I J A B E R, Vol. 14, No. 6, (2016): 3725-3739

THE MACRO FACTORS AFFECTING YIELDS OF BANKING SECTOR: EVIDENCES IN VIETNAM

Doan Thanh Ha[*] and Hoang Thi Thanh Hang[**]

Abstract: *The paper examines the impact of macroeconomic factors including inflation rate, the money supply M2, interest rates, USD/VND exchange rates and market yields on bank stock yields listed in the Vietnam stock market. Through the use of panel data, the authors made estimations by using the regression models such as Pooled, FEM, REM, GLS, DGMM, PMG. The study results show that the rate of inflation, money supply M2 and market yields have strong impacts on bank stock yields. Specifically, the inflation rateshaveopposite effects on the bank stock yields while the money supply M2 and market yields haveimpacts in the same direction. This result is consistent with the actual results in the period studied from 2007 to 2015.*

1. PROBLEM STATEMENT

Stock prices and stock yields have always been a concern for investors, businesses and policy makers. By theories and experiments, many scientists in the world have demonstrated the relationship between stock yields and macroeconomic factors, such as Merton (1973), Chen, N. and Roll, R. and Ross, S. (1986), Islam et al (2004), Hussainey, K and Le Khanh Ngoc (2009), Pramod Kumar, N. and Puja P. (2012), PhanThi Bich Nguyet and Duong Phuong Thao (2013), Kibria, U. et al (2014)... However, most of the studies have focused on the impact of macroeconomic variables on the general market index without considering the impact of those macro variables on the stock yields of each sector. Meanwhile, such issue is very important to be studied by investors because they have to understand the different reactions of each sector to the macroeconomic variables for appropriate investment decisions. Therefore, this is such a gap in research.

2. LITERATURE REVIEW

The theoretical basis for studies about return rates of stocks is the capital asset pricing model (CAPM) and Arbitrage Pricing Theory – APT CAPM presents the

* Department of Finance, Banking University of Hochiminh City, 36 Ton That Dam Street, Distrist 1, Ho Chi Minh City, Vietnam, *E-mail: hadt@buh.edu.vn*

** Business Administration Faculty, Banking University of Hochiminh City, 36 Ton That Dam Street, Distrist 1, Ho Chi Minh City, Vietnam, *E-mail: hanghtt@buh.edu.vn*

linear relationship between the expected return rates of stocks and the only factor is the market risk premium. However, some scholars also found that besides the risk-free interest rates and systemic risks, there were other factors affecting the return rates of stocks such as size, P/E, financial leverage (Fama, EF and KR French, 1993). Therefore, the researches concluded that beta was not the only variable explaining stock yields.

Many researchers of multifactor model believe that the yields of stocks fluctuate depending on not only the change element of the market in general but also on many other factors, therefore adding more elements to the risk factor to explain the profits is be more convincing than relying on a single factor such as the CAPM. Arbitrage pricing theory (APT) is a form of multi-factor model, which is believed by many people to be used as a substitute of CAPM to determine the return on investments. APT theory, developed by Ross, S.A. (1976), states that arbitrage pricing mechanism ensures the balanced pricing for profitability and risk. According to this theory, the return rates of stocks depend on many different factors, involving many different beta factors: changes in GDP growth rates, changes in inflation rates, changes in the difference between short-term bonds and long-term bonds, changes in the yield gap between bonds having different credit risks.

Chen, N. and Roll, R. and Ross, S. (1986) were some of the first people who use multi-factor model to study the effects of the 7 major factors on the return rates of stocks in the US market: industrial production index, inflation, risk premium, tenor structure, market indices, oil prices, the growth rate of real per capita consumption. The authors found that there was an opposite relationship of impacts between stock yields and inflation rates as well as a same-direction relationship of impacts between stock yields and indices of industrial production.

Pramod Kumar, N. and Puja P. (2012) analyzed the impact of 5 factors: industrial production index, consumer price index, money supply, exchange rates and short term interest rates on stock price of the Indian stock market. Results showed that in the long term, the stock price index was influenced in the same direction by money supply while real economic activity, represented by the industrial output index, was influenced oppositely by the consumer price index. Whereas, yields of government bonds having 3 months and exchange rates did not have any impact on the Indian stock index.

