

## Management Solutions for Better Business Performance based on a Six Factor Model on VMD Stock Price – A Case in Medicine Industry in Vietnam

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**Abstract:** What are macro effects on business performance indicators such as stock price in medicine sector and such firms such as Vimedimex (VMD) in Vietnam? Is it the time we propose better management model via analyzing business performance under macro factors effects?

This paper will use quantitative and qualitative analytical methods, such as synthesis and inductive, with OLS regression supported by Eviews.

First, we found that many macro factors have negative correlation with stock price of firm, VMD. Whereas Risk free rate (Rf) has positive correlation with stock price.

Next we discovered better business performance will be affected by better stock price management. Hence, management team need to predict effects from macro policies on their stock price as our suggested model.

We believe these findings could be used by companies and investors as a prediction of stock price management.

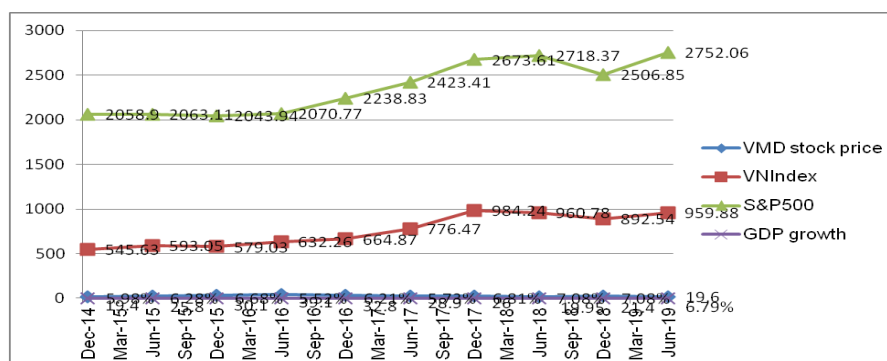
**Keywords:** Management solutions, Business performance, Stock price, GDP growth, Inflationary, Risk free rate, Vietnam, Medicine industry.

### INTRODUCTION

Medical Import-Export Company was established under Decision No. 1106 / BYT-QD of the Minister of Health. Being a State-owned enterprise and also the first Import-Export Company of the Ministry of Health of the Socialist Republic of Vietnam, a company under the Vietnam Union of Pharmaceutical Enterprises. On April 22, 1993, according to Decision No. 415 / BYT - QD of the Minister of Health, the official name of the Company was changed to Medical Import Export Company II in Ho Chi Minh City called VIMEDIMEX II (HCM City).

With Stock code VMD, and taking stock price data from stock exchange, we will analyze macro effects affect business performance via stock price in this paper.

VND stock price, as statistic data shown in below chart, move in same trend with other macro factors.



The paper is organized with introduction, research questions literature review, main results, discussion and conclusion.

## CONTENTS

### Research Questions

Question 1: What are relationship among many economic factors and VMD stock price?

Question 2: What are management solutions for VMD and medicine sector?

### LITERATURE REVIEW

First, Winhua and Miling (2014) found Bank income much affected by macro effects.

Second, Krirsna (2015) mentioned that Between stock price and macro factors there are causal relation.

Third, Kulathunga (2015) stated that In Sri Lanka, stock market curtailed bu increasing deposit rates.

Fourth, Ahmad and Ramzan (2016) found out that Investors might consider macro effects in portfolio of stock investment.

Fifth, Gunaratha (2016) said that whereas firm size negatively impacts on the financial risk, financial leverage and financial risk has positive relationship.

Last but not least, Hami (2017) specified that financial depth has been affected negatively by inflation in Iran during the observation period.

### METHODOLOGY AND DATA

We use both quantitative and qualitative analytical methods, with OLS regression supported by Eviews.

Most data from stock exchange and reliable.

### MAIN RESULTS

#### General Data Analysis

From the below charts, we recognize that Between stock price Y (VMD) and GDP growth and inflation and VNIndex there is negative correlation, while between Y and Rf and lending rate there is positive correlation.

