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The Effect of Macroeconomic Conditions on the Performance of Vietnamese Stock Market

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ABSTRACT

Vietnam plays an important role in the global supply chain. As one of important emerging markets, many studies have focused on Vietnam-related issues. Vietnam established two stock markets in 2000s. The market performance becomes one of interesting issues to explore. This study is to investigate the impact of macroeconomic variables, including inflation rate, exchange rate, interest rate, imports, exports, and gold price, on Ho Chi Minh stock market. The study period is from July 2000 to October 2014. Using the monthly data collected from Vietnam General Statistic Office, IMF International Financial Statistics, and Ho Chi Minh stock exchange, the empirical findings of our regression model show that there exists a positive relationship for imports and gold price, while the relationships for exchange rate and interest rate are negative. No significant relationship has been found for the variables of inflation rate and exports.

Keywords: Exchange Rate; Inflation; Interest Rate; Stock market; Vietnam

INTRODUCTION

Stock market is one of important economic ingredients of a country. It also plays a pivotal role in industrial growth and economy development. That is the reason why governmental institutions, industries, companies, and investors keep a close watch on what happens in stock market.

Vietnam stock market was established in 2000 with the operation of Ho Chi Minh City stock exchanges (HoSE) on July 20th, 2000 and Hanoi Stock Exchange (HNX) on March 8th, 2005. Before that, HNX operated as the Stock Exchange Central Organization in the form of a unit under the State Stock Commission's possession. To go public in these two markets, the different requirements of initial public offerings (IPO) are shown in Table 1.

Table 1. IPO requirements in HoSE and HNX

Requirements of IPO	HoSE	HNX
Authorized capital at the register time	≥ 120 billion VND	≥ 30 billion VND
# of operation years in the form of a joint stock company	≥ 2 years	≥ 1 year
ROE	≥ 5%	≥ 5%
shareholder quantity	≥ 300 (exclude of the major shareholder) and hold at least 20% of stocks	≥ 100 (exclude of the major shareholder) and hold at least 15% of stocks

After its establishment and operation, Vietnam stock market has shown some significant distributions in Vietnam economy. However, after the strong development in the beginning phase, Vietnam stock market dropped in the status of imbalance and Stock Exchange Index decreased dramatically. The Vietnamese stock market is really struggling with various typical weaknesses of an emerging market [1]. Besides that, the global economic crisis in 2008 had resulted in many challenges for Vietnam economy. The behavior of investors, especially those who have just experienced the economic downturn, may influence the decisions of others who are well informed about market developments by following the market consensus [2].

In 2011, the Vietnam economy experienced a significant fluctuation and both Vietnamese stock markets dropped down dramatically. The negative macroeconomic information has significant impact on the overall market decline. Many questions are raised, including the main issue of this study, is there any significant relationship between macroeconomic factors and Vietnam stock market?

The evidence from the study of Phan and Zhou [1] may imply that the Vietnamese stock market is, to which extent, characterized by the weak-form efficiency. However, this lowest form of efficiency cannot assure the Vietnamese stock market is well functioning in scarce resource allocation and attractive enough to encourage foreign investors [2]. Both investors and policy makers mostly concern if the current market prices reflect all publicly available information, such as information on inflation, gold price, economic growth, money supply, exchange rates, foreign direct investment, interest rates, annual earnings, stock splits, import & export etc.

This study investigates the impact of macroeconomic factors on Ho Chi Minh stock market. Six macroeconomic factors, including inflation rate, exchange rate, interest rate, imports, exports, and gold price, are used as independent variables. Vietnamese Ho Chi Minh stock index is employed as the dependent variable.

Using a regression model and monthly data, starting from July 2000 to October 2014, this study is designed to achieve the following specific objectives: (1) To illustrate the performance and the trend of those macroeconomic variables and Ho Chi Minh stock market, and (2) To explore the possible impact of these six macroeconomic variables on Ho Chi Minh stock market.

This structure of this paper is as follows. This section introduces the motivation and the objectives and Section 2 provides literature review. Section 3 summaries our data selection and methodology, while Section 4 shows the empirical findings. Finally, section 5 concludes.

LITERATURE REVIEW

The core macroeconomic variables, including inflation, industrial production index, interest rate, gross domestic product, export, exchange rate, money supply, foreign exchange reserves and unemployment, have causality with prices index of stock exchange [3, 4]. Adam [5] concludes that fluctuations in macroeconomic variables, which lead to the change the structure of stock exchange index. The government fiscal and monetary policies have a greater influence on the economic activities and stock prices of a country [6]. This study focuses on the following six factors: inflation, exchange rate, interest rate, import, export, and gold price.