Kibria, U. *et al.* (2014) studied the macroeconomic factors affecting the Paskistan stock price: inflation, exchange rate, money supply, GDP per capita, GDP savings (GDP after deducting total consumption) and concluded that these variables explained 73% of the changes in the Pakistan stock price.

Vaz *et al.* (2008) studied the impact of the published changes in the official interest rates on the stock yields of big banks in Australia in the period from 1990

to 2005. According to this research, the yields of bank shares were not affected by interest rates.

Saqib M., Babar Z. and Kashif U.R. (2011) used data from 15 banks in the Karachi stock market. The authors used the macro variables: the market index (KSE 100 Index), consumer price index, free-risk interest rate, exchange rate, industrial production index, the money supply M2 and the difference between interest rates and deposit rates of banks (banking spread). Research data is monthly data, from June 1998 to June 2008. Garch model was used for stock yields of each bank and the entire industry. The results showed that the yields of bank shares were affected in the same direction by market yields, risk-free interest rates, banking spreads, while the index of industrial production and inflation rates had the opposite effect, and exchange rates had no impact on the yields of the Pakistan bank shares.

Kasman, Vardar and Tunç (2011) studied the impact of interest rates, exchange rates and market yields on stock yields of Turkish banks by using OLS and Garch models. Research results showed that interest rates and exchange rates had negative impacts on stock yields of banks. The study also stated that banks' stock yields were more sensitive to market yields than to interest rates and exchange rates.

Saeed, S. and Akhter, N. (2012) analyzed the impacts of macroeconomic variables on the price index of bank shares in Pakista. They said that exchange rates and short-term interest rates had the most impacts on banks' stock prices whereas the money supply, exchange rates, short-term interest rates and industrial production index had opposite impacts on banks' stock prices while oil price had impacts in the same direction.

Jawaid, S. and Uihaq. A (2012) analyzed the impact of interest rates, foreign exchange rates on banks' stock prices in Pakistan. The co-intergrated test results showed the long-term opposite relationship between exchange rates and interest rates and stock prices. From causality analysis, Granger concluded that there were 2-way causal effects between exchange rates and stock prices, while interest rates had only one-way causality in the short-term with stock prices. The author thus suggested that investors should make the decision of investing in bank shares when there are macro fluctuations in interest rates and exchange rates.

Ghosh, R. (2013) studied the impact of interest rate changes on the return on stocks, which are characterized by stock prices of 18 big commercial banks in India for a period from the date of 1st April 1996 to 31st March 2011 (782 observations per week), in two situations: when stock prices in the stock market rise and when the market stock prices decline. By using OLS model, the author made three conclusions: there was a weak correlation between the return on banks' stocks

and the changes of interest rates in India; there was a statistically significant relationship in the same direction between the return on banks' stocks and the return on market stocks.

Aishahton, A. and Mansur, M. (2013) analyzed the relationship between interest rates, exchange rates and stock prices of banks in Malaysia. The authors used co-integrated tests and VECM model on panel data to test the existence and impact direction of the causal relationship between exchange rates, interest rates and prices of bank shares by collecting monthly data within 5 months of 40 banks. After the unit-based test to ensure the stationarity data, the co-integrated test showed the co-integrated relationship of the variables in the model. Based on this, the estimation using OLS model can be done. OLS estimation results indicated that only exchange rates had a long-term relationship with stock prices of banks in Malaysia, therefore in order to consider the impacts of changes in exchange rates on banks in Islamic and vice versa, the authors applied Granger's causality analysis from VECM panel models based on DGMM model. The DGMM results confirmed that there was Granger's 2-way causality between banks'stock prices and exchange rates whereas there was no statistical 2-way relationship between banks' stock prices and interest rates.

Subburayan, B. and Srinivasan, V. (2014) analyzed the long-term impact of macroeconomic variables, including exchange rates, interest rates and inflation on stock yields of 90 banks in India. Data were monthly collected, from 1st Jan 2004 to 31st Dec 2013. The authors used Var model through steps: stationarity tests, determining the optimal latency, Granger's causality analysis and the estimation of Var model, Johansen's co-integrated test. The results showed that the selected macro variables all affected the banking indices; there was a long-term relationship between banks' stock yields and macroeconomic variables; the banks' average price index and interest rates did not have causality with exchange rates. The research also showed that exchange rates were important information to forecast banks' stock yields.

