Risk Management via Measuring Impacts of Micro and Macro Economic Factors on Financial Firm Stock Price—A Case of Mitsubishi UFJ in Japan

Dinh Tran Ngoc Huy

Banking University, HCM city, Vietnam

International University of Japan, Niigata, Japan

Mitsubishi UFJ (MUFJ) has made very positive contributions to the overall achievements of the banking industry, deserving its position as one of the leading financial groups in Japan, contributing to helping government stabilizes the market and successfully implement monetary policy. MUFJ is aiming for growth of approximately ¥250 billion in net operating profits, with MUFG Group companies, business groups, and the corporate center. Movement of stock price in financial groups such as MUFJ will reflect the business health of bank and financial system and the whole economy. Good business management requires us to consider the impacts of multi micro and 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) micro and macro economic factors such as: cost, net sale, lending rate, inflation, GPD growth, S&P 500, etc. on stock price of a big financial group, MUFJ in Japan in the period of 2010-2019, both positive and negative sides. The results of quantitative research, in a seven-factor model, show that the decrease in inflation, GDP, and high lending rate has a significant effect on reducing MUFJ stock price with the highest impact coefficient, the second is increase in cost. This research finding and recommended policy also can be used as reference in policy for commercial bank and financial system in many developing countries.

Keywords: MUFJ stock price, GDP growth, inflationary, risk free rate, market interest rate

Introduction

Mitsubishi UFJ Group (MUFG) in Japan maintained a higher growth rate than the industry average on all indicators of scale, quality, efficiency, and labor productivity. It currently pushes social and environmental contribution and control risk. MUFG recognizes that the environmental and social risks arising from the business activities of each group company are important to our business and require managing appropriately.

Dinh Tran Ngoc Huy, MSc, Assistant Professor, Banking University, HCM city, Vietnam; International University of Japan, Niigata, Japan.

Correspondence concerning this article should be addressed to Dinh Tran Ngoc Huy ,Banking University, HCM city, Vietnam, Email:dtnhuy2010@gmail.com.

Mitsubishi UFJ Financial Group, Inc. (MUFG) is one of the world's leading financial groups. Headquartered in Tokyo and with over 360 years of history, MUFG has a global network with around 3,000 locations in more than 50 countries. The Group has over 180,000 employees and offers services including commercial banking, trust banking, securities, credit cards, consumer finance, asset management, and leasing. The Group aims to "be the world's most trusted financial group" through close collaboration among our operating companies and flexibly responds to all of the financial needs of our customers, serving society, and fostering shared, and sustainable growth for a better world. MUFG's shares trade on the Tokyo, Nagoya, and New York stock exchanges.

In term of environment protection and clean energy projects: as of the end of June 2019, the Trust Bank has invested more than ¥10 billion in solar power plants throughout Japan. Through these investments, these plants are expected to supply power to approximately 10,000 households a year as well as offset approximately 25,000 tons of CO_2 emissions annually. Moreover, in February 2019, the Trust Bank released part of its solar power generation portfolio as a fund for domestic institutional investors.

Commercial bank and financial group system in Japan in recent years play a key role in helping the whole economy. In the context that GDP growth in Japan has little decreased and CPI goes down in 2018-2019, it is necessary to evaluate impacts of seven (7) internal and external macro economic factors on MUFJ performance, esp. firm stock price. From these analytical results, we could suggest bank and government policies encourage and stabilize the growth of bank and financial system and stock market.

Looking at Figure 1 below, we find out that MUFJ stock price moves in the same trend with S&P 500 and GDP growth, although it fluctuates in a smaller range.
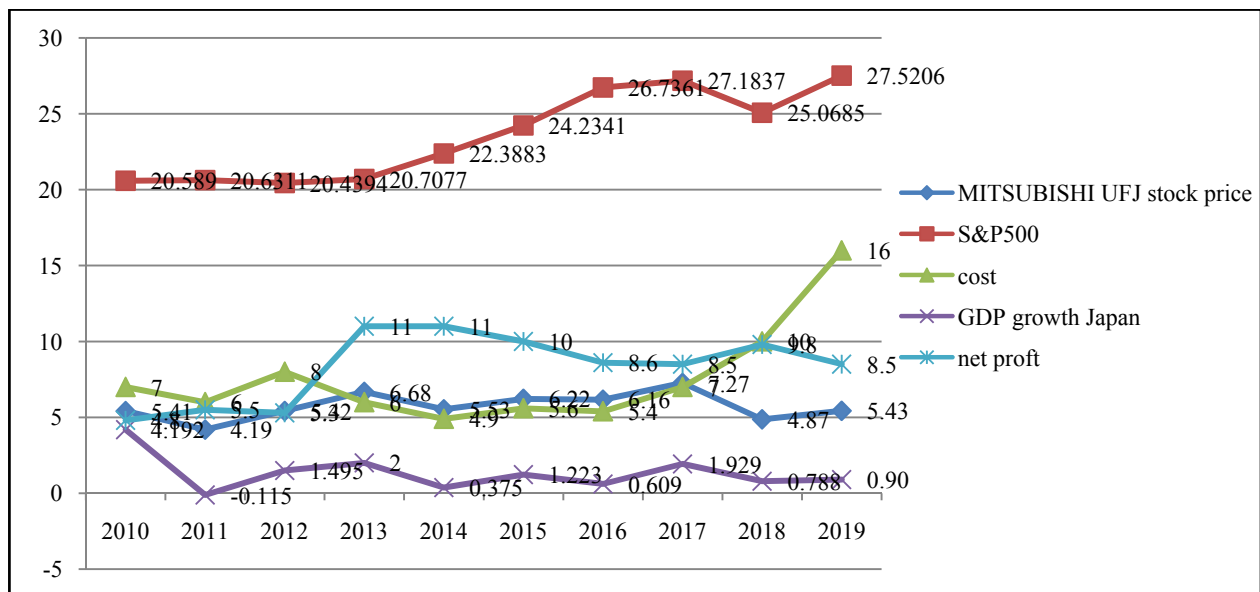

