

# Impact of Exchange Rate Fluctuations on Business Risk of Joint Stock Commercial Banks: Evidence from Vietnam

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## Abstract

The nearer Vietnamese New Year festival comes, the more foreign currency is demanded in order to respond for imports and exports. This need leads to an effervescent market in foreign exchange business of Joint Stock Commercial Banks. The fundamental objective of this paper is to answer the three questions. First, does joint stock commercial banks in Vietnam have to face foreign currency difficulties? Second, which factors impact on exchange rate? And finally, what solutions Joint stock commercial banks in Vietnam should follow in order to reduce exchange rate risk in foreign exchange business? The paper proceeds as follows. First this research will give some information about the fluctuation of foreign exchange rate in 2014. Next we will try to answer the question what make foreign exchange rate fluctuate by establishing one model using data from 2005 to 2014. The final part shows the derivative instruments that commercial banks in Vietnam often use for hedging foreign exchange rate risk.

**Keywords:** Exchange rate, Exchange Rate Risk, Commercial Banks, Derivative Instruments

## 1. Introduction

From the first days of 2014, the State Bank of Vietnam has established a target of foreign exchange rate stability that not exceed the limit of 2% in order to control the depreciation of Vietnam Dong (VND), giving a good condition for companies in buying foreign currency for their business as well as giving market opportunity for Joint stock commercial banks in getting more profit from foreign exchange business. However, there are some fluctuations of foreign exchange rate on foreign exchange markets in Vietnam.

In Vietnam, the interbank average foreign exchange rate is an important indicator of foreign exchange rate policy as well as foreign exchange rate management of the State Bank. It also is the foundation to define trading level on foreign exchange market. With the amplitude control at +/-1% that was given by the State Bank of Vietnam, the joint stock commercial banks in Vietnam can trade foreign currency at the lowest price of 20034VND/1USD (Vietnam Dong/ United States Dollar) and the highest price of 21458 VND/1USD. In the first six months of 2014, foreign exchange rate was kept stably at 20036 VND/1USD. On 19th June, 2014, the State Bank adjusted foreign exchange rate rising 1% to 21246 VND/1USD. Six months after that, this rate was 21405VND/1USD. This rate rising 1,04% in compared with it in the same time of 2013. We can see that the foreign exchange market in Vietnam was basically stable in 2014. However, the foreign exchange market works under the pressure of depreciation of VND. The fluctuation of foreign exchange rate lead to some difficulties that the import companies as well as the joint stock commercial banks in Vietnam have to face. Foreign exchange rate risk can be occurred due to the fluctuation. "What make foreign exchange rate fluctuated?". This paper will represent one model to define factors that make foreign exchange rate fluctuated.

## 2. Literature Review

Globally, there is a lot of research about foreign exchange rate as well as foreign exchange rate risk, i.e. (Allayannis, W.Brown, & F.Klapper, 2001) analyze the exchange rate risk management practices for the large sample of East Asian, the difference in using currency derivatives depends on the differences in size, domestic and foreign debt exposures, and financial characteristics. The result of this research represents that when the difference between domestic and foreign interest rate exist, the companies are less likely to apply foreign exchange rate risk managing instruments because they do not want to abandon maximum profit goals.

(Brown, 2001) analyze in detail on foreign exchange rate risk management at a single, large, multinational companies in order to see the process of foreign exchange rate risk management. The results show that these corporations have a foreign exchange rate risk program and it comes along with foreign operations. The reasons why almost companies tried to manage foreign exchange rate risk are minimizing expected taxes, avoiding costs of financial distress, managerial risk aversion. The results from statistical tests show that foreign exchange rate fluctuation is important factor of foreign exchange rate risk management policies.

(Wong, Wong, & Leung, 2008) analyzes data of 14 commercial banks in China. The results show that there is a positive relationship between foreign exchange rate risk and size of the bank which are represented by its equity. This research also finds the relation between the price of renminbi with the equity values of the commercial banks in China. It states that an appreciation in renminbi will lead to a decrease in equity values, therefore increases the default risk.

(Honohan, 2007) finds the relationship between interest rate of foreign currency deposits with dollarization and exchange rate fluctuation. Higher interest rate of foreign currency deposits lead to a depreciation in foreign currency, therefore increases dollarization and leads to exchange rate fluctuation.