The combination of researches showed that macroeconomic factors had impacts on banks' stock yields, including inflation rates, money supply, exchange rates, market indices, interest rates and the difference between deposit rates and interest rates (banking spread) ...

3. DATA AND RESEARCH METHODS

3.1. Research data

Vietnam stock market has 9 listed banks, and the number of studied objects is not large, threfore we used research panel data. The study was monthly conducted from January 2007 to December 2015. The study period frequency from 1/2007 to

May 12/2015. We had unbalanced panel because the beginning times of listing stocks were different. The macro variables of inflation rates (LP), the M2 money supply, VND/USD (ER), short-term interest rates (IR) were all collected from the IMF's IFS system to ensure the consistency of data. The reason for choosing the monthly data was that most of the macroeconomic variables of Vietnam could be collected following the monthly frequency.

3.2. Research methods

In this study we used panel data with the models such as Pooled Regression, Random Effect Model - REM, Fixed Effect Model - FEM, Dynamic Generalized Method of Moment-DGMM, Pooled Mean Group-PMG).

To avoid spurious, we use Fisher's test based on Augmented Dickey Fuller (ADF) of panel data. In case any variable is not stationary, we will switch to logarithm or difference until the stationary chain is recognized. For variables having% unit such as interest rates, inflation rates, stock yields, market yields, we will switch to difference if the original chain does not stop. For the variables having no % unit such as M2 money supply, USD/VND exchange rate, we will switch to logarithm then get the difference in order to ensure the data stationarity if the original chain does not stop. The transformation of the original data into logarithm for variables helped to reduce the high dispersion yet for some abnormal values of the observations of the original data. It also helped to increase the ability to change the unstationary chain into stationary chain as well as reduce the phenomenon of residual variance changes in estimation, reduce the phenomenon of residuals being not normally distributed, and the use of data aslogarithm helped to facilitate the identification and analysis of data.

4. THE MODEL AND HYPOTHESES

In this article, we use five macroeconomic variables including inflation rates, total means of M2 payment, short-term interest rates in VND, USD/VND exchange rates and the VN-Index which affect banks' stock yields.

$$R_{it} = \beta_0 + \beta_1 LP_{it} + \beta_2 M2_{it} + \beta_3 ER_{it} + \beta_4 IR_{it} + \beta_5 VNI_{it} + \alpha_i + u_{it}$$

- Rit represents i bank stock yield at time t

- LPit, M2it, ERit, iris, VNIit represent inflation rate, money supply M2, USD/VND exchange rate, interest rate of i bank, the market yield at time t.

- α_i represents the characteristic variables of banks

- u_{it} is random error.

+ Inflation rate: Inflation can directly affect the mentality of investors and thereby affect the bank stock prices as well as bank stock yields. High inflation will lead to the economy instability. The currency depreciation will make investors tend to hoard assets which are "safe" like gold, making the demand for bank stocks decline, which would reduce stock price and bank stock yields. Most of the researches in the world such as Asaulo, T.O. et al (2011), Pramod Kumar, N. and Puja, P. (2014) ... indicated that inflation had opposite impact on bank stock yields. We may expect this to be true in the case of Vietnam.

+ Total means of M2 payment: M2 Money supply is the total amount of money available in an economy. When the goverment implement a tight monetary policy to limit inflation, the decrease in money supply also reduces business activity. In addition, reducing the money supply is also accompanied by a decrease in the liquidity of shares, therefore stock price would fall. We may expect the money supply to affect bank stock yields in the same direction as mentioned in the research ofPramod Kumar, N. and Puja, P. (2014).

+ Interest rate: The interest rate is a macro variable which has relative strong influence on the mentality of investors and the stock market. The increase in deposit rates and interest rates have direct impacts on the costs of capital and revenue and thereby strongly affect the business results of banking. The interest rate increase can result in good mentality of investors and stimulate the demand for bank stocks and thus lead to bank stock yield increase. In such direction, interest rates affect bank stock yields in the same direction. In a diffent direction, deposit rates normally increase accordingly to the interest rates, which attracts money flows to savings, reduces money flows to stock trading and negatively affect stock price in general and bank stock price in particular. Thus, thereotically, interest rates will affect bank stock yields in many different directions. Quantitative analytical results will address this issue.