*Figure 1.*The comparison of MUFJ stock prices, S&P500 and GDP growth.

This study will calculate and figure out the impacts of six (6) micro and macro economic factors such as inflation, GDP growth, market interest rate, S&P 500, net sale, and cost on MUFJ 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 Section 6.

Body of Manuscript

Research Issues

The scope of this study will cover:

Issue 1: What are the correlation and relationship among many micro and macro economic factors: MUFJ stock price, net sale and cost, interest rate, lending rate, inflation, S&P 500 and GDP growth?

Issue 2: What are the impacts of above six micro and macro economic factors on MUFJ stock price?

Issue 3: Based on above discussion, we recommend some solutions regarding financial group risk management in incoming period.

This paper also tests two (2) below hypotheses:

Hypothesis 1: An increase in lending rate will make MUFJ stock price decline.

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

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. Macro economic variables like money supply, exchange rate, industrial production, and short term interest rate affect 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 has significant impact on Bankex. Then, Winhua and Meiling (2014) confirmed that macro economic variables do have a substantial influence on 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- 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 it could be seen 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 rallies, and vice versa when the high interest rates the stock market declines.

Last but not least, Quy and Loi (2016) found that three (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 choose the stock because investors are interested in knowing about the factors affecting the working of stock to manage their portfolios. Abrupt variations and unusual movements of macro economic variables cause the stock returns to fluctuate due to uncertainty of future gains.

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

Within the scope of this paper, we measured impacts of both internal and external macro factors on MUFJ stock price and suggested policies for bank system, Japan government, Ministry of Finance, State Bank, and relevant government bodies. We also analyze data throughout time series from 2010-2019.

Methodology and Data

This research paper establishes correlation among micro and macro economic factors by using an econometric model to analyze impacts of six (6) macro economic factors in Vietnam such as: GDP growth, inflation, interest rate, S&P 500, net sale, cost… on MUFJ stock price.

In this research, analytical method is used with data from the economy such as inflation in Japan and market interest rate, GDP growth rate, CPI. Data are included from 2010-2019 with semi-annual data (10 observations in total). Data are estimated based on exchange rate and lending interest rates of commercial banks (source from www.ceicdata). S&P 500 index data are from USA Stock exchange, data source (net sale, cost) is from Corporate FS reports. 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. MUFJ stock price is a function with seven variables as follows:

Y (MUFJ 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: net sale, x_4: lending rate, x_5: cost (c.o), x_6: S&P 500.

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.

Main Results

General Data Analysis

First of all, Figure 2 below shows us that Y has a negative correlation with Cost (c.o):
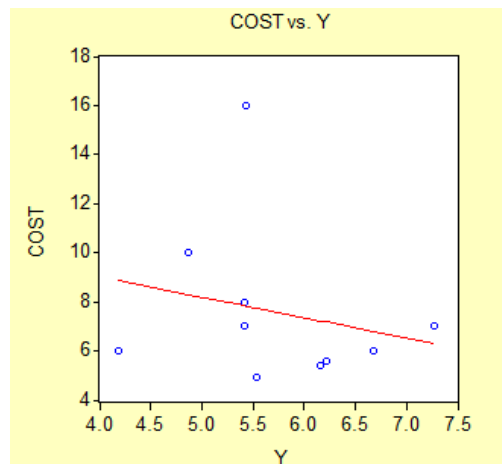

Figure 2. MUFJ stock price (Y) vs. cost (C).

Next we find out that, based on Figure 3 below, Y (MUFJ stock price) has positive correlation with inflation (CPI).
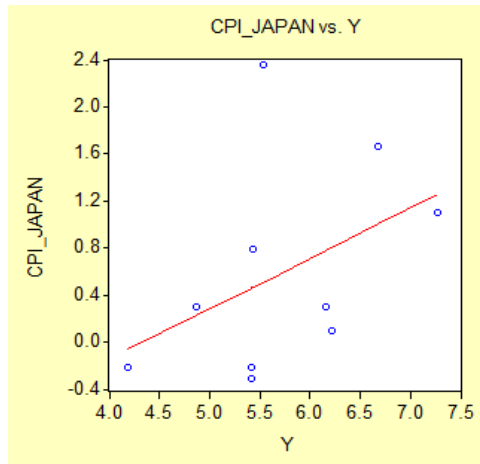
Figure 3. MUFJ stock price (Y) vs. inflation (CPI).

