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Management Issues in Medical Industry in Vietnam

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1. Introduction

We will analyze solutions to enhance better management capabilities for medical industry in Vietnam , in a special case of DMC medical corporation. DMC stands for Domestic medical company located in Dong Thap province in Vietnam, specialized in producing and marketing and trading pharmaceuticals, medicines from pharmaceutical materials, functional food, pure water and medical beverages. Domestic corporation also import and export medicines, functional food and medical supplies, equipment for treatment of public.

Domesco operated with management system such as ISO 14001, ISO 9001, ISO 13485, ISO 45001 and ISO/IEC 17025. DMC business results over past years as follows (table 1).

Our research model can be applied into other cases or markets or industries, as we can generate policies from our results in the medicine sector in Vietnam as example.

DMC business is going with economic growth of Vietnam. We can see DMC stock price fluctuates during 2017-2021: reaching peak in 2017-2018 and then decline sin 2020-2021.

Table 1. Revenues and profits of Domesco (unit: m VND)

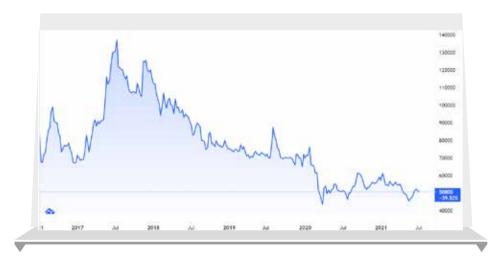|	2017	2018	2019	2020
Revenues	1,363,513	1,463,997	1,533,850	1,542,266
Cost of good sold	804,867	896,095	975,656	1,013,487
Gross profit	534,782	488,992	492,733	438,465
Profit before tax	259,662	286,089	290,915	224,565
Net profit	207,661	228,771	232,634	179,535

Source: financial reports of Domesco

Figure 1. Movement of DMC stock price

Source: tradingview.com, access date 5/7/2021

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

2. Contents

2.1. Research questions

We will find answers for:
Question 1: To what extent macro indicators effects on stock price (of DMC)?
Question 2: What are management implications for DMC and medical firms?

2.2 Literature review

We summarize relating studies in below table 2.

Table 2. Summary of previous studies

Authors	Year	Results, contents
Sadia and Noreen	2012	Banking index much affected by exchange rate and interest rate (short term).
Huy, D.T.N	2012	In construction sector, beta affected by leverage and the size of firms' competitors.
Saeed and Akhter	2012	Banking index much affected by interest (short term) and exchange rate.
Winhua and Meiling	2014	Bank income much affected by macro effects.
Krishna	2015	Between stock price and macro factors there are causal relation.
Kulathunga	2015	In Sri Lanka, stock market curtailed bu increasing deposit rates.
Ahmad and Ramzan	2016	Investors might consider macro effects in portfolio of stock investment.
Huy, D.T.N et al	2020	From analysis of stock price under effects of multi macro factors, we can suggest Good business management.
Mckibbin and Fernando	2020	Global economy might be affected by a contained outbreak, in short run.
Huy, D.T.N et al	2021	Macro index has affected stock price of Vingroup in Vietnam.

Source: own study

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Next, For better management model of company, we can refer to below study (Dinh Tran Ngoc Huy, 2012):

Figure 2. Corporate governance (CG) standards
The Limited Comparative CG standards in America

Source: Dinh Tran Ngoc Huy, 2012

Therefore, this study will propose solutions toward better model and management suggestions for Domesco corporation (DMC).

3. Method and data

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

Most data from stock exchange and reliable. Stock price from HOSE or HNX stock exchange, rates from bank system, GDP and CPI from BUreau statistics and Ministry of Finance.

This research paper establishes correlation among econ factors and uses OLS regression model. Domesco stock price is a function with 6 variables presented below.

Y (DMC stock price) = f (x1: G, x2: CPI, x3: R, x4: Rf, x5: VNIndex, x6; exchange rate).

We therefore can estimate effects and impacts of multi factors on firm stock price.

4. Main results

4.1. Overall analysis

We recognize that Between stock price Y (DMC) and GDP growth and inflation and VNIndex and exchange rate there is positive correlation, while between Y and Rf and lending rate there is negative correlation.
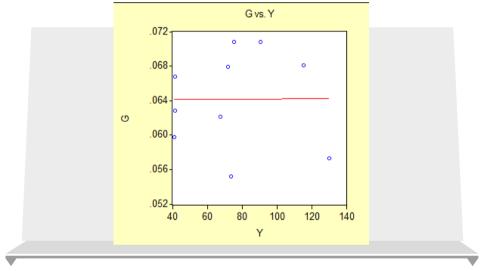

