
Financial Risk Management Via Econometric Model On Saigon Beer Western Jsc. Stock Price – A Case In F&B Industry In Vietnam

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Abstract:

GDP growth in Vietnam, controlled inflation and population growth around 1% (2018) are positive figures to encourage business operation of Saigon Beer Western JSC. (WSB). Fluctuation of stock price in F&B firms such as WSB in Vietnam will reflect the business health of F&B industry and consuming economy. Good business management requires us to consider the impacts of multi macro factors on stock price, and it contributes to promoting business plan and economic policies for economic growth and stabilizing macroeconomic factors. By data collection method through statistics, analysis, synthesis, comparison, quantitative analysis to generate qualitative comments and discussion; using econometric method to perform regression equation and evaluate quantitative results, the article analyzed and evaluated the impacts of six (6) macroeconomic factors on stock price of a joint stock F&B company, Saigon Beer Western JSC (WSB) in Vietnam in the period of 2014-2019, both positive and negative sides. The results of quantitative research, in a seven factor model, show that the decrease in CPI and increase in lending rate has a significant effect on decreasing WSB stock price with the highest impact coefficient, the second is increasing the risk free rate. This research finding and recommended policy also can be used as reference in policy for commercial bank system in many developing countries.

Keywords: WSB stock price; GDP growth; inflationary; risk free rate; market interest rate

JEL: M21, N1

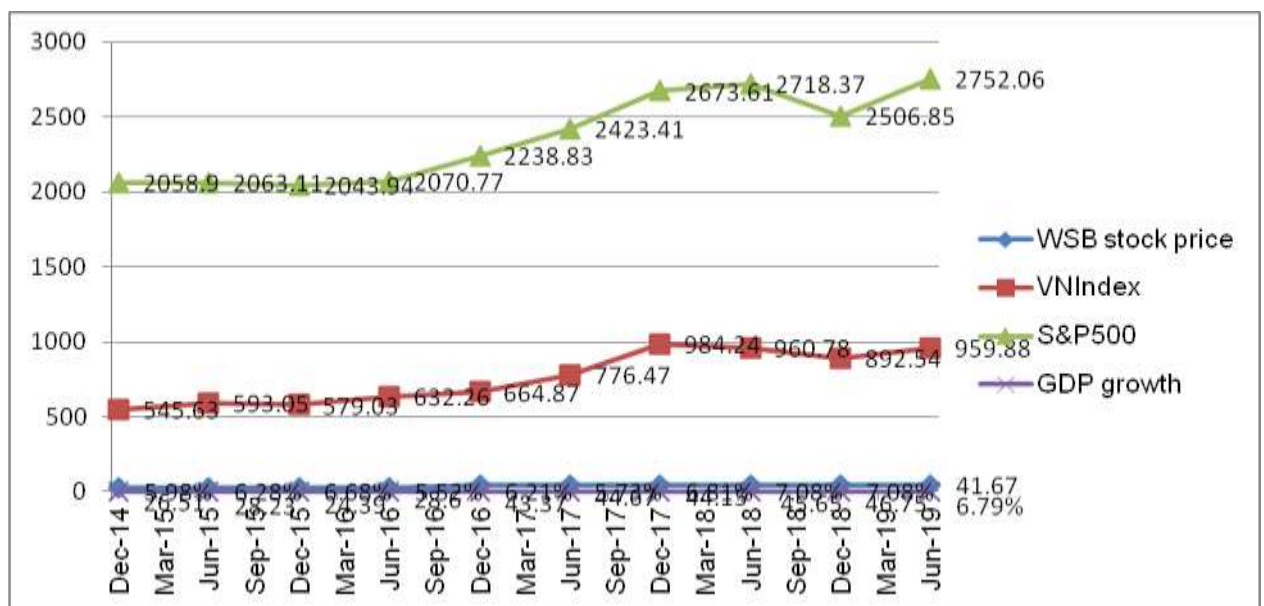
1. INTRODUCTION

Saigon Beer Western JSC (WSB) has went together with the economic development of the nation over years. The unique taste of **Saigon Beer** is the inspiring taste combined with the spirit of Saigonese's generosity and the rich of the Southern land, making it an in dispensable part of everyday life.