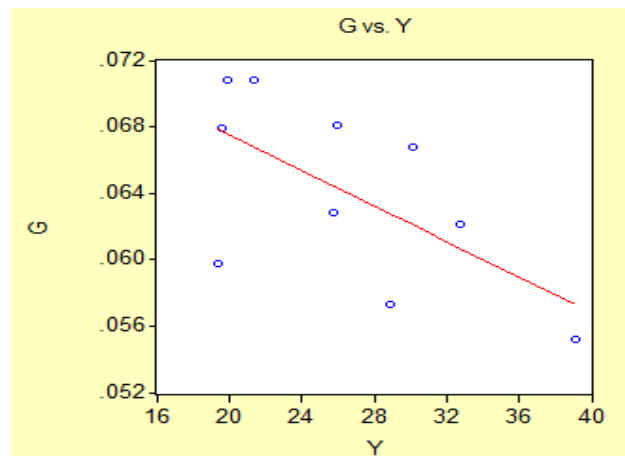


Chart 1 – VMD stock price (Y) vs. GDP growth in Vietnam (G)

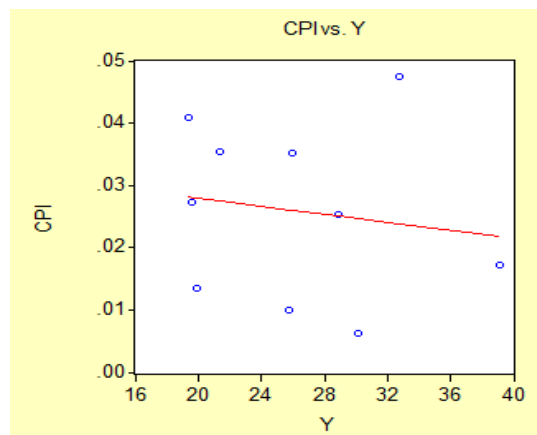


Chart 2 – VMD stock price (Y) vs. Inflation (CPI)

Looking at the below chart 3, we also recognize that BIDV stock price (Y) and VNIndex have positive correlation.

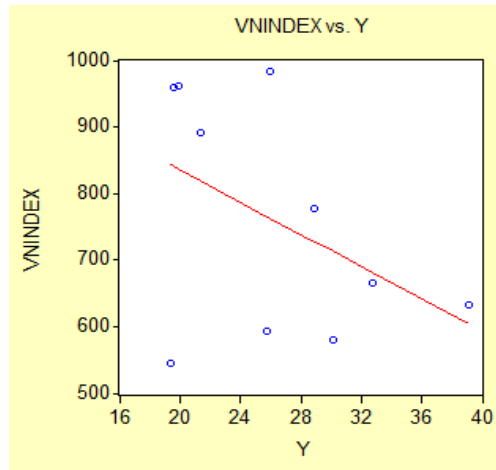


Chart 3 – Y vs. VNIndex

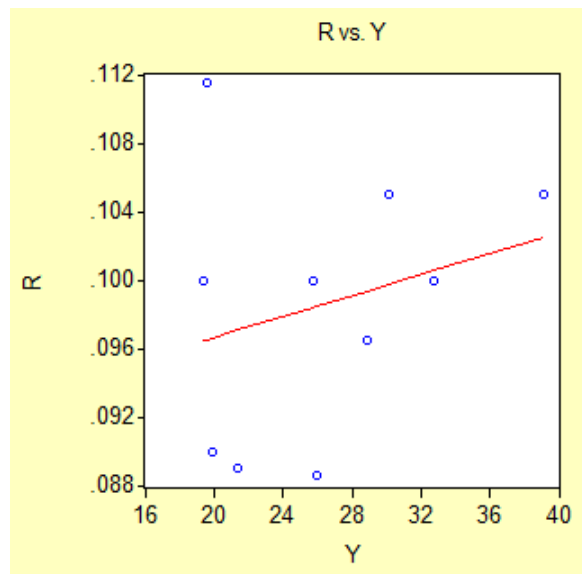


Chart 4 – Y vs. Lending rate (r)

