

### Report on Ph.D. Dissertation Defence

<b>Ph.D. Candidate</b>	Nguyen Hoang Lan
<b>Main referee</b>	LEON-GONZALEZ, Roberto
<b>Referees</b>	HSU, Minchung
	PORAPAKKARM, Ponpoje
	SONOBE, Tetsushi (Chairperson of the Ph.D. Committee)
	FUJIWARA, Ippei (Keio University)
<b>Dissertation Title</b>	Monetary Policy and Stock Returns in emerging economies: The case of Vietnam
<b>Date of submission</b>	June 26, 2015
<b>Date of Dissertation Defense</b>	July 31, 2015
<b>Date of committee meeting</b>	July 31, 2015
<b>Degree Title</b>	Ph.D. in International Economics

**Result:** Pass (subject to minor changes)

#### 1. Thesis overview and summary of the presentation.

The thesis includes two research papers about the relationships between the stock market and monetary policy in Vietnam. The first research chapter uses a structural VAR analysis and the second estimates a Dynamic General Equilibrium Model (DSGE) for monetary policy using Bayesian techniques. The VAR uses ordering restrictions for the identification of structural shocks. In contrast, the DSGE model is built on a detailed macroeconomic model with microeconomic foundations, and therefore it is more firmly built on economic theory. Although the DSGE has the advantage of giving more information about several aspects of the macroeconomy, (e.g. household consumption, labor market, monetary policy), it has the disadvantage of not being able to forecast the macroeconomic variables with the same accuracy as a VAR model. By combining both approaches in the same thesis, Ms. Lan is able to look at the research questions from several perspectives, and confirm that the results of both techniques point to similar

directions.

The thesis formulates the following two research questions:

- 1) To what extent does monetary policy in Vietnam drive financial market performance and other real variables?
- 2) To what extent does Vietnamese central bankers take financial market conditions into account in the process of policy decision making?

The thesis finds that monetary policy effectively affects the stock market performance of small firms and of financial firms. It also finds evidence that monetary policy responds to changes in the stock market.

The thesis also includes an overview chapter about monetary policy in Vietnam and a conclusions chapter.

Ms. Lan made a very clear presentation that lasted for about 1 hour and subsequently the referees made several questions and comments.

## **2. Notes from the Examining meeting (including changes required to the thesis by the referees).**

The referees made the following comments:

### **COMMENTS FROM PROFESSOR FUJIWARA IPPEI**

#### **CHAPTER 3:**

1. I would like to look at the Accumulated Impulses Responses to the shocks.
2. Why don't you also try estimate the VAR model with data in level. You will possibly find more significant results. First, you should test for cointegration among variables and then show the Accumulated Impulses Responses.
3. You can discuss the central bank's reaction to shocks from the VAR model by looking at the impulses responses of the policy instrument to the shocks.

4. You can cite paper by Gertler and Gilchrist (1994) in Quarterly Journal of Economics to support your conclusions about the behavior of small firms.

5. Why don't you consider estimating VAR models with: GDP, inflation, monetary instrument, stock returns of specified portfolios and stock returns of the rest of the firms. In that way, you will be estimating the same model all the time and it is more comparable among the estimations.

#### CHAPTER 4:

6. The model is very much the same with a standard New Keynesian DSGE model except for the existence of the finance condition in the IS curve. Why don't you explain more clearly about how financial condition enter IS curve, it probably has something to do with parameter  $\gamma$ , you should explain more clearly about this parameter.

7. Instead of adding lags to the IS curve and the Phillips curve, why don't you try deriving them from the household's problem and firms' problem.

8. Why don't you also try estimate the original model and discuss the estimation of the parameters?

9. You can check the source of inflation by looking at graphs of shocks.

#### COMMENTS FROM PROFESSOR SONOBE

1. Have you taken foreign exchange rate into account?
2. Did you consider the financial crisis in 2007 in your research?
3. Vietnam is an open economy, the model in this dissertation is, however, a closed economy model.
4. How did the regulations of the market and the market have changed over time?

#### COMMENTS FROM PROFESSOR MINCHUNG HSU:

##### CHAPTER 3:

1. The results suggest that stock returns of financial sector and small firms are more responsive to monetary shocks. Are these results contradicting as financial sector often consists of big firms?

