Examining the Impact of Interest Rate, Inflation and Balance ofTrade on Saudi Arabia's Financial Markets Performance

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Abstract

A confirmatory framework, utilizing the positivist standpoint, provides clarifications of the issue at hand. Investigating the impact of the macroeconomic factors on the profits of Saudi Arabia's stock exchange was developed. Following thorough research, it became clear that a correlative study was required. Secondary data, gathered from to 2006 to 2021, was interpreted through regression analysis for the purpose of the study. As such, a numerical examination was conducted in order to observe the correlation of the macroeconomic variables and changes in Saudi Arabia's stock market. The findings results indicate that the balance of trade has a consequence on Saudi Arabia's stock exchange performance. The aim of this study is to improve the level of understanding of the stock market behavior for entrepreneur, stock market decision maker, whereas deterrent measures in contrast to the risk comprised in stock market performance can be taken by the establishments.

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Introduction

Macroeconomic variables effects on stock market performances have been common subjects for academic debates for a long time. Studies which are conducted on developing countries lack in numbers. Accordingly, this study was prepared to contribute to the debate among scholars within the context of a developing country. This share of the study emphasizes on pinpointing the purpose and objectives of the review along with giving short-lived information about its contextual and structure. Since our study may require the understanding the efficient market response, one needs to refer to these studies for a better understanding (see: Lo, & MacKinlay, 1988; Shleifer, 2000; Schwert, 2003; Shiller, 2003; Borges, 2008; Magnus, 2008; Lim, 2009; Stivers, Sun, & Sun, 2009; Marshall, & Visaltanachoti, 2010; Malkiel, 2011). Market risks are disussed by Shefrin (2007).

1.1 Problem Statement

Various people, businesspersons, corporations and regimes are capitalizing enormous amounts of currency in the monetary markets (see: Allen, Brealey, & Myers, 2011). Nevertheless, and according to Allen, Brealey, & Myers (2011), since most of them are ill informed about how to deal with the stock market, they tend to act unreasonably, as a result. Moreover, not enough information, at an opportune time, as well as the fee of attaining new data, can lead a situation of inequity in investor's market performance (see: Korhonen, 1998; Jarmalaitė, 2002; Jazepčikaitė, 2008; Laidroo, 2008; Bistrova, & Lace, 2009; Chadha et al., 2012; Eizentas, Krušinskas, Stankevičienė, 2012; Laidroo, & Grigaliūnienė, 2012). This is mainly due to the difficulty in understanding

and in forecasting the stock markets' movements. They believe that this may generate the urge for analyzing this behavior quantitatively, in a way to aid in comprehending Saudi Arabia's stock exchange in order to help forecast possible future prices in the Kingdom's stock exchange (cf. De Bondt, & Thaler, 1985; Kim & Shamsuddin, 2008).

As a result, this research endeavors to solve the issue that has been noticed in past studies in the same subject, by investigating the correlation between Saudi Arabia's stock market performance and affecting the Macroeconomic factors in the Kingdom's stock exchange. This study will aid in an overall understanding of the current case for comparative bases (Gembickaja, & Stankevičienė, 2012).

1.2 Research Aim

This research set to develop a model to explain how interest rates, inflation and the balance of trade affect Saudi Arabia's stock market (see: Kaniel et al., 2012). This can't be done defining each variable independently (cf. Keynes, 1936). Therefore, **"which are Macroeconomic variables that influence the returns of Saudi Arabia's stock exchange?"** is the only main research question this paper will deal with (see: Al-Nahlehb, & Al-Zaubia, (2021). Therefore, for the purpose of this investigation, Saudi Arabia was selected since it is a developing country that did not get enough attention in comparison to other developed countries (cf. Vuolteenaho, 2002; Januškevičius, 2003; Kiete, & Uloza, 2005). The study also plans to understand this phenomenon better by consulting Kaniel et al. (2012) for comparative bases.

1.3 Research Objectives

The purposes of our study are claimed: (1) To inspect the effect of Macroeconomic variables on Saudi Arabia's stock exchange behaviour, as shown from previous studies (c.f. Al-Nahlehb, & Al-Zaubia, (2021). (2) To identify the connection between the Macroeconomic variables and movements in Saudi Arabia's stock exchange (see: Al-Nahlehb, & Al-Zaubia, 2021).

1.4 Expected Contribution

This study has crucial contributions to the literature and to professional lives (Allen, Brealey, & Myers, 2011). First of all, this study contributes to the academic debate concerning the consequence of Macroeconomic variables on Saudi Arabia's stock exchange. For professionals, it contributes in the understanding of the result of Macroeconomic variables on behaviour of Tadawul's stock markets (cf. Al-Nahlehb, & Al-Zaubia, 2021).