In the context that GDP growth in Vietnam has been increasing during 2014-2019 and CPI goes down and up and Vietnam stock market has been growing much, it is necessary to evaluate impacts of 6 internal and external macro economic factors on WSB performance, esp. firm stock price. From these analytical results, we could suggest bank and government policies to encourage and stabilize the growth of F&B system and stock market in developing countries such as Vietnam.

Looking at the below chart 1, we find out that WSB stock price moves in the same trend with VN Index and GDP growth, although it fluctuates in a smaller range.

Chart 1- Variation of WSB stock price, VNIndex, GDP growth and SP500



This study will calculate and figure out the impacts of 6 macro economic factors such as inflation, GDP growth, market interest rate, risk free rate, VNIndex, and exchange rate on WSB stock price.

The paper is organized as follows: after the introduction it is the research issues, literature review and methodology. Next, section 3 will cover methodology and data and section 4 presents main research findings/results. Section 5 gives us some discussion and conclusion and policy suggestion will be in the section 6.

2. BODY OF MANUSCRIPT

2.1 Research issues

The scope of this study will cover:

Issue 1: What are the correlation and relationship among many economic factors: WSB stock price, interest rate, exchange rate, inflation, VNIndex, and GDP growth?

Issue 2: What are the impacts of above 6 macro economic factors on WSB stock price?

Issue 3: Based on above discussion, we recommend some solutions regarding to F&B management in incoming period.

This paper also tests two (2) below hypotheses:

Hypothesis 1: An increase in lending rate will make WSB stock price declines.

Hypothesis 2: An increase in inflation can increase pressure in WSB stock price.

2.2 Literature review

Lina (2012) indicated that both the change of inflation rate and the growth rate of money supply (M2) are positive but insignificant to the banking industry stock return, the exchange rate is positive and significant to banking industry stock return and interest rate is negative and significant to banking industry stock return. Next, Sadia and Noreen (2012) found out exchange rate, and Short term Interest Rate have significant impact on Banking index. Macroeconomic variables like Money Supply, Exchange Rate, Industrial Production, and Short Term Interest Rate affects the banking index negatively where as Oil prices has a positive impact on Banking index.

Manisha and Shikha (2014) stated that Exchange rate, Inflation, GDP growth rate affect banking index positively whereas Gold prices have negative impact on BSE Bankex but none of them have significant impact on Bankex. Then, Winhua and Meiling (2014) confirmed that macroeconomic do have a substantial influence to the earning power of commercial banks.

Krishna (2015) investigated the nature of the causal relationships between stock prices and the key macro economic variables in BRIC countries. The empirical evidence shows that long-run and short-run relationship exists between macro economic variables and stock prices, but this relationship was not consistent for all of the BRIC countries. And Kulathunga (2015) suggested that all macroeconomic factors influence the stock market development. More precisely, volatile inflation rate and exchange rate together with higher deposit rate have curtailed the stock market development in Sri Lanka. Moreover, positive optimism created by the economic growth and the stock market performance during the previous periods tend to enhance stock market performance. Moreover, Duy (2015) mentioned through the evolution of interest rates and the VNI could see that the relationship between these two variables in the period 2005-2014 is the opposite. This relationship is shown in specific periods of the year the stock market proved quite sensitive to interest rates. When interest rates are low or high but the bearish stock market rally, and vice versa when the high interest rates the stock market decline.

Last but not least, Quy and Loi (2016) found that 3 economic factors (inflation rate, GDP growth rate, and exchange rate) impact significantly on real estate stock prices; but the relationship between 10-year Government bond yield and trading volume, and real estate stock prices was not found. Ahmad and Ramzan (2016) stated the macroeconomic factors have important concerns with stocks traded in the stock market and these factors make investors to choose the stock because investors are interested to know about the factors affecting the working of stock to manage their portfolios. Abrupt variations and unusual movements of macroeconomic variables cause the stock returns to fluctuate due to uncertainty of future gains.