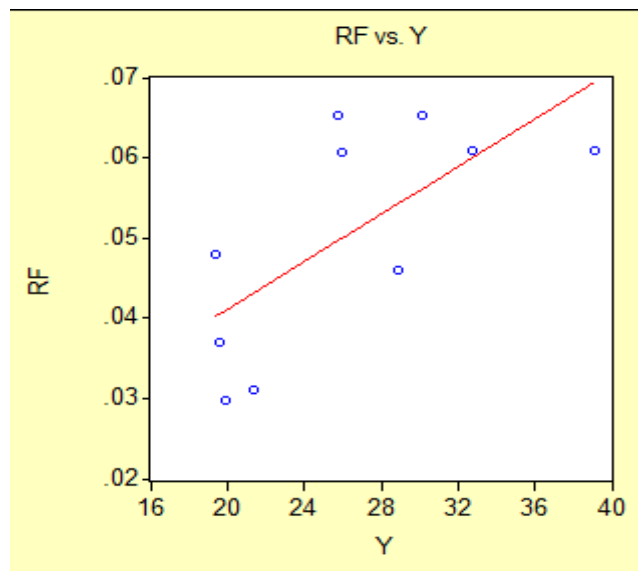


Chart 5 – Y vs. Risk free rate (Rf)

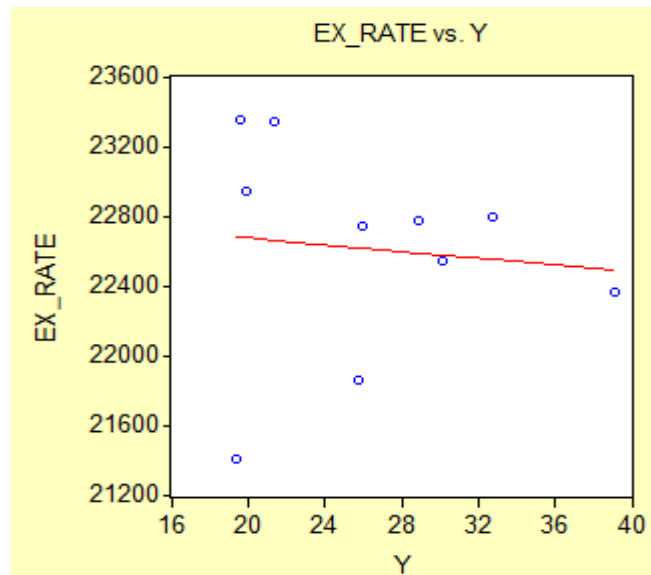


Chart 6 – Y vs. Exchange rate (Ex\_rate)

On the other hand, we could see statistical results with Eview in the below table with 6 variables. We find out in below table, standard deviation of usd/vnd is the highest value.

Table 1: Statistics for macro economic factors

Unit: %

	VMD price	stock	GDP growth	Inflation (CPI)	VN Index	Lending rate	Risk free rate	USD/VND rate
Mean		26.30	0.06416	0.02588	758.875	0.09856	0.050485	22611.7
Median		25.9	0.0648	0.0264	720.67	0.1	0.05435	22757.5
Maximum		39.1	0.0708	0.0474	984.24	0.1115	0.06535	23350
Minimum		19.4	0.0552	0.0063	545.63	0.0886	0.0297	21405
Standard dev.		6.536	0.005549	0.01388	176.483	0.00763	0.014066	610.2313

We find out in below tables, risk free rate an stock price has positive correlation. The correlation between stock price and Rf (0.69)ish higher than that of lending rate (0.26).

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

Correlation Matrix								
	Y	G	CPI	VNINDEX	R	RF	EX_RATE	SP500
Y	1.000000	-0.631308	-0.151369	-0.449506	0.262143	0.690110	-0.105736	-0.519675
G	-0.631308	1.000000	-0.050535	0.653067	-0.390583	-0.474076	0.564582	0.634468
CPI	-0.151369	-0.050535	1.000000	0.146050	-0.220576	-0.158705	0.082310	0.183559
VNINDEX	-0.449506	0.653067	0.146050	1.000000	-0.440372	-0.634696	0.777514	0.983824
R	0.262143	-0.390583	-0.220576	-0.440372	1.000000	0.302601	-0.154750	-0.374293
RF	0.690110	-0.474076	-0.158705	-0.634696	0.302601	1.000000	-0.521420	-0.677534
EX_RATE	-0.105736	0.564582	0.082310	0.777514	-0.154750	-0.521420	1.000000	0.755250
SP500	-0.519675	0.634468	0.183559	0.983824	-0.374293	-0.677534	0.755250	1.000000