2. Literature Review

Apergis,N. & Eleftheriou,S., (2021) discuss the **Consequence of Macroeconomic Variables on Stock Exchanges.** Multiple studies on this subject were conducted that analyze the connection amongst market share fluctuations and Macroeconomic variables from an empirical standpoint, and involving both emerging and advanced capital markets. Then, a primary hypothesis of this review was set as **H1: Balance of trade has no effect on the stock market performance** (see: Allen, Brealey, & Myers, 2011).

In fact, the correlation among share prices and interest amount is designed by in investors' portfolios comprised of bonds and stocks (Apergis & Eleftheriou, 2002). In general, stockholders have a preference for higher interest rate bonds due to fact that this indicates an eventual fall in stock prices. On the other hand, a fall in interest rate levels lead to rises in stock prices (Keynes, 1936).

Omran (2003) discussed the case if the Egyptian market and the existence of any relationship amid the real interest rate besides the enactment of the stocks in market, applied the error correction mechanism (ECM). Findings indicate the real interest rate has a major effect on Egypt's stock exchange performance.

A more recent study, by Alam & Uddin (2009), examines the cases seen in various developed and developing countries, showing a significant negative connection amongst stock prices and interest rates, whereas no links with their changes are examined. In the other countries, except for the Philippines, a significant connection among the stock prices and the interest rates, as well as their changes, is found in the negative direction (see: Al-Nahlehb, & Al-Zaubia, (2021). Further to that, there is a growing consensus among scholars that the short-term effect of interest rate adjustments on stock values is difficult to reproduce, (Chengjun & Wenjie Zhua , 2021)

Hence, a secondary hypothesis of this review was set as **H2: Interest rates has negative impact on stock market performance** (Omran, 2003; Menike, 2006; Al-Nahlehb, & Al-Zaubia, (2021).

The Fisher Effect hypothesis shows an affirmative connection exists between the two variables (Apergis, N. & Eleftheriou, S.,2022). Hence, we can conclude that nominal stock returns will move in the same direction as the rate at which prices increase as an outcome of: (1) The commitment of the government that deflates prices. (2) The existence of a positive connection due to money demand shock than money supply shock.

In addition, investing in stocks as a hedge against price increases may explain the positive correlation between price increases and stock exchange yields. In

order to hedging against price increases, this claim applies two distinct techniques to the definition of stocks. The first technique is where stocks serve as hedges countering price increases where the stock has the capacity to remove or reduce the possibility that the real stock return rate will drop below a pre-determined floor value.

The demand for stocks falls due to the fact that bonds and stocks usually challenge each other in the constitution of a portfolio (Campbell, & Shiller, 1998). Consequently, when price rates increase, companies act more reluctantly to issue bonds for the purpose of collecting financial resources, because doing so would call for being obliged to borrowings of higher nominal rate (see: Brigham, 2011). Portfolios can be more understood by consulting Campbell, &, Shiller, (1998) Higgs, & Worthington, (2004) and Goedhart, Koller, Wessels, (2010) for the purpose of stock market valuation and European stock exchange efficacy.

Thus, a third hypothesis of this review was set as

H3: Inflation has negative impact on stock market performance (Fama, 1965, 1970, Fama, & French, 1988; Fama, 1991; Omran & Pointon, 2001).

3. Methodology

3.1 Research Methodology

In this research, secondary data was only composed and analyzed following the research design illustrated by Saunders et al. (2008: 138), that required further interpretation (Fig..1). Sekaran (2018) defines data collected from predefined sources as secondary data, so as to be aligned with the scope of the research, which is why this research needed to rely on this source.

This study will conduct one type of analysis. Through statistical analysis, this study will identify the correlation between macroeconomic factors and stock exchange movements. Therefore, a quantitative data analysis is conducted. It is vital to be aware that two categories of quantitative analysis are existed:

Firstly, is *correlation analysis*. An analysis of the independent variable is conducted in this study to determine if there exists a relationship between them. A regression analysis model was developed based on the results. In the second step, we can perform a regression examination that aims to realize the association between macroeconomic factors and variations in the stock exchange. The ultimate number of the past era of the year was selected to be examined. As some data are not available for Saudi Arabia, annual data have been used.