Until now, many researches have been done in this field, however, they just stop at analyzing internal macroeconomic factors on stock price.

Within the scope of this paper, we measure impacts of both internal and external macro factors on WSB stock price and suggest policies for bank system, Vietnam government, Ministry of Finance, State Bank and relevant government bodies. We also analyze data through out time series from 2014-2019.

3. METHODOLOGY AND DATA

This research paper establishes correlation among macro economic factors by using an econometric model to analyze impacts of 6 macro economic factors in Vietnam such as: GDP growth, inflation, interest rate, exchange rate,... on WSB stock price.

In this research, analytical method is used with data from the economy such as inflation in Vietnam and market interest rate, GDP growth rate, exchange rate (USD/VND). Data are included from 2014 -2019 with semi-annual data (10 observations in total). Data is estimated based on exchange rate and lending interest rates of commercial banks such as: Vietcombank, BIDV, Agribank, Vietinbank... (average calculation). S&P 500 index data is from USA Stock exchange, data source (inflation, GDP) is from Bureau of Statistics. Beside, econometric method is used with the software Eview. It will give us results to suggest policies for businesses and authorities.

We build a regression model with Eview software to measure impacts of factors. WSB stock price is a function with 6 variables as follows:

$$Y (\text{WSB stock price}) = f (x_1, x_2, x_3, x_4, x_5, x_6) = ax_1 + bx_2 + cx_3 + dx_4 + ex_5 + fx_6 + k$$

With: x_1 : GDP growth rate (g), x_2 : inflation, x_3 : VNIndex, x_4 : lending rate, x_5 : risk free rate (Rf), x_6 : USD/VND rate

Beside, this paper also uses analytical and general data analysis method to measure and generate comments on the results, then suggest policies based on these analyses.

4. MAIN RESULTS

4.1- General data analysis

First of all, The below chart 2 shows us that Y has a positive correlation with GDP growth:

Chart 2 – WSB stock price (Y) vs. GDP growth in Vietnam (G)

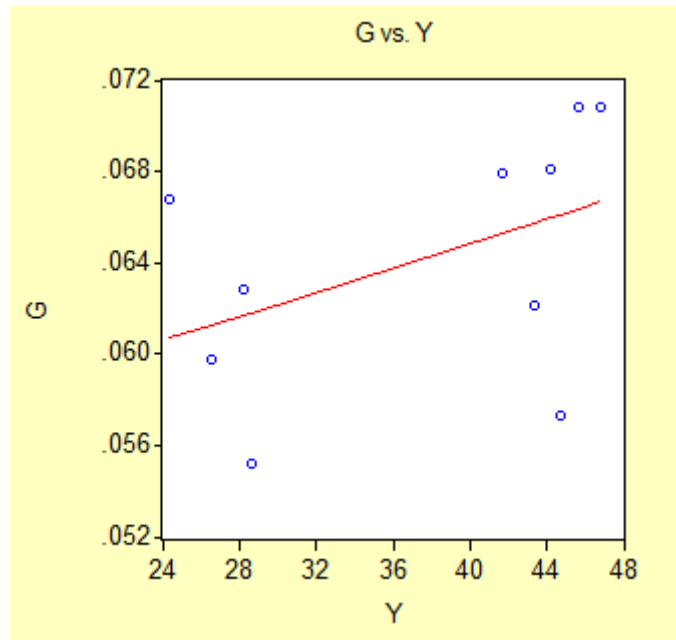
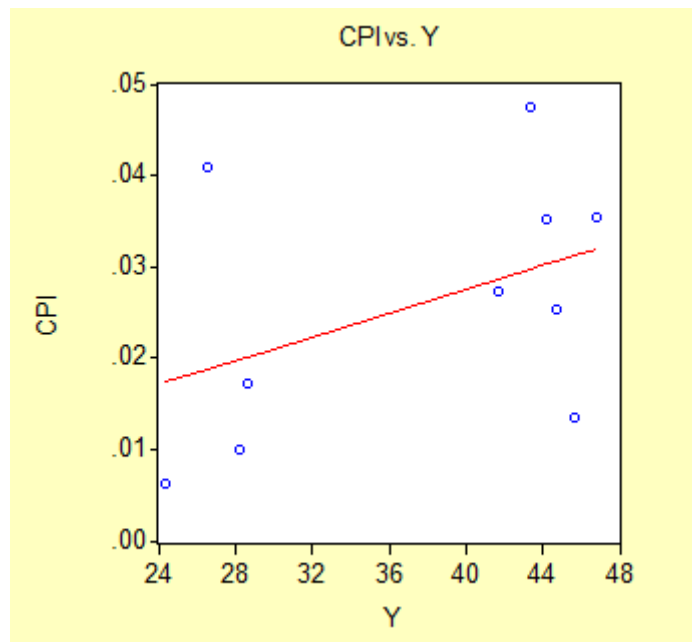