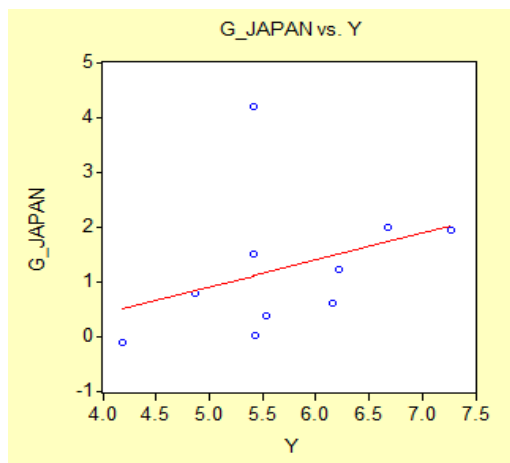Looking at Figure 4, we also recognize that MUFJ stock price (Y) and GDP growth have positive correlation.
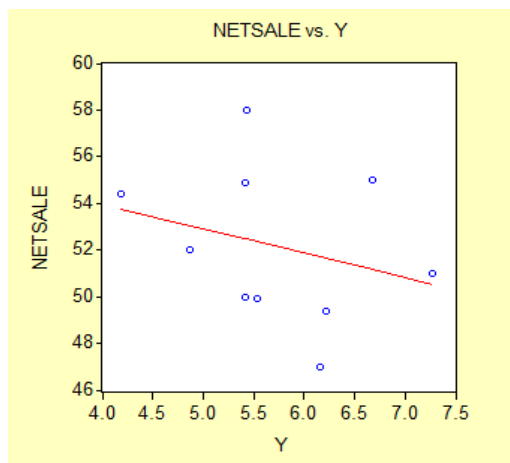

Figure 4. Y vs. GDP growth.

Figure 5. Y vs. sale.

We see that, MUFJ stock price (Y) and net sale have negative correlation:
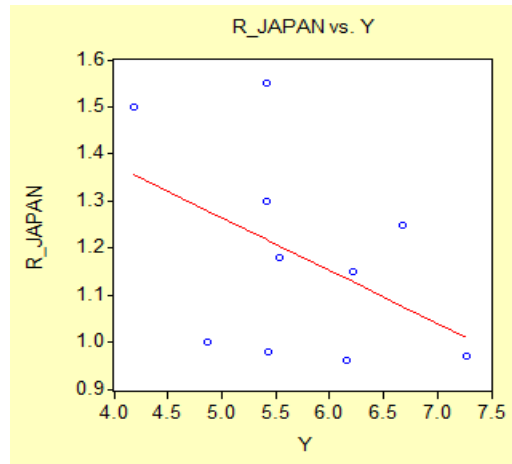
Figure 6. Y vs. lending rate.

We see that, MUFJ stock price (Y) and lending rate have negative correlation:

On the other hand, we could see statistical results with Eview in Table 1 below with six variables:

Table 1

Statistics for Macro and Micro Economic Factors (Unit: %)

	Net profit	Net sales	Cost	MUFJ stock price	Inflation Japan	Lending rate Japan	GDP growth US	Inflation US (CPI)	S&P 500
Mean	52.16	8.30	7.59	5.72	0.59	1.18	2.24	1.76	2,354.99
Median	51.5	8.55	6.5	5.48	0.3	1.165	2.23	1.825	2,331.12
Maximum	58	11	16	7.27	2.36	1.55	2.92	2.96	2,752.06
Minimum	47	4.8	4.9	4.19	-0.31	0.96	1.55	0.73	2,043.94
Standard dev.	3.335	2.333	3.307	0.891	0.888	0.217	0.485	0.680	294.931

Looking at Table 1, we recognize that standard deviation of S&P 500, cost, sale have the highest values whereas standard deviation of CPI and lending rate are the lowest values.

If we want to see correlation matrix of these seven macro variables, Eview generates the below result in Table 2.

Table 2

Correlation Matrix for Seven (7) Micro and Macro Economic Variables (GDP Growth, Inflation in VN, Market Interest Rate, Risk Free Rate, Exchange Rate, and MBB Stock Price)

obs	Y	R_JAPAN	SP500	COST	CPI_JAPAN	G_JAPAN	NETPROFIT	NETSALE
1	5.410000	1.550000	1286.120	7.000000	-0.310000	4.192000	4.800000	54.90000
2	4.190000	1.500000	1312.410	6.000000	-0.210000	-0.115000	5.500000	54.40000
3	5.420000	1.300000	1426.190	8.000000	-0.210000	1.495000	5.300000	50.00000
4	6.680000	1.250000	1782.590	6.000000	1.670000	2.000000	11.00000	55.00000
5	5.530000	1.180000	2058.900	4.900000	2.360000	0.375000	11.00000	49.90000
6	6.220000	1.150000	2043.940	5.600000	0.100000	1.223000	10.00000	49.40000
7	6.160000	0.960000	2238.830	5.400000	0.300000	0.609000	8.600000	47.00000
8	7.270000	0.970000	2673.610	7.000000	1.100000	1.929000	8.500000	51.00000
9	4.870000	1.000000	2506.850	10.00000	0.300000	0.788000	9.800000	52.00000
10	5.430000	0.980000	3230.780	16.00000	0.790000	0.009000	8.500000	58.00000