Inflation

Numerous studies have examined the impact of inflation on stock returns. Inflation seems to affect stock prices, but the relationship between unexpected inflation and stock prices is unclear. While some early studies such as Fama and Schwert [7], Schwert [8], and Fama [9] find a significant negative relationship between stock market and inflation, other studies, such as Pearce and Roley [10], find no significant relationship between two variables. Since the relationship between inflation and stock prices is not clear, it is important for researchers to find out the interaction.

There are many recent studies using international markets to examine the impact of inflation on stock performance. Sangmi and Hassan [11] investigate how macroeconomic variables affecting the stock price in Indian stock market and find that macroeconomics are considered as important factors for investing in India, it is proved that macroeconomics bring significant impact to the stock price. From the Sensex and Nifty (the indices of Indian stock market). They argue that increases in inflation lead to higher stock prices and higher returns. Admad *et al.* [12] conclude that there exist a positive relationship between inflation and stock market, using data in China and India. However, Udoka *et al*. [13] show that there is no significant relationship between inflation and the volume of shares traded in Nigerian stock market.

Inflation

The existence of a relationship between stock prices and exchange rate has received considerable attention. Early studies (ex. [14]) in this area consider only the correlation between exchange rate and stock return, and conclude that the exchange rate and interest rate are the determinants in the stock prices.

Sangmi and Hassan [15] find that increasing in exchange rate causes lower price of Indian stock, and hence, lower return. Ali *et al*. [16] find that there was no significant relationship between exchange rate and Pakistan Karachi stock exchange price.

Besides, Agrawal *et al.* [17] find that the correlation between Indian Nifty index returns and exchange rates is negative. Their further investigation into the causal relationship between the two variables using Granger Causality test highlights unidirectional relationship between Nifty returns and exchange rates.

Interest Rate

Admad *et al.* [18] observe the impacts of interest rate and exchange rate on stock return in Pakistan market. The data is collected from the State Bank of Pakistan and Karachi Stock Exchange over period of 1998-2009 on yearly basis. Their regression analysis shows that the change in interest

rate and exchange rate has a significant impact on stock return. The change in interest rate shows a negative impact on stock returns, while change in exchange rate positive. However, in the work of Sangmi and Hassan [15], by applying multiple regression analysis, they find that there is no effect between interest rate and India Stock Index over the period of April 2008 to June 2012.

Stock exchange and interest rate are two crucial factors to economic growth of a country. The impacts of interest rate on stock exchange provide important implications for monetary policies, risk management practices, financial securities valuation and government policy towards financial markets. Alam and Uddin [19] show an empirical relationship between stock index and interest rate for fifteen developed and developing countries- Australia, Bangladesh, Canada, Chile, Colombia, Germany, Italy, Jamaica, Japan, Malaysia, Mexico, Philippines, S. Africa, Spain, and Venezuela. Individual country results are mixed for both developed and developing countries. Interestingly, Malaysia market shows that interest rates have no relationship with share prices but changes in interest rate have a negative relationship with changes in share price. In case for Japan, interest rates have a positive relationship with share prices but change in interest rate has negative relationship with change in share price.

Four countries like Bangladesh, Colombia, Italy, and S. Africa shows negative relationship for both interest rate with share price and changes of interest rate with changes of share price. Eight countries like, Australia, Canada, Chile, Germany, Jamaica, Mexico, Spain, and Venezuela has significant negative relationship between interest rates and share price but no relationship between change of interest rate and change of share price. Therefore, all other countries, except for the Philippines, show a significant negative relationship either interest rates with share price or changes in interest rate with changes in share price or both.

Import and Export

To explore macroeconomic factors on the Instanbul Stock Market, Tursoy *et al.* [20] empirically test the Arbitrage Pricing Theory (APT) in Istanbul Stock Exchange (ISE), and their results suggest that there exists a significant relationship between both export value and import value on Istanbul Stock Market.

However, using the data of Pakistan from 1992 to 2010, Rafay *et al.* [21] demonstrate the presence of a strong positive relationship between import and KSEI (Karachi Stock Exchange Index). However, the amount of exports shows no relationship with KSEI. This finding is similar to that of Nosheen *et al.* [22].

Bellalah *et al.* [23] want to investigate the economics forces and stock prices in China. In the sample period of January 2001 to June 2007 in China, imports are positively and significantly correlated with stock prices. Meanwhile, in the long run, exports have no significant impact on Shanghai stock exchange prices and conclude that exports cannot be used to predict stock price movements.

Gold Price

Buyuksalvarci [24] analyzes the effect of seven variables of macroeconomics in Turkish stock exchange, using the Arbitrage Pricing Theory framework. The results of multiple regression show that gold price do not have any significant effect on Istanbul Stock Exchange-100 Index returns.