+ Exchange rate: The exchange rate chosen for research is USD/VND rate. If the rates rise (VND devaluated against the US dollar), it will reduce revenues from foreign currency lending activity. It will strongly affect results of banks which do businesses having a large proportion of foreign exchange trading, therefore bank stocks are also affected. On the other hand, rising rates may lead to overall adverse impacts on the economy, the stock market in general and bank stock prices in particular, so exchange rate increases can lead to indirect and adverse impacts on bank stock investors. Therefore, exchange rates can affect bank stock yieldsin different directions and it is theoretically hard to have an accurate answer.

+ Market Yields: Market yield increases will positively affect the mentality of investors, stimulate the demand for bank stocks. Therefore, we may expect market yields to have impact in the same direction on bank stock yields.

5. FINDINGS

5.1. Descriptive statistics

Table 1
Description of data

Variables	*Mean*	*StdDev*	*Skewness*	*Kurtosis*	*Min*	*Max*
R_i	0.5	8.2	0.378	5.245	-27.9	37.5
LP	7.797	6.274	1.171	3.823	-0.01	28.31
M2	2.63×10^{15}	1.02×10^{15}	-0.097	1.927	5.17×10^{14}	4.29×10^{15}
IR	11.314	3.3	0.548	2.436	6.96	20.25
ER	20210.46	1626.276	-1.388	3.667	15960	21890
VNI	0.3	6.3	0.212	4.972	-25.4	24.2

From the statistical results, the average yield of bank stocks is 0.005, larger than the average yield of the market which is 0.003. However, the stock yields have high standard deviation: 8.2 (%), i.e greater volatility (the highest bank stock yield is 37.5 (%), the smallest is -27.9 (%), greater compared to the market yield: 0.063.

Skewness of the variable Ri, LP, IR, VNI is positive, meaning the density function graph has right skewed distribution while the skewness of M2, ER is negative, meaning the density function graph has left skewed distribution. Kurtosis of Ri, LP, ER, VNI is larger than 3, proving the density function graph has Leptokurtic distribution while Kurtosis of M2, IR is smaller than 3, proving the density function graph has Platykurtic distribution

5.2. Correlation Analysis

Table 2
Matrix of variable correlation

	Ri	*LP*	*M2*	*ER*	*IR*	*VNI*
Ri	1,0000					
LP	-0,0601	1,0000				
M2	0,0617	-0,6365	1,0000			
ER	0,0849	-0,3367	0,8618	1,0000		
IR	-0,0222	0,9006	-0,7138	-0,3337	1,0000	
VNI	0,6956	-0,1765	0,0456	0,0242	-0,1010	1,0000

The correlation coefficient of the independent variables is quite high, especially the correlation coefficient of M2 and LP, LP and IR, M2 and ER, IR and M2. This presents the high correlation of the independent variables. Therefore the phenomenon of regression multicollinearity may easily happen. Therefore we should not use the original forms of these variables as independent variables.

5.3. Unit based tests and multicollinearity

Table 3
Testing of Fishers staionarity

Variables		*Prob> chi2 – No trend*	*Prob> chi2 – Trend*
Ri		0.0000	0.0000
M2	lnM2	0.0087	0.8856
	d.lnM2	0.0000	0.0000
LP	LP	0.2151	0.2262
	d.LP	0.0000	0.0003
IR	IR	0.8149	0.4337
	d.IR	0.0000	0.0000
ER	lnER	0.0226	0.5203
	d.lnER	0.0000	0.0000
VNI	0.0000	0.0000	

The results of the Fisher stationarity test of panel data based on ADF and PP are presented in table 4.3. Results showed Ri, d.lnM2, d.LP, d.IR. d.ER, VNI all stopped at 1% significance level. We choose them as variables in the model. Matrix of variable correlation is presented in table 4.