#### CHAPTER 4:

2. How  $E_t \{F_{t,t+1} B_{j,t+1}^*\}$  enters financial budget equation?
3. It will be more informative if you compare the estimation results for the US. and Vietnam.
4. Vietnam has a monetary targeting regime, the model should reflect this.

#### COMMENTS FROM PROFESSOR PONPOJE PORAPAKKARM

##### CHAPTER 3

1. The thesis finds that the effect of monetary policies (money supply) strongly affects the stock return of financial firms and small firms. One conclusion (last paragraph on page 34) about a policy implication is to use monetary policies to boost asset return of these companies. I do not see how this suggestion would be economically beneficial. First, the measure of return in the study is return on financial assets, instead of real assets. Consequently, this policy recommendation will only create an asset price bubble. Second, it is still debatable, even among developed economies, whether Central Banks should intervene in asset markets. I wonder why the Vietnamese Central Bank should boost the asset pricing of financial sector and small firms.

##### CHAPTER 4

2. I found that the description of the model part (page 54-70) is not well written and there are many mistakes. Specifically, many variables shown in equations are not explained and many equations are wrong. For example,  $F_{t,t+1}$  is first mentioned on page 55 but there is no explanation till page 57, which only briefly mention about it. Equation (1) and (2) are incorrect. The notation of choice variables is wrong. I do not understand how the expectation,  $E_t$ , can show up in the budget constraint (2). The state variables in the Bellman equation at the end of page 55 are incorrect.

3. The explanation about the benchmark equilibrium (page 67-68) is unclear. In addition, how are the time-varying potential output and potential stock price determined in the benchmark equilibrium? And how can stock return be a proxy of the stock price gap ( $s_t$ ), defined as the deviation from the potential stock price (page 71)? If stock return is measured as the gain/loss from two consecutive periods, the measure will be different from the theoretical measure of stock price gap.

4. The underlying equations for the estimation are shown on page 69. However, it is unclear if they are related to the theoretical model explained in length in the previous

sections. It should be transparent which equations are log-linearized to get the equations on page 69.

5. The theoretical model is based on a perpetual youth model. However, on page 74, the estimated (survival probability) is precisely zero. This implies that the model collapses to an infinitely lived agent. How does this change the theoretical implication of the model since there is no longer a newborn without asset entering in each period?

Overall, I can see that the studies have important implications for Vietnamese monetary policies. But I would like to see a significant improvement in terms of thesis writing, which should have shown that the Ph.D. student has a deep understanding of the underlying economic model.

**3. Confirmation by the Main Referee that changes have been done to the satisfaction of the referees.**

Ms. Lan has revised her thesis to incorporate the comments of the referees and has provided an explanation of the changes that I attach at the end of this report. The referees are satisfied with the revisions.

**4. Final recommendation.**

I recommend that the degree of PhD in International Economics be awarded to Ms. Nguyen Hoang Lan.

**Appendix: Report of how the comments of the referees where incorporated in the thesis by Ms. Nguyen Hoang Lan.**

**COMMENTS FROM PROFESSOR FUJIWARA IPPEI**

**CHAPTER 3:**

10. I would like to look at the Accumulated Impulses Responses to the shocks.

*I added the Accumulated Impulses Responses for various VAR models on page 44, 45 and 48.*

11. Why don't you also try estimate the VAR model with data in level. You will possibly find more significant results. First, you should test for cointegration among variables and then show the Accumulated Impulses Responses.

*I added a section discussing VAR models with data in level on page 46 and 47. I also added the Accumulated Impulses Responses for model in level on page 48. Johansen Conintegration Test suggests that there is one cointegration relationship among the variables; therefore it is possible to estimate the model in levels.*

12. You can discuss the central bank's reaction to shocks from the VAR model by looking at the impulses responses of the policy instrument to the shocks.

*I agree with your suggestion and I added a paragraph on page 27 to discuss the central bank's responses to shocks in the VAR model. It is as follows:*

*"The Impulses Reponses functions of M2 to all other shocks imply that the central bank is adjusting money supply to changes GDP and inflation. Specifically, in response to an increase in GDP and an increase in inflation, the central bank decreases money supply in adjustment"*

13. You can cite paper by Gertler and Gilchrist (1994) in Quarterly Journal of Economics to support your conclusions about the behavior of small firms.