Sangmi and Hassan [15] reach a similar conclusion, using monthly data from the period of April 2008 to June 2012.

However, Ray [25] conducts a research to explore the impact of different macroeconomic variables on the stock prices in India, using annual data from 1990-91 to 2010-11. The multiple regression of the study indicates that gold prices have a significant negative effect on India stock prices.

METHODOLOGY

Data

The purpose of this study is to investigate the impact of macroeconomic factors on Vietnam stock market. Six macro-economy factors are selected as independent variables: inflation rate (*INF*), exchange rate (*EX*), interest rate (*INT*), import (*IMP*), export (*EXP*), and gold price (*GP*). The Ho Chi Minh stock index (*VNINDEX*) is used as the independent variable to represent the Vietnamese market performance. This study uses monthly data and the study period covers the period of July 2000 to October 2014. As a result, the number of sample size is 172.

Those monthly macroeconomy data are collected from Vietnam General Statistic Office and IMF International Financial Statistics (IFS eLibrary). As of the *VNINDEX*, daily prices are downloaded from the official Website of Ho Chi Minh stock exchange and then converted into monthly prices.

Model and Analysis

To achieve the study purposes, SPSS 16.0 and Microsoft Excel are used to analyze those collected data. The following analysis are then employed.

Descriptive Statistic Analysis

To have a better understanding about the trend of each variable in the study period, this study illustrates minimum, mean, maximum, and standard deviation of each variable and introduce the pattern of movements.

Regression Analysis

Regression Analysis is adopted to analyze the relationships between a single dependent variable and several independent variables. This technique is applied to use the independent variables whose values are known in order to predict the single dependent variables selected by the researcher.

The regression model this study employs is as shown as follows

$$VNINDEX_t = \alpha + \beta_1 INF_t + \beta_2 EX_t + \beta_3 INT_t + \beta_4 IMP_t + \beta_5 EXP_t + \beta_6 GP_t + \varepsilon_t \quad (1)$$

where $VNINDEX_t$, INF_t, EX_t, INT_t, IMP_t, EXP_t, and GP_t represent Ho Chi Minh stock market index, inflation rate, interest rate, import, export, and gold price at time *t*, respectively. If the coefficient of macroeconomic factor is significantly different from 0, it shows that this variable has an impact on the performance of Vietnam stock market.

Empirical Findings and Discussions

Descriptive Statistics

The descriptive statistics of all regression variables is shown in Table 2.

Table 2. Descriptive statistics of regression variables

Variables	Description	Minimum	Mean	Maximum	Std. Dev.
VNINDEX	Ho Chi Minh Stock Index	102	417.70	1137.7	219.44
INF	Inflation Rate	-0.85	0.649	3.90	0.86
EX	Exchange Rate	14,093	17,300	21,623	2335
INT	Interest Rate	4.80	7.293	15.00	2.935
IMP	Imports (Billion USD)	1.05	5.519	13.60	3.5223
EXP	Exports (Billion USD)	0.91	5.020	13.27	3.5781
GP	Gold Price	85.88	268.59	585.61	156.94
This study uses monthly data. The study period is from July 2000 to October 2014, and hence, the number of sample is 172.					

VNINDEX was around 200 to 400 before 2005. After the release of a new security law in 2007, *VNINDEX* reached its historical high of 1137.7. Because of the 2008 financial crisis, the index experienced a sharp drop to less than 300. After recovering from that crisis, *VNINDEX* ranged between 400 and 600 points during the study period.

Vietnam experienced a hyperinflation period in 1980s and early 1990s. After conducting an economic reform, the inflation situation became much less serious. In early 2000s, the inflation rate was less than 2%, even negative. In the period of 2008 financial crisis, the inflation went more than 3% and reached the highest level of 3.9% in May 2008. Inflation rate reduced dramatically in 2009 and bounced back to 3% in 2011. The rates were around 1% in 2013 and 2014.

The Vietnamese currency, Dong, constantly depreciated against US dollar over the study period. The exchange rate of VN dong against US dollar was 14,093 in July 2000 and reached 21,623 in the end of study period. Especially, during the period of 2008-2011, the Vietnamese dong showed a significant depreciation. The rate changed from 16,000 to more than 21,000.

Compared with other developed countries, the rate in Vietnam is relatively high. The average interest rate during the study period was as high as 7.2%. There were two peaks over the sample period which were in late 2008 and early 2012. Both rates reached 15%.

Because Vietnam is an emerging market, the figures of imports and exports steadily increased over the study period. Both minimums happened in early 2000 and maximums in late 2014. Speaking of balance of trade (imports minus exports), there existed trade deficits before 2011. After 2012, Vietnam experienced a positive balance of trade.