3.2 Reliability and Validity

In this research, multiple data information was utilized to verify if the collection of data was correct. for this purpose, several databases listed in Al-Nahlehb, & Al-Zaubia (2021) were implemented to test the reliability of the constructs. So, we can consider that the constructs of this study are vastly reliable according to the statistics' methods conducted. The validity of this review is attained due to the use of specific types of analysis, and the significant outcomes resulted from these analyses. Consequently, similar studies could be conducted several times along which same results may be obtained. A proof of which is provided by Al-Nahlehb, & Al-Zaubia (2021) who studied similar variables in their confirmatory investigation.

3.3 Summary

In order to reach the aim of this study, a positivist / deductive / causal / quantitative study was determined, where merely secondary data was composed and analyzed through correlation and

regression (Sekaran, 2018; Saunders et al., 2008). In the next section, Saudi Arabia's background will be provided (see: Al-Nahlehb, & Al-Zaubia, 2021). Finally, the research findings and discussions were presented in the conclusion part.

4. Data Analysis

4.1 Effect of Macroeconomic Variables on Stock Exchange Performance

The Correlation Analysis examination took place in order to determine the possible correlation among the investigated phenomena. In fact, to protect the accuracy of the regression results, it is highly recommended to examine the independency among the macroeconomic variables before conducting the regression analysis. if there did prove to be a significant correlation between two variables, then the regression results would become inaccurate.

Macroeconomic Variables	Interest Rate	Inflation Rate	Balance of Trade
Interest Rates	1	-0.21	0.14
Inflation Rate	-0.21	1	-0.27
Balance of Trade	0.14	-0.27	1

Table 1: Correlation among macroeconomic variables

Table 1 shows that the correlation between each two variables is very weak and almost does not exist (Correlation coefficients are: -0.21, 0.14, and -0.27). Hence, we can proceed to regression analysis to examine the effect of each macroeconomic variable on stock exchange performance. (Relate **this result to some literature review and explain in economics the theory of this result)**

To conduct regression analysis, we need first to study the correlation between each of the independent macroeconomic factors and the dependent factor stock exchange.

	Stock Exchange	Significance
Interest Rates	0.211	4.77×10^{-6}
Inflation Rate	0.212	4.76×10^{-6}
Balance of Trade	0.685	2.14×10^{-6}

Table 2: Correlation between microeconomic variable and stock exchange

Table 2 shows a weak positive correlation between interest rates, inflation rate from one side and stock exchange from the other side (r: 0.211, 0.212). Although this relationship is weak, there is no

statistical reason to stop the regression analysis due to two reasons: First, the sample size is small (n = 15), and secondly the p-value approach is significant (p-value < 0.05). (Relate **this result to some literature review and explain in economics the theory of this result)** On the other hand, the is a remarkable positive correlation between balance of trade and stock exchange; this relationship is also significant (p-value < 0.05). (**Relate this result to some literature review and explain in economics the theory of this result)**

The regression analysis is conducted to study the effect of independents factors (Interest Rates, Inflation Rate, and Balance of Trade) on the dependent variable (Stock Exchange). Tables 3 and Table 4 summarize the results of the ordinary least square (OLS) analysis.

Table 3: Regression Statistics

Regression Statistics	
Multiple R	0.841981
R Square	0.708933
Adjusted R Square	0.592506
Standard Error	2370.09
Observations	15

ANOVA

	Df	SS	MS	F	Significance F
Regression	4	1.37E+08	34204341	6.08908	0.009494
Residual	10	56173246	5617325		
Total	14	1.93E+08			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	-3636.25	2566.509	-1.41681	0.18693	-9354.79	2082.283	-9354.79	2082.283
Interest rates	524.3497	394.2044	1.330147	0.213008	-353.993	1402.692	-353.993	1402.692
Inflation rate	331.4221	351.9683	0.941625	0.368575	-452.812	1115.656	-452.812	1115.656
Balance of trade	0.029673	0.007187	4.12868	**0.002049**	0.013659	0.045687	0.013659	0.045687

Table 4: Regression Model Summary

The Regression analysis' output shows significance in the model (p = 0.009494 < 0.05) and the value of R^2 (coefficient of determination) is about 0.71 indicating that 71 % of the variation in the dependent variable (Stock Market Performance) is described by a portion variation of the independent variables comprised in the regression model. This mean that only 29% of variance were not involved in the model.

The results of regression indicate that Stock Market Performance influence is explained by the three variables: (Interest Rates, Inflation Rate, and Balance of Trade. The effect of the three antecedents on Stock Market Performance which were measured by the regression analysis is estimated through the following least-squared line:

FSMP= β1 ×Interest Rate + β2 × Inflation Rate + β3 ×Balance of Trade + ε.