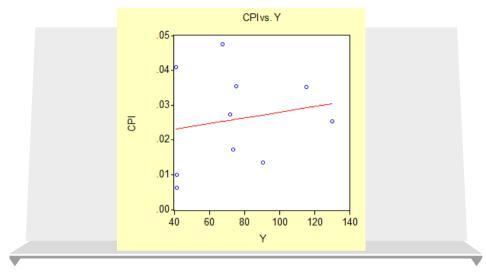**Figure 3. DMC stock price (Y) and GDP growth in Vietnam (G)**
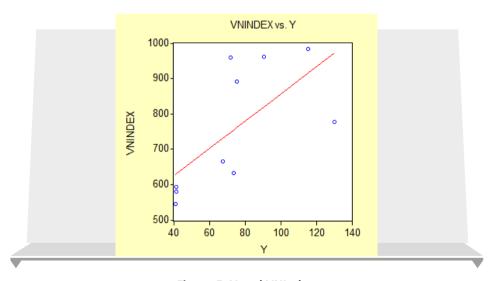
Source: own study

Figure 4. Y and CPI

Source: own study

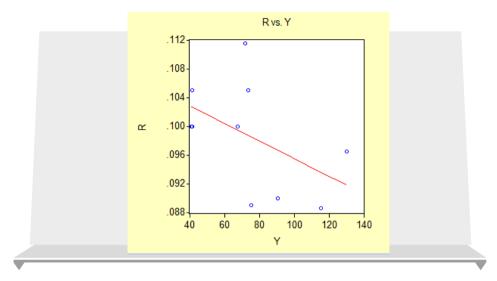**Figure 5. Y and VNIndex**

Source: own study

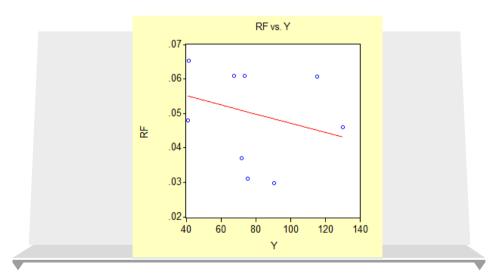**Figure 6. Y vs. Lending rate (r)**

Source: own study

Figure 7. Y and Rf

Source: own study
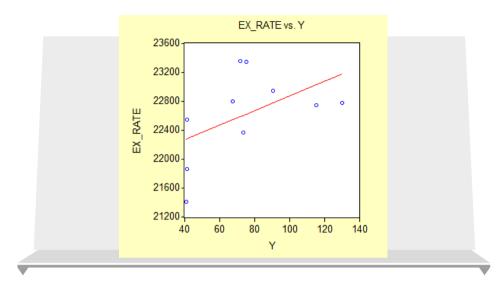
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Figure 8. Y vs. Exchange rate (Ex_rate)

Source: own study

Next, we generate with software the Below table which will show mean and deviation of variables. The lowest value of std. Deviation is GDP growth, while that of USD/VND has the highest value.

In addition, We see in table 3 and 4 that: between stock price (DMC) and CPI, there is higher correlation (0.18) than between Y and GDP growth (0.007)

Table 3. Statistics for macro economic factors [Unit: %]

	DMC stock price	GDP growth	Inflation (CPI)	VN Index	Lending rate	Risk free rate	USD/ VND rate
Mean	74.86	0.06416	0.02588	758.875	0.09856	0.050485	22611.7
Median	72.75	0.0648	0.0264	720.67	0.1	0.05435	22757.5
Maximum	130	0.0708	0.0474	984.24	0.1115	0.06535	23350
Minimum	41	0.0552	0.0063	545.63	0.0886	0.0297	21405
Standard dev.	30.517	0.005549	0.013884	176.4835	0.007636	0.014066	610.2313

Source: authors calculation and Vietnam stock exchange

Table 4. Matrix of Correlation of macro-economic variables

Correlation Matrix								
	Y	G	CPI	VNINDEX	R	RF	EX_RATE	SP500
Y	1.000000	0.007831	0.181794	0.669173	-0.489881	-0.290871	0.505773	0.651558
G	0.007831	1.000000	-0.050535	0.653067	-0.390583	-0.474076	0.564582	0.634468
CPI	0.181794	-0.050535	1.000000	0.146050	-0.220576	-0.158705	0.082310	0.183559
VNINDEX	0.669173	0.653067	0.146050	1.000000	-0.440372	-0.634696	0.777514	0.983824
R	-0.489881	-0.390583	-0.220576	-0.440372	1.000000	0.302601	-0.154750	-0.374293
RF	-0.290871	-0.474076	-0.158705	-0.634696	0.302601	1.000000	-0.521420	-0.677534
EX_RATE	0.505773	0.564582	0.082310	0.777514	-0.154750	-0.521420	1.000000	0.755250
SP500	0.651558	0.634468	0.183559	0.983824	-0.374293	-0.677534	0.755250	1.000000

Source: authors calculation and Vietnam stock exchange

4.2. Regression model and main findings

We will run under several cases with various factors that affect stock price of our medical company.