The gold market showed a strong bullish trend, increasing from 85.88 in 2001 to 585.61 in 2011. The gold price remained stable in 2011 and 2012, and declined significantly in early 2013. After that, the prices stayed around 400.

Regression results

The regression results are shown in Table 3. Panel A shows the coefficients of independent variables, while Panel B shows the fitness of regression model.

Table 3. Regression Results

Panel A : Regression Coefficients				
	Coefficient	**Std. Error**	**T stat**	***P*-Value**
Constant	1797.247	371.576	4.837	0.000
Inflation Rate (*INF*)	15.000	18.051	0.831	0.407
Exchange Rate (*EX*)	-0.109	0.026	-4.157	0.000
Interest Rate (*INT*)	-16.914	7.824	-2.162	0.032
Import Value (*IMP*)	85.555	24.074	3.554	0.000
Export Value (EXP)	-22.011	26.206	-0.840	0.402
Gold Price (*GP*)	0.960	0.372	2.578	0.011
Panel B: Model Fitness				
Model	**Sum of Squares**	**df**	**F**	**Significance**
Regression	3077669.474	6	16.413	0.000
Residual	5156770.706	165		
Total	8234440.180	171		
# of sample: 172 R^2: 0.374 Adjusted R^2: 0.351				

The regression result shows that the effect of inflation rate on Vietnam stock index is insignificant (P-value = 0.407 > 0.05). This result is the same as the finding of Pearce and Roley [10] and Hardouvelis [26], Aurangzeb [27]. They all conclude that there is no relationship between inflation rate and stock index. The coefficient of *EXP* is also insignificant (P-value = 0.402 > 0.05). Other studies with a similar conclusion include Rafay *et al.* [28] and Rasool *et al*. [29].

Exchange rate shows a negatively significant effect on Vietnam stock index (P-value < 0.05). One percentage increase in exchange rate decreases Vietnam Stock Index by 0.109%. This result is consistent with the work of Sangmi and Hassan [11].

With a *P*-value of 0.032 (less than 0.05), interest rate showa a significantly negative relationship with Vietnam stock market. Kim [30] and Admad *et al.* [18] also find that interest rate has a negative impact on stock performance. However, Ray [25] concludes that interest rate positively influences India stock price, while Sangmi and Hassan [15] argue that no relationships have been found using the sample of Indian market.

The significantly positive coefficient of imports illustrates that an increase of import amount will result in an increase for Vietnam stock index. The result is the same as the work of Bellalah *et al*. [31] and Rafay *et al.* [21]. Finally, there also exists a significantly positive relationship between gold price and Vietnam stock market (P-value = 0.011 < 0.05). In contrast, Sangmi and Hassan [15] claim that there is no significant relationship between two variables.

As of the model fitness, the regression *R*-square is 0.374, indicating that 37.4% of variation in Vietnam stock market can be explained by these six macroeconomic variables. This study also has

an *F*-value is 16.413 with a significance level of 0.000. Compared with some other related studies, the overall model employed in this study fits well, and hence, the results are able to demonstrate the relationship between Vietnamese stock market and these macroeconomic variables.

CONCLUSION

Stock markets are essential to the economy development for all countries and the performance of a stock market can reflect the economic situations. The issue of how economic variables affect the performance of a stock market has attracted lots of efforts to explore. Vietnam, as one of the newly rising emerging markets, established its two stock markets in early 2000s. To understand the interactions between Vietnamese stock market and macroeconomic variables, this study employs a regression model, using inflation rate, exchange rate, interest rate, imports, exports, and gold price as independent variables, to examine their effects on Ho Chi Minh stock market. The study period is from July 2000 to October 2014 and the sample size of monthly data is 172.

The Ho Chi Minh stock market experienced a rapid growth from 2000 to 2007 and reached the historical high of 1137.7. Because of the 2008 financial crisis, the index suffered a sharp drop to less than 300. During the study period, inflation rates normally stayed below 2%, even negative. However, in the period of 2008 financial crisis, the inflation rate went more than 3% and reached the highest level of 3.9% in May 2008. The Vietnamese currency, Dong, constantly depreciated over the study period. The exchange rate of VN dong against US dollar was 14,093 in July 2000 and reached 21,623 in the end of study period.

The average interest rate in Vietnam was 7.2%. The rates in late 2008 and early 2012 even reached as high as 15%. Because Vietnam is an emerging market, the figures of imports and exports steadily increased over the study period. Finally, gold prices increased from 85.88 in 2001 to 585.61 in 2011 and declined significantly in early 2013.

The empirical findings of our regression model show that there exists a positive relationship for import and gold price, while the relationships for exchange rate and interest rate are negative. No significant relationship has been found for the variables of inflation rate and export. Investors could use the empirical findings as the reference of their future investment decisions.

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