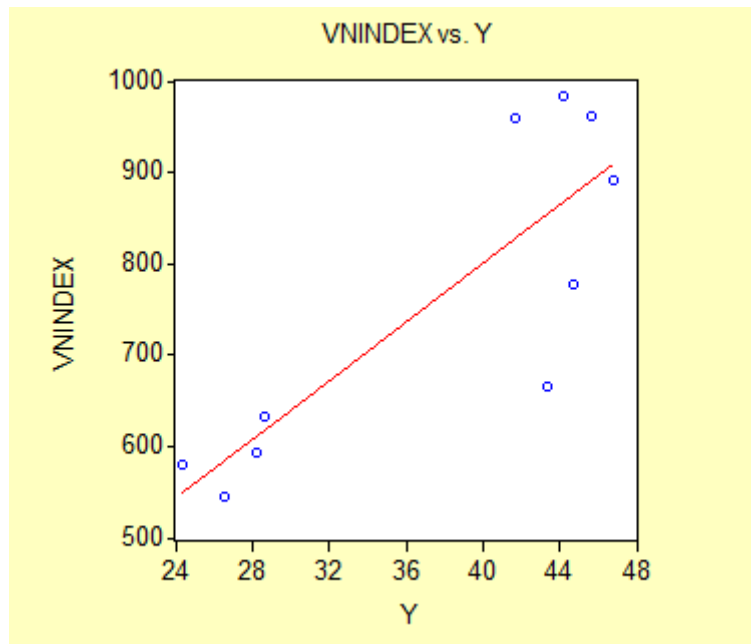
Chart 3 – WSB stock price (Y) vs. Inflation (CPI)

Next we find out that, based on the below scatter chart, Y (WSB stock price) has slightly positive correlation with inflation (CPI).

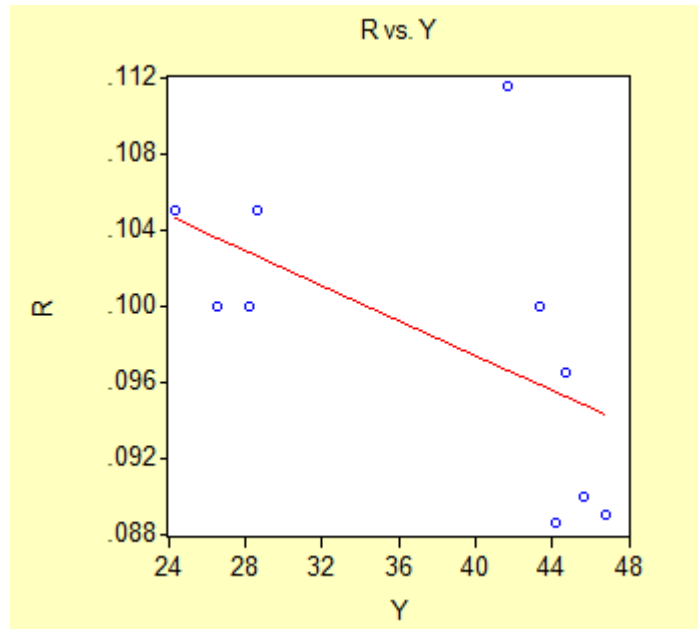


Looking at the below chart 4, we also recognize that WSB stock price (Y) and VNIndex have positive correlation.