Table 2 shows us that correlation among seven macro variables. An increase in lending rate and decrease in CPI might lead to an increase in MUFJ stock price. It also indicates that correlation between MUFJ stock

price (Y) in Japan and Net sale and S&P 500 in the US (54.9 and 1286) is higher than that between Y and lending rate (155) or between Y and CPI (-0.31).

Table 3 below shows us that covariance matrix among seven micro and macro economic variables. MUFJ stock price (Y) has a negative correlation with cost and lending rate but has a positive correlation with net profit, and GDP growth.

Hence, an increase in inflation may have slight positive impact on in MUFJ stock price.

Table 3

Covariance Matrix for Seven Macro Economic Variables

Covariance Matrix								
	Y	R_JAPAN	SP500	COST	CPI_JAPAN	G_JAPAN	NETPROFIT	NETSALE
Y	0.713736	-0.079932	161.0076	-0.588320	0.304988	0.349869	0.830700	-0.747880
R_JAPAN	-0.079932	0.042424	-110.3189	-0.223960	-0.062576	0.106422	-0.283100	0.199260
SP500	161.0076	-110.3189	361545.2	1203.090	187.3542	-297.5591	700.4785	196.4273
COST	-0.588320	-0.223960	1203.090	9.844900	-0.271110	-0.879705	-0.513000	6.170600
CPI_JAPAN	0.304988	-0.062576	187.3542	-0.271110	0.709769	-0.205936	1.427200	0.000860
G_JAPAN	0.349869	0.106422	-297.5591	-0.879705	-0.205936	1.453291	-0.859110	0.400270
NETPROFIT	0.830700	-0.283100	700.4785	-0.513000	1.427200	-0.859110	4.898000	-1.336000
NETSALE	-0.747880	0.199260	196.4273	6.170600	0.000860	0.400270	-1.336000	10.00840

Regression Model and Main Findings

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

Scenario 1: Regression model with single variable: analyzing impact of cost (c.o) on MUFJ stock price (Y)

Note: C: constant

Using Eview gives us the below results:

Dependent Variable: Y
Method: Least Squares
Date: 03/02/20   Time: 22:41
Sample: 1 10
Included observations: 10

Variable	Coefficient	Std. Error	t-Statistic	Prob.
COST	-0.059759	0.092822	-0.643803	0.5377
C	6.171570	0.762342	8.095535	0.0000

R-squared	0.049258	Mean dependent var	5.718000
Adjusted R-squared	-0.069585	S.D. dependent var	0.890528
S.E. of regression	0.920990	Akaike info criterion	2.850122
Sum squared resid	6.785787	Schwarz criterion	2.910639
Log likelihood	-12.25061	F-statistic	0.414482
Durbin-Watson stat	2.064212	Prob(F-statistic)	0.537718

Hence, $Y = -0.05 \times COST + 6.17$, $R^2 = 0.04$, SER = 0.92.
                (0.09)   (0.76)

Within the range of 10 observations (2010-2019) as described in Figure 2 above, coefficient -0.05, when cost increases, MUFJ stock price will decrease.

Scenario 2: Regression model with two variables: analyzing impact of Inflation (CPI) on MUFJ stock price (Y)

Running Eview gives us below results:

```
Dependent Variable: Y
Method: Least Squares
Date: 03/02/20   Time: 22:42
Sample: 1 10
Included observations: 10
```

Variable	Coefficient	Std. Error	t-Statistic	Prob.
COST	-0.048435	0.090609	-0.534554	0.6095
CPI_JAPAN	0.411200	0.337456	1.218530	0.2625
C	5.843427	0.787704	7.418299	0.0001

R-squared	0.215635	Mean dependent var		5.718000
Adjusted R-squared	-0.008470	S.D. dependent var		0.890528
S.E. of regression	0.894291	Akaike info criterion		2.857754
Sum squared resid	5.598297	Schwarz criterion		2.948530
Log likelihood	-11.28877	F-statistic		0.962207
Durbin-Watson stat	2.404655	Prob(F-statistic)		0.427380

Therefore, $Y = -0.04 \times Cost + 0.41 \times CPI + 5.8$, $R^2 = 0.21$, SER = 0.89.

            (0.09)   (0.33) (0.78)

Hence, this equation shows us MUFJ stock price has a positive correlation with CPI and negative relationship with cost. Esp., it is more positively affected by CPI.