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

OLS running gives us the below results:

Dependent Variable: Y
Method: Least Squares
Date: 02/15/20   Time: 12:16
Sample: 1 10
Included observations: 10

Variable	Coefficient	Std. Error	t-Statistic	Prob.
G	43.06686	1944.399	0.022149	0.9829
C	72.09683	125.1718	0.575983	0.5805

R-squared	0.000061	Mean dependent var	74.86000
Adjusted R-squared	-0.124931	S.D. dependent var	30.51714
S.E. of regression	32.36733	Akaike info criterion	9.969032
Sum squared resid	8381.150	Schwarz criterion	10.02955
Log likelihood	-47.84516	F-statistic	0.000491
Durbin-Watson stat	0.730377	Prob(F-statistic)	0.982871

Source: authors calculation and Vietnam stock exchange
We have, Y = 43 * g + 72.09, R^2 = 0.00006, SER = 32.3

Because coefficient calculates as of 43, when we run OLS with 10 observations (2014-2019) if GDP growth increases, DMC stock price will go up.

4.2.2. Scenario 2: Regression model with 2-6 variables: we test other factors on DMC stock price (Y)

Table 5. Regression results

	Coefficient				
	2 variables	3 variables	4 variables	5 variables	6 variables
G	93.8	-1148.7	-4616.9	-4514	-4762
CPI	401.4	104.4	-215.6	-187.4	-206
R		-2242.1	-1472.5	-1469	-1783
Rf				319	344
VNIndex			0.18	0.19	0.15
Ex_rate					0.015

Source: authors calculation and Vietnam stock exchange

Analysis: from above tables we see that VNIndex and exchange rate just have tiny positive correlation with Domesco stock price. Hence, not much impact if we tend to increase USD/VND exchange rate.

Beside, while Rf has positive correlation with stock price, R has negative relationship. It implies that if we reduce lending rate a bit and increase treasury bond rate a litle, it supports DMC stock price.

5. Discussion and further researches

As we recognize from above result tables, between DMC stock price and Rf and VNIndex and exchange rate and there is positive relationship. While there is negative correlation between Y and CPI, lending rate.

CPI and R also have highest effects on DMC stock price.

Cause and effects analysis: lending rate, CPI and G might be directly and have more impacts on DMC stock price.

6. Conclusion

To be in favor of stock price performance, as shown in above model, governmental agencies such as bank and Ministries need to control lending rate and CPI, meaning not let them going up too much. Hence, there is policy implications.

Better management of the firm requires a TQM approach as we presented below.

Management implications. Better performance will require: DMC firm build a model to evaluate impacts from external and internal factors on business performance indicators: stock price or net profit.

Beside, Total Quality Management (TQM) is a method calling for every firm member to join in quality program of firms to create long term values for their clients.

Measure your business's current costs. Identifying quality issues and the effectiveness of quality efforts, the stages of the TQM program should be costly. Evaluate TQM's economic performance and work out an action plan.

TQM's comprehensive quality management goal. Is improving product quality and improving customer satisfaction at the best level. The highlight of TQM compared to previous quality management methods is to provide a comprehensive management system for management and improvement in every aspect related to quality. Mobilizing the participation of all departments and all individuals to achieve set quality goals.

Commitment of intermediate management level: the commitment of the intermediate level staff (department head, foreman, group leader...) to ensure the development of quality programs in departments and divisions, linking assigned tasks and relationships The vertical and horizontal system in the organization is the bridge between the implementation of the policies of top management and the executive. The commitment of intermediaries managers is an important catalyst in quality management activities in the business.

Summary

Management Issues in Medical Industry in Vietnam
Stock exchange has impacts on activities and capitals of medical companies in Vietnam market. However, medical firms still need researches to address some management issues including good practices of governance, good resources allocation and better risk management policies.

Authors uses quantitative analysis and statistics, together with qualitative methods including synthesis and explanatory methods. We figure out CPI and stock price has negative relationship while there is positive correlation between stock price and Risk free rate (Rf).

In conclusion, authors also propose total quality management perspective as well as recommend macro policies that affect company performance.

For example, exchange rate policy could support USD/VND just little bit while inflation policy need to be controlled at low level.

Key words: *management capabilities, medical industry, Vietnam, TQM.*

JEL: M21, N1.

References

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.

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.