Chart 4 – Y vs. VNIndex



We see that,WSB stock price (Y) and lending rate have negative correlation:
Chart 5 – Y vs. Lending rate (r)



In addition to, the below scatter graph shows us that WSB stock price (Y) and risk free rate (Rf) also have negative correlation.

Chart 6 – Y vs. Risk free rate (Rf)

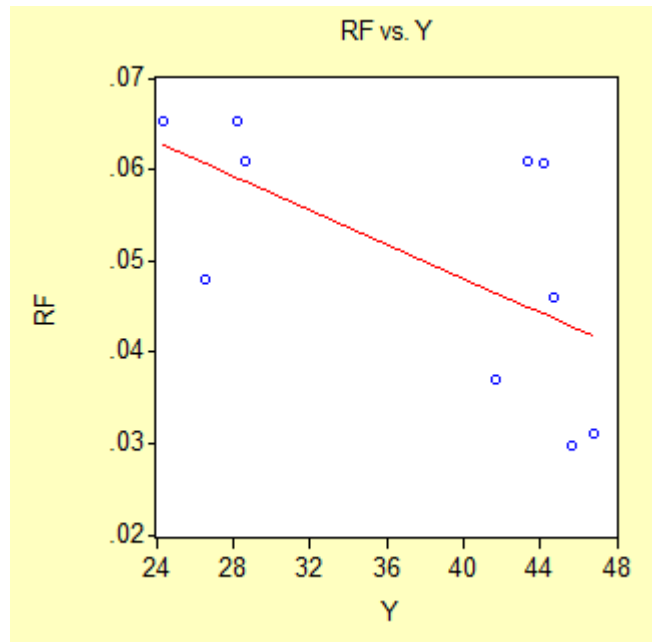
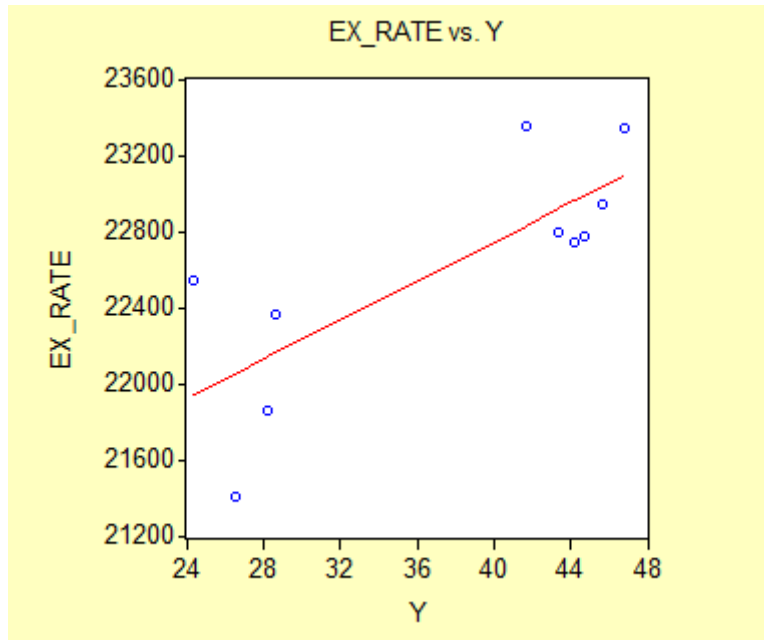


Chart 76 – Y vs. Exchange rate (Ex_rate)

The below chart 7 shows us that Y and USD/VND rate have a positive correlation.



On the other hand, we could see statistical results with Eview in the below table with 6 variables:

Figure 1 – Statistics for macro economic factors

Unit: %

Looking at the above table, we recognize that standard deviation of exchange rate and VNIndex are the highest values. Whereas standard deviation of GDP growth and lending rate are the lowest values.