Scenario 3: Regression model with three variables: adding GDP growth (g) into the above model

Eviews generates below statistical results :

```
Dependent Variable: Y
Method: Least Squares
Date: 03/02/20   Time: 22:42
Sample: 1 10
Included observations: 10
```

Variable	Coefficient	Std. Error	t-Statistic	Prob.
COST	-0.018757	0.090020	-0.208364	0.8418
CPI_JAPAN	0.510062	0.332988	1.531776	0.1765
G_JAPAN	0.301666	0.238007	1.267469	0.2520
C	5.182705	0.918015	5.645554	0.0013

R-squared	0.381292	Mean dependent var		5.718000
Adjusted R-squared	0.071937	S.D. dependent var		0.890528
S.E. of regression	0.857899	Akaike info criterion		2.820514
Sum squared resid	4.415944	Schwarz criterion		2.941548
Log likelihood	-10.10257	F-statistic		1.232541
Durbin-Watson stat	1.659152	Prob(F-statistic)		0.377062

Hence, $Y = 0.3 \times G + 0.5 \times CPI - 0.018 \times COST + 5.18$, $R^2 = 0.38$, SER = 0.85

           (0.23)   (0.33)   (0.09) (0.91)

The above regression equation shows us that MUFJ stock price (Y) has a positive correlation with GDP growth (G) and with inflation (CPI) which has negative correlation with Cost. And the coefficient (with CPI) is the highest, the 2nd highest is with GDP growth. CPI increases will increase more costs of business and lead to a decrease in MUFJ stock price.

Scenario 4: regression model with four macro and micro variables: adding sale into the above model
Eviews presents the below results:

Dependent Variable: Y
Method: Least Squares
Date: 03/02/20   Time: 22:43
Sample: 1 10
Included observations: 10

Variable	Coefficient	Std. Error	t-Statistic	Prob.
COST	0.081791	0.117129	0.698295	0.5161
CPI_JAPAN	0.580517	0.322517	1.799956	0.1318
G_JAPAN	0.411530	0.243155	1.692458	0.1513
NETSALE	-0.141661	0.112226	-1.262288	0.2625
C	11.62971	5.181929	2.244281	0.0748

R-squared	0.530810	Mean dependent var	5.718000
Adjusted R-squared	0.155458	S.D. dependent var	0.890528
S.E. of regression	0.818386	Akaike info criterion	2.743887
Sum squared resid	3.348776	Schwarz criterion	2.895180
Log likelihood	-8.719435	F-statistic	1.414167
Durbin-Watson stat	2.789935	Prob(F-statistic)	0.350891

Therefore, $Y = 0.41 \times G + 0.5 \times CPI + 0.08 \times COST - 0.14 \times NETSALE + 11.6$, $R^2 = 0.53$, SER = 0.81.
                    (0.24)   (0.32)   (0.11)   (0.11)   (5.18)

We find out impacts of four micro and macro variables, with the new factor: NET SALE, shown in the above equation, MUFJ stock price (Y) has negative correlation with Net sale, whereas it has positive correlation with GDP growth and CPI. When inflation goes down, cost increases, this will decrease public investment in stock market, as a result, MUFJ stock price will decrease.

Scenario 5: regression model with six macro and micro variables: adding lending rate (r) onto the above model
Running Eviews gives us results:

Dependent Variable: Y
Method: Least Squares
Date: 03/02/20   Time: 22:43
Sample: 1 10
Included observations: 10

Variable	Coefficient	Std. Error	t-Statistic	Prob.
COST	-0.175940	0.155862	-1.128821	0.3221
CPI_JAPAN	0.118025	0.338848	0.348311	0.7452
G_JAPAN	0.430047	0.190358	2.259150	0.0868
NETSALE	0.099897	0.147214	0.678583	0.5346
R_JAPAN	-4.186826	2.048648	-2.043702	0.1105
C	6.192686	4.847436	1.277518	0.2705

R-squared	0.770475	Mean dependent var	5.718000
Adjusted R-squared	0.483569	S.D. dependent var	0.890528
S.E. of regression	0.639961	Akaike info criterion	2.228890
Sum squared resid	1.638200	Schwarz criterion	2.410441
Log likelihood	-5.144451	F-statistic	2.685464
Durbin-Watson stat	2.692266	Prob(F-statistic)	0.179933

Hence, Y = -0.17 × COST + 0.11 × CPI + 0.43 × G + 0.09 × NETSALE - 4.1 × R + 6.1, R^2 = 0.77, SER = 0.63.

$$(0.15) \qquad (0.33) \qquad (0.19) \qquad (0.09) \qquad (2.04)\ (4.84)$$

Here we see impacts of six micro and macro factors, with the new variable: lending rate (R), the above equation shows that MUFJ stock price (Y) has negative correlation with cost and lending rate, whereas it has positive correlation with inflation, GDP growth, and net sale. We also recognize that lending rate, GDP growth, cost, and CPI have the highest impact on MBB stock price. When lending rate declines, it will increase investment in stock as well as financial market, then it will lead to an increase in MUFJ stock price.

Risk happens and makes MUFJ stock price decline if GDP growth declines, lending rate increases (highest coefficient), then cost increases and low inflation.