Table 4
Matrix of correlation of stationary variables

	d.LP	*d.lnM2*	*d.IR*	*d.lnER*	*VNI*
d.LP	1,0000				
d.lnM2	0,0125	1,0000			
d.IR	0,4784	0,2259	1,0000		
d.lnER	0,1746	0,1123	0,2404	1,0000	
VNI	-0,1966	0,0298	0,0749	-0,149	1,0000

Table 4 shows that the correlation coefficients between the independent variables are relatively low; The highest correlation coefficient shows that the correlation between DLP and DIR is 0.4784, so we can hope there will not be phenomenon of multicollinearity between variables. However, to make sure, we will examine the Variance Inflation Factor (VIF) of the variables giving data by Collin command in Stata. The results are stated in table 5.

Table 5
The VIF coefficient of theindependent variables

	dlnM2	*dLP*	*Dir*	*dER*	*VNI*
VIF	1,07	1,41	1,49	1,1	1,11

All VIF coefficients of the independent variables are less than 10, therefore there is no multicollinearity phenomenon between variables (Kennedy, 1992). Therefore, the use of variables to estimate the model is appropriate.

5.4. Model estimation results

First, we used Pooled Regression. The regression results using different models are summarized in Table 6.

Table 6
The results estimated by different models

	Pooled	*FE*	*RE*	*FE-robust*	*DGMM*
d.LP	-0,00824***	-0,00812***	-0,00824***	-0,00583*	-0,01705**
	(0,007)	(0,008)	(0,007)	(0,063)	(0,01)
d.lnM2	0,46967**	0,50603**	0,46967**	0,42239**	0,91506***
	(0,022)	(0,014)	(0,021)	(0,023)	(0,000)
d.IR	-0,0038	-0,0039	-0,0038	-0,00422	-0,00731
	(0,492)	(0,481)	(0,492)	(0,401)	(0,266)
d.lnER	0,58891*	0,58939*	0,58891*	0,6653**	-1,09609
	(0,089)	(0,09)	(0,088)	(0,043)	(0,257)
VNI	0,89726***	0,89791***	0,89726***	0,88047***	0,87383***
	(0,0000)	(0,0000)	(0,0000)	(0,0000)	(0,000)

The sign ***, **, * equivalent to the level of significance at 1%, 5%, 10%
Values in parentheses are corresponding p-values.

The regression results show that except for the variable d.IR d.LP, the remaining variables, including d.LP, d.lnM2, d.lnER, VNI are allo statistically significant. Coefficient R2 = 0.5145, which is quite high. F with p-value 0.0000 value also indicates that the model use is appropriate.

However, the results estimated by the Pooled model may not be sustainable and may be inefficient because this model does not consider specific characteristics of each object. (Baltagi, 2001). Therefore, in order to solve the problem of unobserved heterogeneity, random-effect model (REM) and fixed effect model (FEM) are used.

The results of the regression coefficients and p-value corresponding to FEM and REM are almost similar to each other and almost similar to Pooled model.

To compare 3 Pooled model, FE and RE, we performed 3 tests: F-Limer test to compare between Pooled and FE, Breusch Pagan Lagrange Multiplier (LM) test to compare Pooled model to RE, Hausman test for comparison between FE and RE models. P-value of F-Limer is 0.5154, indicating there is no difference between Pooled model and FE model. P-Value of the LM test is 0.349, indicating there is no difference between Pooed model and RE. P-value of the Hausman test is 0.8224, indicating there is no difference between FEM and REM. Thus, we have found no difference between the three models: Pooled, FE and RE. R^2 values †of 3 models

are respectively 0.5145, 0.5171, 0.5170, meaning R^2 value †of FEM model is the largest. Moreover, in the case of hardly chosing between FEM and REM, we should choose FEM. In summary, we select FEM model as the most suitable-to-data model. The regression results in FEM show that except for the change amount of interest rates, the rests such as the change amount of inflation rates, changeratio of money supply M2, change ratio of exchange rates and market yields are statistically significant. In particular, the change amount in the rate of inflation has negative impact, while the change rate of money supply M2, the change rate exchange rates and market yields have impactsin the same direction on bank stock yields. This is included in the author's expectations.