If we want to see correlation matrix of these 7 macro variables, Eview generate the below result in figure 2:

Figure 2 – Correlation matrix for seven (7) macro-economic variables (GDP growth, inflation in VN, market interest rate, Risk free rate, exchange rate and WSB stock price)

The above table 2 shows us that correlation among 7 macro variables. An increase in exchange rate and decrease in lending rate might lead to an increase in WSB stock price. It also indicates that correlation between WSB stock price (Y) in Viet Nam and VNIndex in Viet Nam and S&P 500 in the US (0.83 and 0.84) is higher than that between Y and lending rate (-0.515) or between Y and CPI (0.43).

The below figure 3 shows us that covariance matrix among 7 macro economic variables. WSB stock price (Y) has a negative correlation with risk free rate and lending rate but has a positive correlation with exchange rate (EX_Rate), CPI and GDP growth.

Hence, an increase in GDP may lead to an increase in WSB stock price.

Figure 3 – Covariance matrix for 7 macro economic variables

4.2 Regression model and main findings

In this section, we will find out the relationship between eight macro economic factors and stock price.

4.2.1 Scenario 1: Regression model with single variable: analyzing impact of GDP growth (G) on WSB stock price (Y)

Note: C: constant

Using Eview gives us the below results:

Figure 4

Hence, $Y = 727 * g - 9.3, R^2 = 0.19, SER = 8.7$

Within the range of 10 observations (2014-2019) as described in the above scatter chart 1, coefficient 727, when GDP growth increases, WSB stock price will increase.

4.2.2 Scenario 2 - Regression model with 2 variables: analyzing impact of GDP growth (G) and Inflation (CPI) on WSB stock price (Y):

Running Eview gives us below results:

Figure 5

Therefore, $Y = 765 * g + 300.8 * CPI - 19.5, R^2 = 0.4, SER = 8.05$

Hence, this equation shows us WSB stock price has a positive correlation with GDP growth and inflation in Vietnam. Esp., it is highly positively affected by GDP growth rate.

4.2.3. Scenario 3 - Regression model with 3 variables: adding lending rate (r) into the above model

Eviews generates below statistical results :

Figure 6

Hence, $Y = 538 * G + 246 * CPI - 411 * R + 37, R^2 = 0.49, SER = 7.9$

The above regression equation shows us that WSB stock price (Y) has a positive correlation with GDP growth (G) and inflation (I) and negative correlation with lending rate (R). And the coefficient (with GDP) is the highest, the 2nd highest is with lending rate. Lending interest rate increases together with GDP growth decreases will lead to a decrease in WSB stock price.

4.2.4. Scenario 4 - regression model with 4 macro variables:

Eviews presents the below results:

Figure 7

Therefore, $Y = -249 * G + 173 * CPI - 236 * R + 0.04 * VNINDEX + 40.3, R^2 = 0.83, SER = 5.07$

We find out impacts of 4 macro variables, with the new factor: VNINDEX, shown in the above equation, WSB stock price (Y) has negative correlation with GDP growth, lending rate whereas it has positive correlation with CPI, VNINDEX. When inflation goes down, interest rate increases, as a result, WSB stock price will decrease.

4.2.5. Scenario 5 - regression model with 5 macro variables:

Running Eviews gives us results:

Figure 8

Hence, $Y = -272 * G + 167 * CPI - 236 * R + 0.03 * VNINDEX - 72.9 * Rf + 48, R^2 = 0.83, SER = 5.5$

Here we see impacts of 5 macro factors, with the new variable: risk free rate (Rf), the above equation shows that WSB stock price (Y) has negative correlation with GDP growth and lending rate, risk free rate whereas it has positive correlation with CPI and VNINDEX. We also recognize that GDP growth and lending rate have the highest impact on WSB stock price. When risk free rate declines, it will increase investment in stock market, then it will lead to an increase in WSB stock price.

4.2.6. Scenario 6 - regression model with 6 macro variables:

Running Eviews gives us results:

Figure 9

$$Y = -399 * G + 157.4 * CPI - 396.6 * R + 0.01 * VNINDEX - 59.9 * Rf + 0.007 * EX_RATE - 87.7,$$

$$R^2 = 0.92, SER = 4.2$$

Therefore, we see impacts of 6 macro factors, with the new variable: exchange rate USD/VND (EX_RATE), the above equation shows that WSB stock price (Y) has negative correlation with GDP growth, lending rate and risk free rate, whereas it has positive correlation with GDP growth, CPI, VNINDEX and exchange rate. We also recognize that GDP growth and lending rate, then CPI have the highest impact on WSB stock price, while exchange rate just has a slightly impact on stock price.