Discussion and Further Researches

After the global crisis 2008, MUFJ has developed RM system as below:
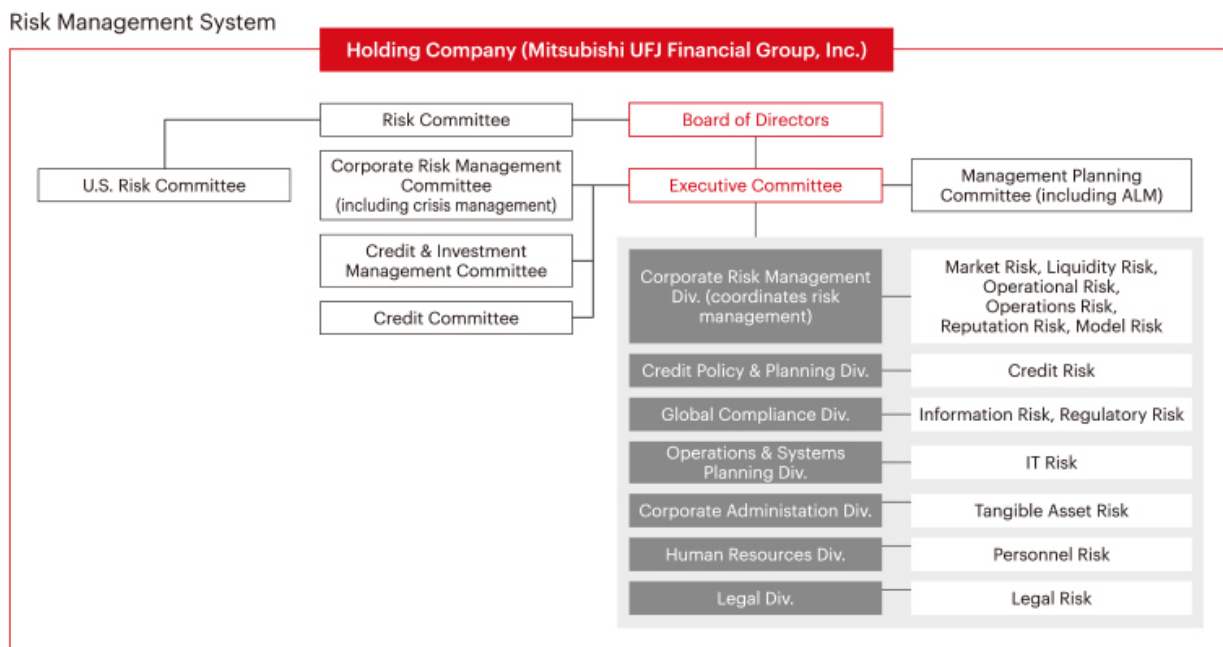

Figure 7. RM system has been developed(source: MUFJ reports).

Compliance management divisions have been established at the holding company Mitsubishi UFJ Financial Group, and at MUFG Bank, Mitsubishi UFJ Trust and Banking, and Mitsubishi UFJ Securities Holdings (referred to as the three companies below). Each compliance management division formulates compliance programs and organizes training courses to promote compliance, and regularly reports to each company's board of directors and Executive Committee on the status of compliance activities. And its compliance system:

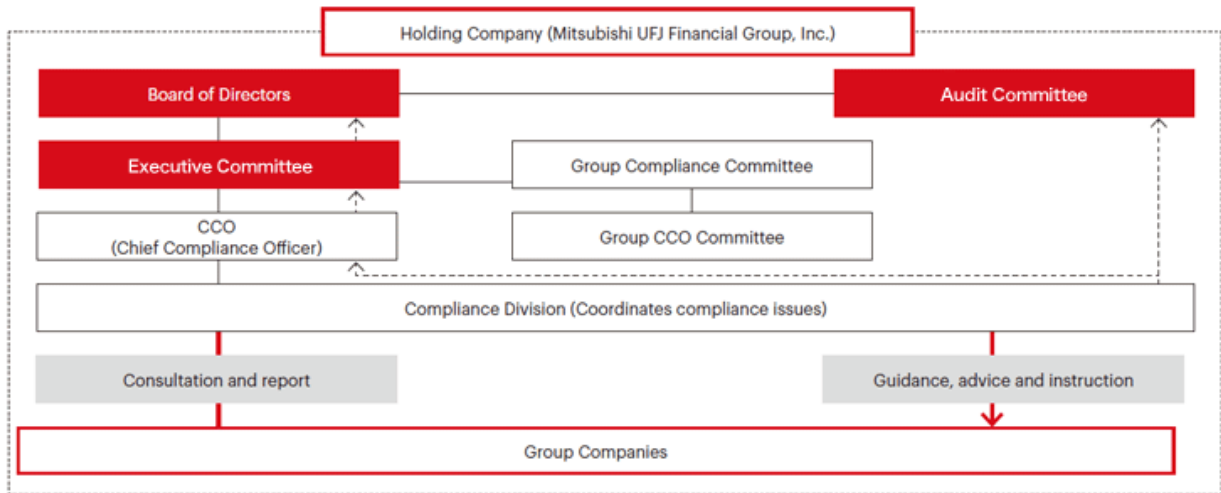*Figure 8.* Compliance management divisions and compliance system (source: MUFJ reports).
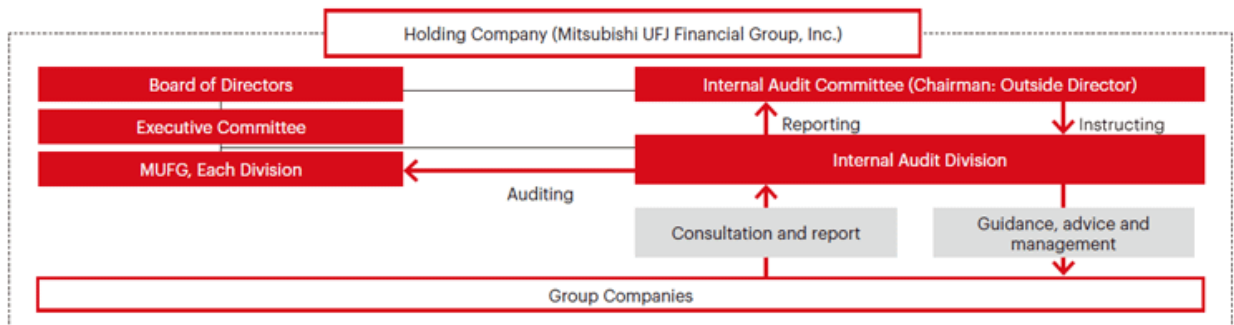
And then an internal audit framework:

Figure 9. Internal Audit Framework(source: MUFJ reports)

Through the regression equation with above six micro and macroeconomic variables, this research paper used updated data from 2010-2019 to analyze the regression equation via Eview in order to show that an increase in lending rate and a decrease in GDP growth have a significant impact on reducing MUFJ stock price (Y) with the highest coefficient of impact, followed by an increase in cost and decrease in inflation.

Therefore, Figure 10 below will show us most of factors' impacts on the above micro and macro factors that create risk for stock price declines of MUFJ:

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 Japan 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 movement. Furthermore, we can add unemployment rate or

public debt increase into our econometric model to measure the impact of these extra factors on MUFJ stock price.
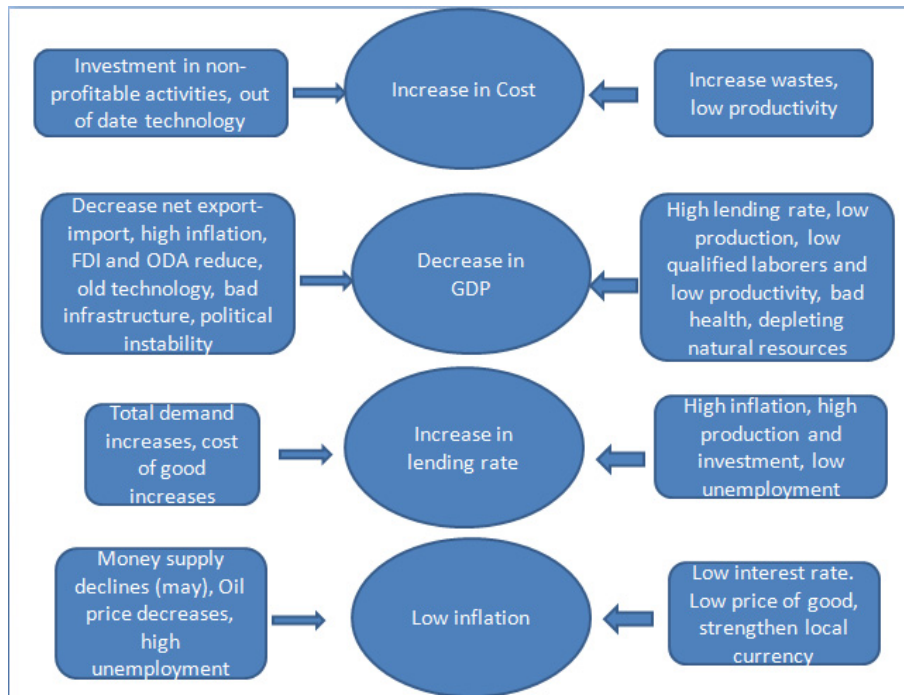

Figure 10. Risk of MUFJ stock price decline.