*Thank you for recommending this article. I have included it in the dissertation on page 24, which reads:*

*"This result supports the hypothesis proposed by Gertler and Gilchrist (1994) that credit constraints caused by a monetary tightening should affect small firms, which are less well-collateralized and have less ability to borrow, more than large firms. Monetary policy, thus, matters because it affects firms' access to credit."*

And on page 28, which reads:

*“The findings are consistent with Thorbecke (1997) and Gertler and Gilchrist (1994). Gertler and Gilchrist (1994) find that in response to a tightening of monetary policy, small firms’ manufacturing level declines and consequently inventory demand also largely declines. Financial factors, i.e. declines in future cash flow and declines in value of collateral assets, are found to be at work. Along the same line with the hypothesis by Gertler and Gilchrist, as balance sheet position of small firms worsens, their stock price performance may as well suffer.”*

14. Why don’t you consider estimating VAR models with: GDP, inflation, monetary instrument, stock returns of specified portfolios and stock returns of the rest of the firms. In that way, you will be estimating the same model all the time and it is more comparable among the estimations.

*I agree that with this strategy, the estimation will be more consistent as we will be estimating the same model with the same variables. This is a very helpful idea that will significantly improve the quality of this chapter and I will surely incorporate it in the nearest future.*

CHAPTER 4:

15. The model is very much the same with a standard New Keynesian DSGE model except for the existence of the finance condition in the IS curve. Why don’t you explain more clearly about how financial condition enter IS curve, it probably has something to do with parameter  $\gamma$ , you should explain more clearly about this parameter.

*I added a paragraph describing parameter  $\gamma$  in more details on page 59, which reads:*

*“The demand side of the economy consists of an indefinite number of households, who enter the financial market in period  $j$  and face a constant probability  $\gamma$  of being replaced by new comers before the next period begins (or survival rate  $1 - \gamma$ ). As the results, the household sector consists of an indefinite number of cohorts whose participation time in the financial market is different from one another. The existence of replacement probability  $\gamma$  introduces heterogeneity in households which latter allows the accumulation of financial wealth in the aggregate consumption equation. Specifically,  $\gamma$  does not let the effects of financial wealth be smoothed out perfectly during the process of aggregation across cohorts and therefore, allow these effects enter the aggregate demand equation. With replacement probability  $\gamma$  approaches 0, this model becomes*

*the standard New-Keynesian model with a representative agent. During Bayesian estimation of the model,  $\gamma$  is allocated a normal distribution which allows  $\gamma$  to be zero or non-zero.”*

16. Instead of adding lags to the IS curve and the Phillips curve, why don't you try deriving them from the household's problem and firms' problem.

*I agree that ideally, we should derive past output and past inflation in the IS and the Phillips curve from the household's and firms' problem. Adding them to the final equations is only a short-cut. I will do this exercise in the future as suggested to improve the accountability of the empirical model.*

17. Why don't you also try estimate the original model and discuss the estimation of the parameters?

*I have estimated the original model in page 79. This part includes a table showing the estimations results and some discussions, which reads:*

*“Before estimation, we calibrate some of the parameters of the model. We demean GDP, inflation and the stock returns rate by setting  $\xi$  and  $r$  to their sample means that read, respectively, 1.99% and 0.62%. We fix the share of public expenditures over GDP  $\varpi$  to 0.28, the average share in period 2006-2011. Parameter  $\gamma$ , depicting a wealth effect in the household's consumption pattern is assigned a prior mean of 0 and a normal distribution so that the parameter can freely speak for the data.*

*The estimates for the theoretical model are presented in エラー! 参照元が見つかりません。 . In contrast with the results for the U.S data provided by Castelnouvo and Nistico (2010), we do not find strong support to the role of stock prices in this monetary model of the business cycle.*

*The parameter of interest here is the turnover rate  $\gamma$  or the probability of being replaced in the financial market.  $\gamma$  is estimated at 0 and this result indicates that fluctuations in financial holdings do not have an affect the household's consumption pattern which is described in details by equation (11). The wealth channel that links asset prices and household's consumption in Vietnam is found to be weak, which is not surprising in light of the high volatility and modest size the Vietnamese stock market. Wealth channel in more advanced economies likewise has a significant yet small impact on household's behaviors (Koivu, 2010).*