5. DISCUSSION AND FURTHER RESEARCHES

Through the regression equation with above 6 macroeconomic variables, this research paper used updated data from 2014-2019 to analyze the regression equation via Eview in order to show that an increase in GDP growth has a significant impact on decreasing WSB stock price (Y) with the highest coefficient of impact, followed by an increase in lending rate and decrease in CPI, then an increase in Risk free rate, a reduction in VNINDEX, as well as a little reduction in exchange rate.

Data are from observations in the past 10 years, it is partly based on the market economic rules, and the research results are also affected by socio-economic characteristics in Vietnam such as: efficiency of public investment, waste of public investment, enterprise bankruptcy, and investment in areas that increase GDP such as production, electricity, etc. or investing in healthcare, environment and education sectors. We have not yet considered the impact of these factors.

Beside, we can analyze impact of another macro factor, for example, deposit rate when we add this variable into our regression model of stock price. Furthermore, we can add unemployment rate or public debt increase into our econometric model to measure the impact of these extra factors on WSB stock price.

6. CONCLUSION AND POLICY SUGGESTION

Based on the above data analysis from our regression model, although low inflation during 2015-2016 is a good signal for WSB stock price, we would suggest the government, Ministry of Finance and State Bank of Vietnam consider to control inflation more rationally, i.e not decreasing much and suitable with each economic development stage. Governmental bodies and bank system also need to apply macro policies to stimulate economic growth, however not increasing lending rate too much, together with credit, operational and market risk management, corporate governance and controlling bad debt.

Next, it is necessary to coordinate synchronously between the management and administration of commercial bank policies with fiscal policies, monetary policies (used as effective tools to stimulate bank stock price) and other economic development policies to

limit the negative effects of lending rate, risk free rate and exchange rate, i.e not increasing much. Lending policy of bank system need to be selective and increase interest rates for acceptable high risk high return projects.

Generally speaking, managing WSB stock price depends on many factors, so the government need to use fiscal policy combined with monetary policies and socio-economic policies to reduce unemployment and stimulate economic growth, toward a good stock price management.

Finally, this research paper also helps to direct further future researches, for instance, we could add deposit rate and unemployment rate into our above econometric model to measure impacts of them on F&B firm stock price.

REFERENCES

- [1] Ahmad, N., & Ramzan, M. (2016). Stock Market Volatility and Macroeconomic Factor Volatility, *International Journal of Research in Business Studies and Management*, 3(7), 37-44.
- [2] Arshad, Z., Ali, R. A., Yousaf, S., & Jamil, S. (2015). Determinants of Share Prices of listed Commercial Banks in Pakistan, *IOSR Journal of Economics and Finance*, 6(2), 56-64.
- [3] Ayub, A., & Masih, M. (2013). Interest Rate, Exchange Rate, and Stock Prices of Islamic Banks: A Panel Data Analysis, MPRA Paper No. 58871.
- [4] Cherif, R., & Hasanov, F. (2012). Public Debt Dynamics: The Effects of Austerity, Inflation, and Growth Shocks, *IMF Working paper WP/12/230*.
- [5] Krishna, R.C. (2015). Macroeconomic Variables impact on Stock Prices in a BRIC Stock Markets: An Empirical Analysis, *Journal of Stock & Forex Trading*, 4(2).
- [6] Kulathunga, K. (2015). Macroeconomic Factors and Stock Market Development: With Special Reference to Colombo Stock Exchange, *International Journal of Scientific and Research Publications*, 5(8), 1-7.
- [7] Ihsan, H., Ahmad, E., Muhamad, I.H., & Sadia, H. (2015). *International Journal of Scientific and Research Publications*, 5(8)
- [8] Jarrah, M., & Salim, N. (2016). The Impact of Macroeconomic Factors on Saudi Stock Market (Tadawul) Prices, *Int'l Conf. on Advances in Big Data Analytics*.
- [9] Luthra, M., & Mahajan, S. (2014). Impact of Macro factors on BSE Bankex, *International Journal of Current Research and Academic Review*, 2(2), 179-186.
- [10] Ndlovu, M., Faisal, F., Nil, G.R., & Tursoy, T. (2018). The Impact of Macroeconomic Variables on Stock Returns: A Case of the Johannesburg Stock Exchange, *Romanian Statistical Review*, 2, 88-104.
- [11] Pan, Q., & Pan, M. (2014). The Impact of Macro Factors on the Profitability of China's Commercial Banks in the Decade after WTO Accession, *Open Journal of Social Sciences*, 2, 64-69.
- [12] Quy, V.T., & Loi, D.T.N. (2016). Macroeconomic factors and Stock Price – A Case Of Real Estate Stocks on Ho Chi Minh Stock Exchange, *Journal of Science Ho Chi Minh City Open University*, 2(18), 63-75.