The medium strategy of MUFJ as follows (which will connect and imply business risks in each filed) needs to be controlled rationally:
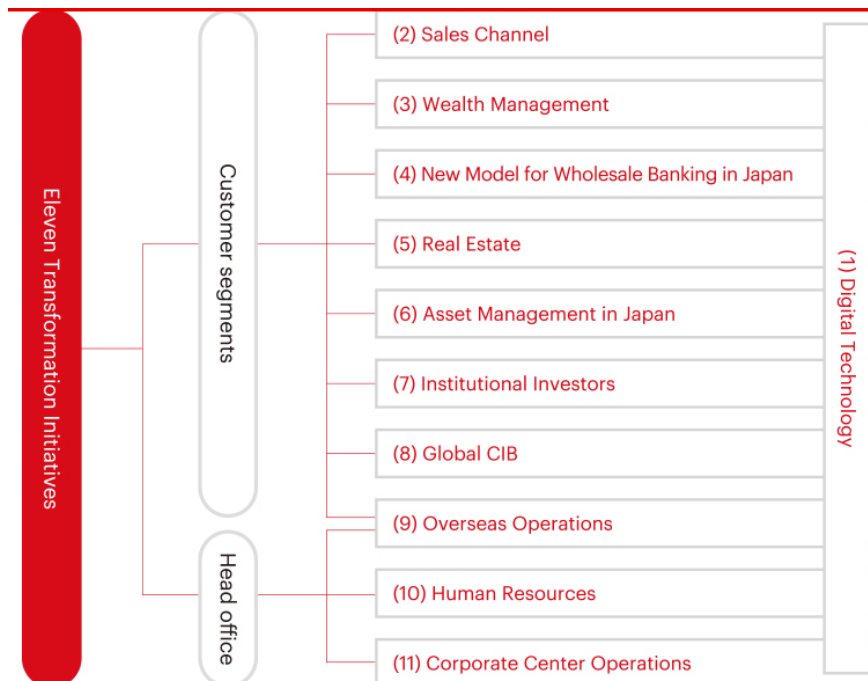

Figure 11. The medium strategy of MUFJ (source: MUFJ reports).

Next, restructuring wholesale banking in MUFJ also implies potential risks in each filed and needs to be managed.
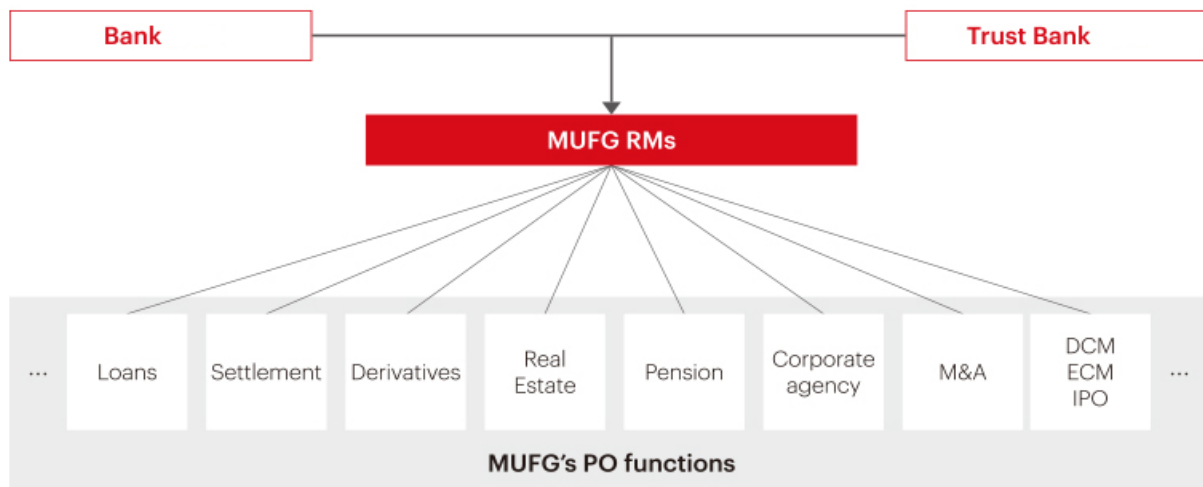

Figure 12. Restructuring wholesale banking in MUFJ (source: MUFJ annual reports).

Conclusion and Policy Suggestion

Based on the above data analysis from our regression model, although low inflation during 2018-2019 is a good signal for MUFJ stock price, we would suggest the government, Ministry of Finance and Bank of Japan considers controlling inflation more rationally, i.e. not increasing much and being 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 Firm 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 needs to be selective and increase interest rates for acceptable high risk high return projects.

Generally speaking, managing MUFJ stock price depends on many factors, so the government needs to use fiscal policy combined with monetary policies and socio-economic policies to control unemployment rationally 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 bank stock price.

Acknowledgements

Nguyen V. Phuc, Dr Le Si Dong, Dr Nguyen Ngoc Thach., Dr Le thi Man, and my lecturers at Banking University—HCMC, Viet Nam for their help.

Lastly, thank you very much for my family, my father—Mr. Dinh Van Tai, my Mum—Mrs. Tran Thi Manh, my grandmothers, Mrs. Man and Mrs. Ut, my colleagues, a friend indeed—Ms Do Thi Sang, and brother—Mr Dinh Tran Ngoc Hien in assisting convenient conditions for my research paper.

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.

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.

Ihsan, H., Ahmad, E., Muhamad, I. H., & Sadia, H. (2015). *International Journal of Scientific and Research Publications, 5*(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.

Luthra, M., & Mahajan, S. (2014). Impact of macro factors on BSE bankex. *International Journal of Current Research and Academic Review, 2*(2), 179-186.

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.

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.

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.

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.

https://www.sbv.gov.vn

https://nif.mof.gov.vn