To increase the effecciency of FEM, tests of heteroscedasticity and correlation in panel data are conducted. P-value of Wald test is 0.0000, indicating there is the phenomenon of heteroscedasticityin the model. P-value of Wooldridge test is 0,006, indicating there is the phenomenom of 1st-level self-correltationof the variables. Therefore, in order to to deal with these problems, the study uses FEM model having adjusted standard errors GLS - FE-robust model. FE-estimated results give us regression coefficients quite similar to the results in Pooled, FEM and REM. The signs of the regression coefficients remain similar to Pooled, FEM and REM.

Although FE-robust model solved the problem of heteroscedasticity and selfcorrelation but there are still endogenous problems of variables which are not yet processed. The endogenous phenomena can occur due to simultaneous relationships: macro variables affect bank stock yields but banks are important financial institutions in the economy, thus banks still affect macro factors of the economy, and bank stocks can still work factors affecting the macro-economy. The consequences of endogenous phenomenon for the model are really serious because the variable regression can lead to the correlation with errors, making the estimation results of Pooled, FE, RE biased and unsteady (Baltagi, 2001 and Bond, 2002).

To solve this problem, dynamic panel data model GMM was suggested by Arellano and Bond's (1991). GMM estimation method of Arellano - Bond is designed appropriately for the panel table with limited T and N (Judson et al, 1996). Arellano and Bond suggested two key tests to examine the validity of GMM. One of them is Sargan test or Hansen testto identify the suitability of tool variables in GMM. Sargan's test result shows p-value at 0.186, which is greater than the significance level at 1%, 5%, 10%, indicating that the tool variables are appropriate. Results oflevel-2 self-correlation test show p-value at 0.192 which is higher than the significance level at 1%, 5%, 10%, indicating there isno phenomena of level-2 self-correlation. Therefore DGMM is appropriate.

DGMM estimation results show that the variable d.LP, d.lnM2, VNI have statistically meaning with the appropriate level of significance. Among them, the amount of change in the rate of inflation has opposite impacts while the change speed of M2 and market yields have impacts in the same direction on bank stock

yields. The impacts of these variables along with the change amount of interest rates on bank stock yields in DGMM are similar to Pooled, FE, RE and FE-robust as analyzed above. The only difference is that in DGMM, change speed of exchange rates has no statistical significance to bank stock yields.

DGMM model allows exploiting gross panel dataand controlling length of time data chain of the objects in the data table. Based on that, the use of appropriate delay to exploit the dynamic feature of the data. However, DGMM as well as FEM, REM also have limitations: forcing the parameters to be homogeneous between the objects and may lead to inconsistencies and discrepancies of the regression coefficients in the long term. The problem would become more serious when the observation period lasts long (Pesaran and Smith (1995), which does not represent the dynamic feature in the short term and the long term cointegration

To overcome the above problems, PMG estimation method is used. It allows independent parameters for the entire group and does not take into account possible consistency between the groups. PMG also highlights the dynamic feature adjustment between long term and short term. Therefore, PMG estimation allows: to estimate the long-term elasticities, determine the speed of adjustment to return to the balance in the long term, check the stability of DGMM estimations.

To perform the PMG regression, the variables must have cointegration. Because the variable VNI stops at the root level whilethe remaining variable LP, lnM2, IR, lnER stop at the first level difference, we will check the cointegration of the variables throughWesterlund test (2007). The results show that the p-values of the tests are all 0.0000, proving the variables have cointegration and we can have PMG regression. PMG estimation results are presented in Table 7.

Table 7
PMG estimation results

Variable	*The long-term cointegrated vectors Dependent variable: Ri* *Coeff*	*Prob*
d.LP	-0,0103477***	0,003
d.lnM2	0,5391774**	0,026
d.IR	0,0047032	0,499
d.lnER	0,862983**	0,046
VNI	0,7080211***	0,000
Dependent variable: ΔRi	*Short term dynamic*	
Correction factor	-0,8248838***	0,000
LP	-0,0048643	0,462
lnM2	0,1210848*	0,068
IR(-1)	0,0045332**	0,025
lnER(-1)	-0,8875295	0,33
ΔVNI	0,3153166***	0,000
Cons	4,474623	0,531

The sign ***, **, * equivalent to the level of significance at 1%, 5%, 10%

In short term, the money supply M2 has statistical significance, in the same direction, at the significance level of 10%; Interest rates have statistical significance, in the same direction at the level of 5%; Market yields have significance level, in the same direction at the level of 1%. Whereas inflation rates have no impact on bank stock yields in the short term. Negative correction speed has significance at the level of 1%, proving the existence of a long term cointegration relationship at one bank stock code at least in the data table. When the changes in the macro economy such as inflation, money supply M2, exchange rates, interest rates and stock market yields make bank stock yields deviate from the long-term equilibrium line, right one period later (1 month later), the values of these effects would tend to return to the equilibrium position with the speed adjusted to the equilibrium position (the equilibrium line in the long term) is quite high at 82.49 %.