*As to the systematic monetary policy by the State Bank of Vietnam, our estimates suggest a strong and significant response to inflation and output gap, which is in line with the goals of the central bank. Estimations using U.S. data in Castelnouvo and Nistico*



*(2010) suggest that the Federal Reserve Fund responses strongly to inflation but very weakly to output gap. The difference between findings is due to Vietnam, being a developing nation, has been emphasizing growth since 1986. In addition to price stability, the central bank is asked to support GDP growth, in particular the growth of State-owned enterprises and it has never explicitly prioritized between the two goals. This is obviously not the case for the U.S. Federal Reserve Fund whose prime responsibility is price level control.”*

18. You can check the source of inflation by looking at graphs of shocks.

*Thank you very much for your recommendation. I would like to leave this for future research.*

#### COMMENTS FROM PROFESSOR SONOBE

5. Have you taken foreign exchange rate into account?

*Foreign exchange in Vietnam is pegged with the U.S. dollar and is allowed to move within a very narrow bandwidth of  $\pm 1\%$ . It is a non-active policy instrument and therefore, is excluded from our discussion in this study.*

6. Did you consider the financial crisis in 2007 in your research?

*The financial crisis and its specific impact have not been discussed in this dissertation. It is, however, noteworthy that the crisis is a proof of the high volatility and uncertainty in the Vietnamese financial market. The crisis and its impact has gathered attention of policy makers and urged them to formulate and implement policies to moderate and regulate the financial market.*

7. Vietnam is an open economy, the model in this dissertation is, however, a closed economy model.

*I agree with the comment that ideally, the model should capture all the features of the Vietnam economy including the open economy feature. The features that are not included now in the model such as open economy, informal sector, wage rigidities are subjects for future research.*

8. How did the regulations of the market and the market have changed over time?

*I have briefly mentioned how the market has changed over time on page 2 of the*

*thesis. I would also incorporate this type of institutional details in the introduction of future publications.*

*“Second, the role of stock market is expanding in Vietnam. By the end of 2008, Ho Chi Minh Securities Trading Center and Hanoi Securities Trading Center has a combined market capitalization of approximately 9.59 billion US dollars, or 10.5% of GDP of Vietnam. It increased quickly to 17.6% in 2010 and 21.1 in 2012 (World Bank). There are more than 300 companies listed on the Ho Chi Minh Stock Exchange as of 2012 and 730,000 trading accounts with 102 securities companies. Given the growing share of the financial market in GDP, policy makers may wish to moderate its development and to comprehend the mechanism by which monetary policy is transmitted into the financial market.”*

#### COMMENTS FROM PROFESSOR MINCHUNG HSU:

##### CHAPTER 3:

2. The results suggest that stock returns of financial sector and small firms are more responsive to monetary shocks. Are these results contradicting as financial sector often consists of big firms?

*These results are not contradicting as financial sector in this study consists of many “small firms”. Financial sector, by definition in this study, consists of commercial banks, insurance firms, investment firms and real estate firms. Among these firms, investment firms and real estate firms are categorized as “smallest firms” and “second smallest firms”. Specifically, among 57 financial firms, there are 34 small firms. I added a description of the financial sector on page .... in order to clarify this point.*

##### CHAPTER 4:

5. How  $E_t \{F_{t,t+1} B_{j,t+1}^*\}$  enters financial budget equation?

*I have added an explanation on this point in page 62, which reads:  
“In the budget constraint (2), the current discounted bond price is given by the expectation of the discounted bond payoff one period later  $E_t \{F_{t,t+1} B_{j,t+1}^*\}$  under an important assumption that the contingent claims are risk-free. Contingent claims in this model are called Arrow securities which have two features: 1) they are risk-free one-period claims that are traded every period and 2) they represent rights to receive pre-specified payoffs at a pre-specified state or zero payoffs otherwise. Details on Arrow assets pricing measure can be found in Kwok (2008, pp 40-41).”*

6. It will be more informative if you compare the estimation results for the US. and Vietnam.

*I have included some discussion about the difference between findings for the US. and Vietnam on page 79-80, which reads:*

