institutional variables.

Overall, the results suggest that the macroeconomic determinants of stock market development in Saudi Arabia are Economic growth, Income level, Control of corruption, and Market Depth. It is evident that economic growth and market liquidity have a statistically significant and positive correlation with stock market development, while Income level and corruption control have a negative impact.

This research has important policy implications for legislative authorities and policymakers in Saudi Arabia. It can support policymakers in their decision-making process, as they will have a clear guide to creating adaptive and necessary policies to enhance stock market development, which will trigger economic growth. Policymakers can formulate better policies to enhance development and economic growth and achieve Vision 2030.

Saudi Arabia is working to expand investment opportunities to foreign and domestic investors. Legislative authorities must accelerate their reform efforts to achieve an optimal investment environment.

Saudi Arabia must move to policies that stabilize inflation, protect domestic industries, promote private sector growth, increase FDI inflows, and promote the development of the banking sector. The kingdom must formulate policies to increase and diversify GDP and increase market liquidity. We suggest extending our research to include the GCC member countries for future research.

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