In the longer term, inflation growth speed has opposite impacts while the the market yields have impacts in the same direction, with the statistical significance at 1%; growth speed of money supply M2 and exchange rate have impacts in the same direction, with the statistical significance at 5%, while the change amount of interest rates has no statistical significance.

DGMM and PMG estimation results are basically suitable, indicated by the significant impact that independent variables have on dependent variables.

6. CONCLUSION AND RECOMMENDATION

6.1. Conclusion

This is the first study which provides experimental evidences of the impact of macroeconomic variables on bank stock yields in Vietnam. The results from the models which as Pooled, FEM, REM, FE-robust are relatively similar as well as similar to the research results in other countries in the world: inflation rates have the opposite effects, matching the research of Saqib *et al.* (2011), while money supply M2 and market yields have impacts in the same direction, matching the results of Saqib *et al.* (2011), Ghosh (2013); exchange rates have impacts in the same direction, different from with the results of Saqib *et al.* (2011), Kasman et al (2011), while interest rates have no impact on bank stock yields, aligned with the research by Vaz *et al.* (2008), AishatonAyub and Mansur Masih (2014). GMM can process endogenous problems having results relatively similar to the above models in terms of the impact direction of macro variables. The only difference is that the model shows that exchange rates have no impacts on bank stock yields. This indicates bank stock yields are heavily affected by inflation rates, money supply M2 and market yields without being affected by interest rates and exchange rates.

The fact that interest rates and exchange rates have no impact on bank stock yields, following GMM, demonstrates that changes in interest rates or exchange

rates do not change the investment behaviours of investors. The changes in policies of interest rates or exchange rates are not enough to make the money flow from savings or foreign exchange market switch to bank stocks. The fact that interest rates and exchange rates are macroeconomic factors having no impacts on bank stock yields demonstrates that the bank stock market is not completely affected by macro news but also affected by the phenomenon of biased news in the stock market and investors' herd mentality.

The results of PMG also indicate that there is the long term cointegration between macrovariables and bank stock yields, matching the research of Jawaid et al. (2012), Subburayan andSrinivasan (2014). Inflation rates and change speed of exchange rates have only long term impacts, aligned with the research results of Aishahton (2013); Interest rates only have impacts on bank stock yields in short term, meaning that once interest rates change, they will quickly affect investors' mentality but in long term they do not move the investmentcapital flow which goes from savings to bank stocks.

6.2. Recommendation

The experimental analytical results also imply that when policy planners implement monetary policy which make money supply increase or decrease to control inflation rate, they should also take notice of its impact on bank stock yields. The government should be careful in planning macro policies for a stable investment environment in order to avoid serious shocks in the stock market in general and in bank stocks in particular. In addition, to strengthen the confidence of the investing public, the monetary policies should be publicly announced and predict investment and business activities. If the macroeconomic situation is not stable and the government policies are inconsistent, it will significantly affect the price and yield of bank stocks, making inconstant fluctuations.

Bank stock yields in the stock market are important information for a bank to self-evaluate their activity situation. Based on that, suitable solutions of affecting prices and liquidity of shares can be chosen to strengthen the position as well as competitiveness of the bank. Therefore, bank managers should observe macro information in order to actively reacte to the economic fluctuations which can negatively affect bank stocks.

Investors also need to notice and observe the unstable situation of maro prices, especially VN-Index in order to make appropriate investment decisions.

References

Aishahton A., and Mansur, M. (2014), 'Interest rate, Exchange Rate and Stock Prices of Islamic Banks: A panel Data analysis', *MPRA Paper*, no. 58871. Available from: www.mpra.ub.uni-muenchen.de/58871/ [10 May 2016].