Table 3: Covariance matrix for 7 macro economic variables

Covariance Matrix								
	Y	G	CPI	VNINDEX	R	RF	EX_RATE	SP500
Y	38.44623	-0.020606	-0.012362	-466.6464	0.011774	0.057101	-379.5485	-901.5725
G	-0.020606	2.77E-05	-3.50E-06	0.575578	-1.49E-05	-3.33E-05	1.720538	0.934488
CPI	-0.012362	-3.50E-06	0.000173	0.322068	-2.10E-05	-2.79E-05	0.627614	0.676458
VNINDEX	-466.6464	0.575578	0.322068	28031.78	-0.534085	-1.418033	75361.46	46087.69
R	0.011774	-1.49E-05	-2.10E-05	-0.534085	5.25E-05	2.93E-05	-0.648952	-0.758612
RF	0.057101	-3.33E-05	-2.79E-05	-1.418033	2.93E-05	0.000178	-4.028085	-2.529699
EX_RATE	-379.5485	1.720538	0.627614	75361.46	-0.648952	-4.028085	335144.0	122334.5
SP500	-901.5725	0.934488	0.676458	46087.69	-0.758612	-2.529699	122334.5	78286.05

### Regression Model and Main Findings

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

Scenario 1: Regression model with 1-6 variables: analyzing impact of macro effects on stock price (Y)

	Coefficients				
	1 variable	2 variables	3 variables	4 variables	5 variables
G	-743.6	-754	-771	-758	-668
CPI		-86.4	-90.6	-89.4	-64.5
VNINDEX			-30.9	-0.0006	0.01
R				-33.8	-31.5
Rf					282

Above table shows us that most of macro factors have negative correlation with VMD stock price while VNINDEX has positive correlation.

2). Scenario 2 - regression model with 6 macro variables:

Running Eviews gives us results:

Dependent Variable: Y  
Method: Least Squares  
Date: 02/16/20 Time: 11:45  
Sample: 1 10  
Included observations: 10

Variable	Coefficient	Std. Error	t-Statistic	Prob.
G	-821.3708	291.0724	-2.821878	0.0666
CPI	-76.42596	87.89413	-0.869523	0.4485
R	-224.8589	185.9863	-1.209008	0.3133
VNINDEX	-0.013269	0.013300	-0.997629	0.3920
RF	298.0335	107.0544	2.783944	0.0688
EX_RATE	0.009358	0.003238	2.890140	0.0630
C	-113.4240	63.99635	-1.772351	0.1745

R-squared	0.907247	Mean dependent var	26.30500
Adjusted R-squared	0.721741	S.D. dependent var	6.535903
S.E. of regression	3.447706	Akaike info criterion	5.509322
Sum squared resid	35.66002	Schwarz criterion	5.721132
Log likelihood	-20.54661	F-statistic	4.890662
Durbin-Watson stat	2.032641	Prob(F-statistic)	0.110286

$$Y = -821 * G - 76.4 * CPI - 224 * R - 0.01 * VNINDEX + 298 * Rf + 0.009 * EX\_RATE - 113,$$

$$R^2 = 0.90, SER = 3.44$$

Hence, the above OLS regression tell us that:

Between Stock price of VMD and other macro indicators such as Rf and exchange rate, there is positive correlation.

Between Stock price of VMD and other macro indicators such as G, CPI, ending rate and VNINDEX, there is negative relationship.

And G, Rf and CPI have highest effects on stock price.

### DISCUSSION AND FURTHER RESEARCHES

From above equation we see: stock price of VMD will increase if CPI, lending rate decline and Rf and exchange rate increase.

There will be management implications, toward a good stock price management.

### CONCLUSION AND POLICY SUGGESTION

#### There is Policies Implies:

Inflation need to be controlled.

Lending rate not need to increase much.

Rf not need to decrease too much.

#### Management Implies

Board of management need to construct suitable model to manage better business performance and stock price under macro effects and macro policies.

### Limitation of Research

We can expand our research model to other markets.

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