*“Third, backward looking behavior in inflation seems to be dominant. Past inflation has significant impact on current inflation as indexation to the past  $\alpha$  takes value of 0.8392. This result is in contrast with that reported for the U.S. as Castelnuovo and Nistico (2010) find a low degree of price indexation of only 0.04.*

*Indexation to expected output gap is found to be very high for Vietnam as parameter  $\omega_x$  is reported at 0.974. Output fluctuations seem to be driven much more by future realizations of the output gap rather than by its past realization. This is, again, not the case for the U.S. as the parameter is reported at 0.39, indicating less emphasis on future realizations of output gap.”*

*And on page 82, which reads:*

*“...This is obviously not the case for the U.S. Federal Reserve Fund whose prime responsibility is price level control”*

7. Vietnam has a monetary targeting regime, the model should reflect this.

*I agree that the model should reflect the regime that the state bank of Vietnam is adopting. Although I have argued and cited studies suggesting that in theory, money supply rule or Taylor-type rule does not differ, it is true that in practice, this may not be the case. In order for the model to reflect the real economy better, I will include in the future research money demand in the household's problems and a money supply rule for the central bank of Vietnam.*

## COMMENTS FROM PROFESSOR PONPOJE PORAPAKKARM

### CHAPTER 3

1. She found that the effect of monetary policies (money supply) strongly affects the stock return of financial firms and small firms. One conclusion (last paragraph on page 34) about a policy implication is to use monetary policies to boost asset return of these companies. I do not see how this suggestion would be economically beneficial. First, the measure of return in the study is return on

financial assets, instead of real assets. Consequently, this policy recommendation will only create an asset price bubble.

*Changes in the momentary policy, although remain neutral in the long run, can have real effects in the short term. In case of economic stagnation, a boost in money supply or decrease in interest rate can create a better balance sheet position (through future expected cash flows) for firms and the resulting effect is increases in stock prices.*

Second, it is still debatable, even among developed economies, whether Central Banks should intervene in asset markets. I wonder why the Vietnamese Central Bank should boost the asset pricing of financial sector and small firms.

*I agree that the topic is an interesting debate. Given the fact that the Vietnamese financial market is only at its infant stage and there exists many shortcomings in financial regulations, I think that at the moment, a moderator such as the central bank is necessary.*

#### CHAPTER 4

2. I found that the description of the model part (page 54-70) is not well written and there are many mistakes.

*This part has been revised, rewritten and improved.*

Specifically, many variables shown in equations are not explained and many equations are wrong. For example,  $F_{t,t+1}$  is first mentioned on page 55 but there is no explanation till page 57, which only briefly mention about it.

*I have added the definition of  $F_{t,t+1}$  and other variables on page 61, which is as follows:*

*“ ...where  $E_0$  is the expectation operator conditioned on information available at time 0,  $W_t$  denotes wage income from labor,  $B_{j,t+1}^*$  denotes the one-period ahead expected payoffs of a set of contingent claims,  $F_{t,t+1}^*$  denotes the associated discount factor of the contingent claims,  $Z_{j,t+1}^*$  denotes the set of equity shares issued by wholesale firms,  $Q_t(i)$  denotes the real price of equity shares at time  $t$ ,  $T_t$  denotes lump-sum taxes, which is assumed to be uniformly distributed across cohorts.”*

Equation (1) and (2) are incorrect. The notation of choice variables is wrong.

*Thank you for pointing this out. The notation of choice variables in the household's problem is corrected as follows:*

$$\text{Max}_{\{N_{j,t}, B_{j,t+1}^*, Z_{j,t+1}^*\}} E_0 \sum_{t=0}^{\infty} \beta^t (1 - \gamma)^t V_t [\delta \log C_{j,t} + (1 - \delta) \log(1 - N_{t,j})]$$

I do not understand how the expectation,  $E_t$ , can show up in the budget constraint (2)

*I have added an explanation on this point in page 62, which reads:*

*“In the budget constraint (2), the current discounted bond price is given by the expectation of the discounted bond payoff one period later  $E_t \{F_{t,t+1} B_{j,t+1}^*\}$  under an important assumption that the contingent claims are risk-free. Contingent claims in this model are called Arrow securities which have two features: 1) they are risk-free one-period claims that are traded every period and 2) they represent rights to receive pre-specified payoffs at a pre-specified state or zero payoffs otherwise. Details on Arrow assets pricing measure can be found in Kwok (2008, pp 40-41). ”*

The state variables in the Bellman equation at the end of page 55 are incorrect.