Asaulo, T.O. *et al.* (2011), 'An Econometric Analysis of the Impact of Macroeconomic Variables on Stock Market Movement in Nigeria', Asian Journal of Business Management, vol. 3, no. 1, pp.72 – 78.

Baltagi, B. (2001), Econometric Analysis of Panel Data, 2nd edn, John Wiley and Sons Ltd.: Great Britain.

Chen, N. and Roll, R. and Ross, S. (1986), 'Economic Forces and the Stock Market', The Journal of Business, vol. 59, no. 3, pp. 383 – 403.

Fama, E.F. and K.R. French (1993), 'Common risk factors in the returns on stocks and bonds', Journal of Financial Economics, no. 33, pp. 3 – 56.

Ghosh, R. (2013), 'Relationship between interest changes and banking stocks returns in up-market and down-market situation', Asian Journal of Multidisciplinary Studies, vol. 1, no. 3, pp. 128 – 146.

Hussainey, K. and Le Khanh Ngoc (2009), 'The impact of macroeconomic indicators on Vietnamese stock prices', The Journal of Risk Finance, vol. 10, no. 4, pp. 321 – 332.

Islam, M. (2003), "The Kuala Lumper stock market and economic factors: a general-to-specific error correction modeling test", Journal of the Academy of Business and Economics, vol.1, no. 1, pp. 37-47.

Jawaid, S. and Uihaq. A (2012), 'Effects of interest rate, exchange rate and their volatilities on stock prices: evidence from banking industry of Pakistan', Theoretical and Applied Economics, vol. 19, no. 8, pp. 153 – 166.

Judson, Ruth A. and Owen, Ann L. (1996), 'Estimating Dynamic Panel Data Models: A Practical Guild for Macroeconomists', Federal Reserve.

Kasman, S., Vardar, G. and Tunc. G. (2011), 'The impact of interest rate and exchange rate volatility on banks'stock returns and volatility: Evidence from Turkey', Economic Modelling, no. 28, pp. 1328 – 1334.

Kibria, U. *et al.* (2014), 'The Impact of Macroeconomic Variables on Stock Market Returns: A Case of Pakistan', Research Journal of Management Sciences, vol. 3, no. 8, pp. 1 – 7.

Merton (1973), 'Theory of Rational Option Pricing', The Bell Journal of Economics and Management Science, vol.4, no. 1, pp. 141 – 183.

Pesaran, M.H. and Smith, R.P. (1995), 'Estimating Long-Run Relationships from Dynamic Heterogeneous Panels', Journal of Econometrics, no. 68, pp.79 – 113.

Pramod Kumar, N. and Puja P. (2012), 'The Impact of Macroeconomic Fundamentals on Stock Prices Revisited: Evidence from Indian Data', Eurasian Journal of Business and Economics, vol. 5, no. 10, pp.25 – 44.

Ross, S.A. (1976), 'The arbitrage theory of capital asset pricing', Journal of Economic Theory, vol. 13, no. 3, pp. 341 – 360.

Saeed, S. & Akhter, N. (2012), 'Impact of Macroeconomics Factors on Banking Index in Pakistan', Interdisciplinary Journal of Contemporary Research in Business, vol. 4, no. 6, pp. 1200 – 1218.

Saqib, M., Babar Z. & Kashif U.R. (2011), 'A multifactor Model of Banking Industry Stock Returns: An Emerging Market Perspective', Information Management and Business, vol.2, no. 6, pp. 267 – 275.

Subburayan, B. & Srinivasan, V. (2014), 'The Effects of Macroeconomic Variables on CNX Bankex Returns: Evidence from Indian Stock Market', International Journal of Management and Business Studies. vol. 4, no. 2, pp. 67 – 71.

Vaz, J.J., Ariff, M., Brooks, R.D. (2008), 'Effects of interest rate change on bank stock returns', Investment Management and Financial Innovations, vol. 5, no. 4, pp. 221 – 236.

Phan Thi Bich Nguyet& Duong Phuong Thao (2013), "Analyzing impacts of macroeconomic factors on VN stock market", Development and Integration magazine, vol 8. (no.8), pg 34-38.