FSMP= 524.3497 ×Interest Rate + 331.4221×Inflation Rate + 0.029673× Balance of Trade - 3636.25

4.2 Hypothesis Testing

The regression analysis that was conducted with the closing dates of the Tadawul stock exchange after each month (Table 1). linked stock market to Macroeconomic variables. Yet, the current study shoes the below correlations with the three hypotheses, and reject all three (cf. Al-Nahlehb, & Al-Zaubia, 2021)

H1: Balance of trade has no effect on the stock market performance	Not Accepted
H1: Interest rates has negative impact on stock market performance	Not Accepted

H2: Inflation has negative impact on stock market performance	Not Accepted

Table 5: Resuts of Hypotheses

5. Discussion and Conclusion

The paper's results indicate that the balance of trade has a consequence on Saudi Arabia's stock exchange performance (Al-Nahlehb, & Al-Zaubia, 2021).

So, through this perspective and for the Saudi Arabia stock market's benefits, it is highly recommended that the Kingdom's government requires to regulate the control of political turmoil, initiate stability in its political proceedings and preserve its steadiness of trade (Al-Nahlehb, & Al-Zaubia, 2021).

As Al-Nahlehb, & Al-Zaubia, (2021) hints out, stock markets have positive impact on the development of economy. Likewise, they assert on the strong positive relationship that exists between stock market growth and long-term economic development (Al-Nahlehb, & Al-Zaubia, 2021). Based on this perception, a government that try to attain high performance in economy should maintain political consistency with the Kingdom of Saudi Arabia, and should foster a balance of trade through different diverse of economy. Actually, the economy in Saudi Arabia depends on the oil industry excessively as it is resulted from this research, it has no effect on stock market (see: Al-Nahlehb, & Al-Zaubia, (2021).

Thus, the economy in Saudi Arabia is highly encouraged to be diversified to grow its performance. In effect, the price of oil is currently very low that put the economy of Saudi Arabia under a grim status. This leads to the fact that if Saudi Arabia economy was not merely depending on oil, then such difficulties might not have an unfavorable influence on its economy.

Any decrease in the price of oil will bring negative impact on the balance of trade of the country and consequently it affects negatively the stock market performance (based on the results of this study). Hence, the government of the country has to diversify its economy through different sectors of investments.

5.1. Practical Contribution

This study also highlighted the importance of Saudi Arabia's vision for 2030 as the related reforms carried out to date are affecting the country's economy in a positive way. Indeed, diversifying the economy to other sectors rather than focusing only on oil helps the country to attract more investors to the economy.

5.2. Limitations

The results of this study can only be applicable to Saudi Arabia as Al-Nahlehb, & Al-Zaubia, (2021) initially presented. In fact, such findings can only be utilized in the context of Saudi Arabia's case and cannot be applied to other countries. Some data was missing on foreign direct investments and consequently, this determinant could not be included in the models, and thus had to be analysed separately. Using daily data could have created better results, however, in Saudi Arabia a large gap in these data were observed, as Al-Nahlehb, & Al-Zaubia, (2021) discussed as well.

5.3. Opportunities for Further Research

As mentioned earlier, studies related to developing countries in the MENA region are limited in numbers. Therefore, a similar study could be conducted in another developing country to create a pattern on the Macroeconomic factors, which affect stock market performances in developing countries. This is why the authors strongly suggest doing the same study as previously carried out by Chaaban (2019) in the Lebanese stock market.

This is specially to see how the impact of interest rate, price increases and the balance of trade affect the Lebanese financial markets performance especially the current covid 19 global recession, and with the August 4th 2020 Beirut Harbour blast, causing major strain in the Lebanese Economy (see: El-Bacha, 2020a; Gerges, 2020). The issue with interest rates in Lebanon has been raised before by Hobeika (2019), quite recently, and deserves our full attention. Chaaban (2019) presented some interesting facts on Lebanese budgeting issues that must be raised in the future study.