Ayub, A., & Masih, M. (2013). Interest Rate, Exchange Rate, and Stock Prices of Islamic Banks: A Panel Data Analysis, *MPRA Paper No. 58871.*

Cherif, R., & Hasanov, F. (2012). Public Debt Dynamics: The Effects of Austerity, Inflation, and Growth Shocks, *IMF Working paper WP/12/230.*

Dat, P.M., Mau, N.D., Loan, B.T.T., Huy, D.T.N. (2020). Comparative China Corporate Governance standards After Financial Crisis, Corporate Scandals and Manipulation, *Journal of Security and Sustainability Issues, 9*(3).

Dinh Tran Ngoc Huy, & Nguyen Thi Hang. (2021). Factors that affect stock price and Beta CAPM of Vietnam banks and enhancing Management Information System - Case of Asia Commercial Bank, *Revista Geintec-Gestao Innovacao e Technologias, 11*(2).

Hang, N.T., Tinh, D.T., Huy, D.T.N., & Nhung, P.T.H. (2021). Educating and training labor force Under Covid 19; Impacts to Meet Market Demand in Vietnam during Globalization and Integration Era, *Journal for Educators, Teachers and Trainers, 12*(1). DOI: 10.47750/jett.2021.12.01.023.

Hac, L.D., Huy, D.T.N., Thach, N.N., Chuyen, B.M., Nhung, P.T.H., Thang, T.D., Anh, T.T. (2021). Enhancing risk management culture for sustainable growth of Asia commercial bank -ACB in Vietnam under mixed effects of macro factors, *Entrepreneurship and Sustainability Issues*, 8(3).

Hang, T.T.B., Nhung, D.T.H., Hung, N.M., Huy, D.T.N., Dat, P.M. (2020). Where Beta is going–case of Viet Nam hotel, airlines and tourism company groups after the low inflation period, *Entrepreneurship and Sustainability Issues*, 7(3).

https://www.sbv.gov.vn

https://nif.mof.gov.vn

Huy, Dinh T.N., (2012), Estimating Beta of Viet Nam listed construction companies groups during the crisis, *Journal of Integration and Development, 15(1)*.

Huy, D. T.N., Loan, B. T., and Anh, P. T. (2020). 'Impact of selected factors on stock price: a case study of Vietcombank in Vietnam', *Entrepreneurship and Sustainability Issues, vol.7, no.4*, pp. 2715-2730. https://doi.org/10.9770/jesi.2020.7.4(10).

Huy, D. T.N., Dat, P. M., và Anh, P. T. (2020). 'Building and econometric model of selected factors' impact on stock price: a case study', *Journal of Security and Sustainability Issues, vol.9*(M), pp. 77-93. https://doi.org/10.9770/jssi.2020.9.M(7).

Huy D.T.N., Nhan V.K., Bich N.T.N., Hong N.T.P., Chung N.T., Huy P.Q. (2021). 'Impacts of Internal and External Macroeconomic Factors on Firm Stock Price in an Expansion Econometric model—A Case in Vietnam Real Estate Industry', *Data Science for Financial Econometrics-Studies in Computational Intelligence*, vol.898, Springer. http://doi-org-443.webvpn.fjmu.edu.cn/10.1007/978-3-030-48853-6_14

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).

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.

Mckibbin, W., & Fernando, R. (2020). *The Global Macroeconomic Impacts of COVID-19: Seven Scenarios*, Project: Global Macroeconomic Impacts of COVID-19.

Nguyen, Hung T., Songsak Sriboonchitta, and Nguyen Ngoc Thach. 2019. On Quantum Probability Calculus for Modeling Economic Decisions. In Structural Changes and their Econometric Modeling, *Proceedings of the International Conference of the Thailand Econometrics Society, Chiang Mai, Thailand, January 9–11.* Cham: Springer, pp. 18–34.
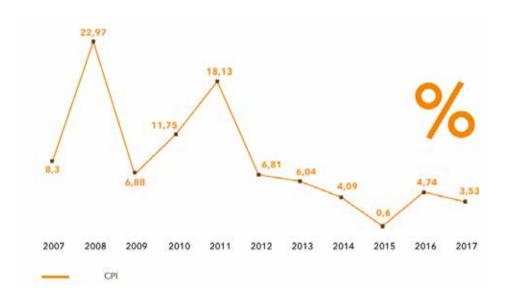
Nguyen, Hung T., Nguyen Duc Trung, and Nguyen Ngoc Thach. 2019. Beyond Traditional Probabilistic Methods in Econometrics. In *Beyond Traditional Probabilistic Methods in Economics, Proceedings of the ECONVN*

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2019, Studies in Computational Intelligence, Ho Chi Minh City, Vietnam, January 14–16. Cham: Springer, pp. 3–21.

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.

Exhibit

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

Acknowledgments