*Thank you for pointing this out. The Bellman equation is corrected as follows:*

$$U(B_{j,t}^*, Z_{j,t}^*) = \max\{(1 - \gamma)^t V_t[\delta \log C_{j,t} + (1 - \delta) \log(1 - N_{j,t})]\} \\ + \beta E_t(1 - \gamma)^t V_t U(B_{j,t+1}^*, Z_{j,t+1}^*)$$

3. The explanation about the benchmark equilibrium (page 67-68) is unclear.

*I have rewritten the explanation of the benchmark equilibrium in page 74 as follows:*

*“ Nistico (2012) takes as benchmark an equilibrium in which price are fully flexible ( $\theta = 0$ ), and is representative agent setup (replacement rate  $\gamma = 0$ ). He labels this equilibrium the frictionless and denotes variables in this equilibrium with an upper bar.”*

In addition, how are the time-varying potential output and potential stock price determined in the benchmark equilibrium?

*For benchmark equilibrium determinacy, please kindly see Nistico (2012), pp 134-135 and appendix A2. In the dissertation, I have also referred the readers to pages 134-135 and appendix A2 where details on mathematical derivations can be found.*

And how can stock return be a proxy of the stock price gap ( $s_t$ ), defined as the deviation from the potential stock price (page 71)? If stock return is measured as the gain/loss from two consecutive periods, the measure will be different from the theoretical measure of stock price gap.

*The choice of the empirical counterpart for the stock price gap is open to discussion. Nistico and Castelnouvo (2010) choose real S&P500 index quarterly growth rate (with a measurement error) as a proxy for stock price gap. Castelnouvo (2012) uses the Kansas City Financial Condition Index, created by Hakkio and Keeton (2009), which captures uncertainty leading to asset prices volatility. I agree that ideally, a similar type*

*of financial condition index should be created for the Vietnam financial market. However due to limitation in data, such exercise is difficult at the moment. We, therefore, choose stock returns quarterly growth rate and assume that the potential stock price is the price of the previous period. From a theoretical standpoint, stock return fulfill two conditions to be the proxy for stock price gap: 1) it takes high (low) value when financial market is in good (bad) condition and 2) it may connect financial wealth (as reflected in private portfolios) with household's consumption decision. Another alternative for stock price gap is to use HP filter to remove the cyclical component of stock prices from the trend.*

4. The underlying equations for the estimation are shown on page 69. However, it is unclear if they are related to the theoretical model explained in length in the previous sections. It should be transparent which equations are log-linearized to get the equations on page 69.

*The equations on page 69 indeed are related to the theoretical model explained in previous sections. First order approximation around the (non-stochastic zero-inflation) steady state of the aggregate constraints, labor supply and aggregate Euler equations (Equation 18 -19) yields a log-linearized system. The equations on page 69 are this log-linearized system written in terms of deviations from the benchmark steady state (the frictionless level). Nistico (2012, pp 132-133) provides a detailed mathematical derivations of the equations on page 69.*

5. The theoretical model is based on a perpetual youth model. However, on page 74, the estimated (survival probability) is precisely zero. This implies that the model collapses to an infinitely lived agent. How does this change the theoretical implication of the model since there is no longer a newborn without asset entering in each period?

*I agree that this is a quite surprising result. It implies that the estimated model is very close to (but not exactly) the benchmark equilibrium where replacement rate equals 0 and price adjustment cost  $\theta$  equals 0.  $\gamma = 0$  is surprising but still a possibility and not internally or mathematically inconsistent. In practice, during Bayesian estimation, we also allow  $\gamma$  to have normal distribution and let the data freely speaks. With  $\gamma = 0$ , there is no wealth effect on aggregate consumption nor demand.*

Overall, I can see that the studies have important implications for Vietnamese monetary policies. But I would like to see a significant improvement in terms of thesis writing, which should have shown that the Ph.D. student has a deep understanding of the underlying economic model.