[13] Saeed, S., & Akhter, N. (2012). Impact of Macroeconomic Factors on Banking Index in Pakistan, *Interdisciplinary Journal of Contemporary Research in Business*, 4(6), 1200-1218.

[14] <https://www.sbv.gov.vn>

[15] <https://nif.mof.gov.vn>

Exhibit

Exhibit 1 – Inflation, CPI over past 10 years (2007-2017) in Vietnam

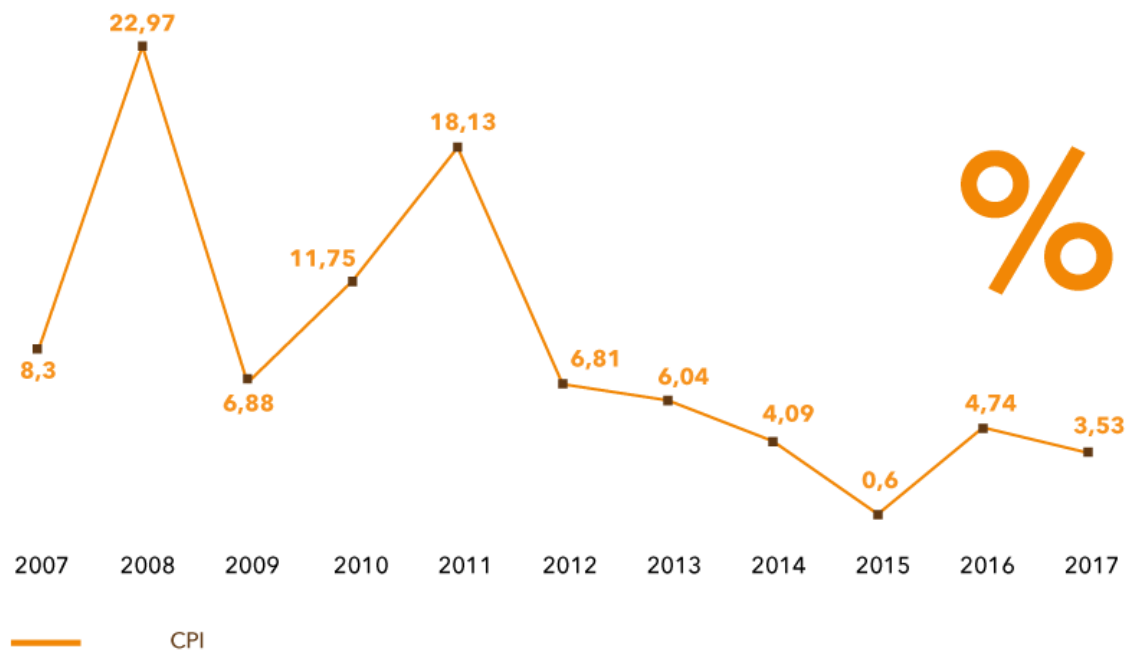


Exhibit 2 – GDP growth rate past 10 years (2007-2018) in Vietnam