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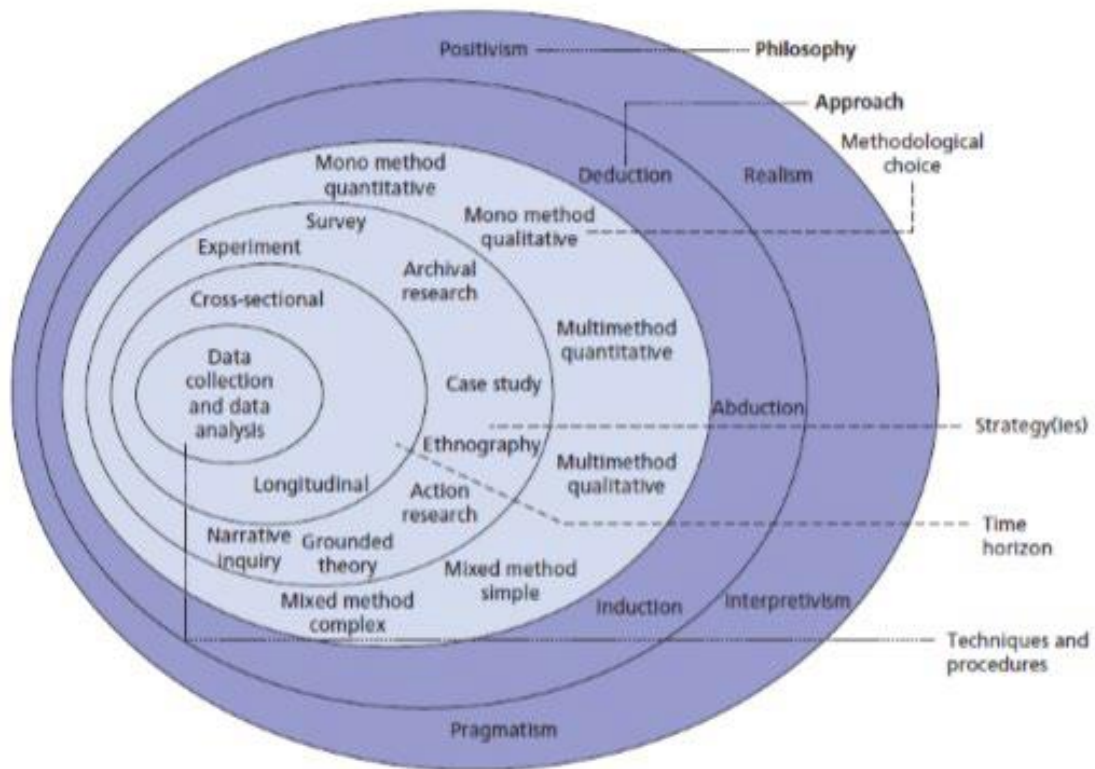
7. Figures

Figure 1: Research Onion (adapted from Saunders et al., 2008: 138).

Interest Rates		Inflation Rate		Balance of Trade		Stock Market (TADAWUL/TASI)	
[DateTime]	[Close]	[DateTime]	[Close]	[DateTime]	[Close]	[DateTime]	[Close]
31/12/2006	7	31/12/2006	2.21	31/12/2006	$112.01B	31/12/2006	2258.29
31/12/2007	2.75	31/12/2007	4.17	31/12/2007	$104.04B	31/12/2007	2434.1
31/12/2008	2	31/12/2008	9.87	31/12/2008	$146.17B	31/12/2008	2518.08
31/12/2009	1.75	31/12/2009	5.06	31/12/2009	$39.99B	31/12/2009	4437.58
31/12/2010	2.25	31/12/2010	5.34	31/12/2010	$87.63B	31/12/2010	8206.23
31/12/2011	4.75	31/12/2011	5.83	31/12/2011	$178.25B	31/12/2011	16712.64
31/12/2012	5.2	31/12/2012	5.83	31/12/2012	$184.21B	31/12/2012	7933.29
31/12/2013	5.5	31/12/2013	3.53	31/12/2013	$157.74B	31/12/2013	11038.66
31/12/2014	2.5	31/12/2014	2.24	31/12/2014	$99.16B	31/12/2014	4802.99
31/12/2015	2	31/12/2015	1.21	31/12/2015	$-29.30B	31/12/2015	6121.76
31/12/2016	2	31/12/2016	2.07	31/12/2016	$2.75B	31/12/2016	6620.75
31/12/2017	2	31/12/2017	-0.84	31/12/2017	$38.02B	31/12/2017	6417.73
31/12/2018	2	31/12/2018	2.46	31/12/2018	$105.33B	31/12/2018	6801.22
31/12/2019	3	31/12/2019	-2.09	31/12/2019	$66.92B	31/12/2019	8535.6
31/12/2020	2.5	31/12/2020	3.45	31/12/2020	$2.03B	31/12/2020	8333.3
31/12/2021	1	31/12/2021	3.06	31/12/2021	$86.87B	31/12/2021	11461