In Vietnam, there is also some research related to this topic. In his thesis, (Tin, 2013) generalized the characteristics of Vietnam's economy from 2007 to 2012 as follow: was difficult, inflation ran at high level, trade balance was deficit, dollarization status persisted, the foreign currency credit has reduced but this reduction was not large enough to transfer to foreign currency relations. Under the negative impacts inside and outside of Vietnam's economy, foreign exchange business of commercial banks in Ho Chi Minh city face many risks. The research has shown the strengths as well as the weaknesses of joint stock commercial banks in Ho Chi Minh city. Finally, this research has come up with the solutions for reducing risks.

In the research of (Trinh, 2013) the author has shown the role of foreign exchange rate in monetary policy framework of Vietnam, finding the relationship between interest rate and inflation rate with foreign exchange rate by using money supply as one monetary controlling tool. This research states that foreign exchange rate have direct impact on price chain included import price, producing price and consumption price. By this way, the author has shown the damage of foreign exchange rate risk and the important role of foreign exchange rate management in response to dollarization and price puzzle in Vietnam.

(Nga, Hien, & Chien, 2013), foreign exchange rate and inflation rate have an indirect relationship. Foreign exchange rate impacts on inflation by three ways: the first way is the affect on aggregate demand, the second way is the affect on money supply, the final way is the affect on imported prices.

According to (Mishkin, 2004), there are seven factors shift and affect exchange rate, including domestic interest rate (iD), foreign interest rate (iF), expected domestic price level, expected trade barriers, expected import demand, expected export demand, expected productivity.

As for us, seven factors that affect exchange rate, like Frederic S.Mishkin states, can be shortly stated in four factors.

The first factor is the inflation rate. One country has higher inflation, the currency of this country will depreciation in comparison to the currency of another country.

The second factor is the interest rate. Higher interest rates offer lenders in an economy a higher return relative to other countries. Because the investors want to collect more profits, in condition of other factors of the economy don't change, especially inflation, if domestic interest rate is higher than foreign interest rate, the investors will sell foreign currency and buy domestic currency in order to get more earnings from differentials in interest rate. As a result of this action, the supply for foreign currency will increase, the exchange rate will decrease, domestic currency will appreciate. In general, domestic interest rate is higher than foreign interest rate will lead to an import currency, and vice versa. Interest rate is an instrument of State Bank used for controlling exchange rate. However, this solution only has efficiency in short-term period. In long-term, this solution can cause disastrous effects on the entire economy, increasing pressure on exchange rate by the nature of the problem is this effect doesn't base on the real purchasing power of currency, it bases on a temporary appreciation of currency.

The third factor is the trade balance. Trade balance or balance of trade (BOT), also called net export, is the largest component of one country's balance of payments. It is the difference between the monetary value of exports and imports of output in an economy over a certain period, measured in the currency of that economy.

$$BOT_t = EXPORT_t - IMPORT_t$$

A positive balance is known as a trade surplus if it consists of exporting more than is imported, vice versa, a negative balance is referred to as a trade deficit.

The trade balance is expected to depend on the real exchange rate and a measure of domestic and foreign income respectively, id est on the main determinants of import and export. On the opposite view, we can see the impact of trade balance on exchange rate. Domestic currency is more sensitive with the change in trade balance. The report of trade balance shows the commercial condition, the economic growth, the ability of competition of one country. A trade surplus means export is larger than import, or domestic goods is used more than foreign goods, will lead to an increase in domestic currency demand, domestic currency appreciate, so exchange rate will decrease, vice versa.

The fourth factor is the level of trade liberalization of an economy. The trade liberalization of an economy is the degree which a country participates in international trade, international relations, conducting exchanges of goods, monetary, labor, capital, and technology. The trade liberalization means seeking investment opportunities from foreign partners. The trade liberalization can be measure by the trade barriers. In the process of trade liberalization, the policies which allow foreign investors to invest in one country easier. These lead to an impact on exchange rate. The trade liberalization also includes financial liberalization. Financial liberalization, especially in banking, in financial market, will have a significant impact on exchange rate. Foreign exchange transaction costs will reduce by adopting a series of new instruments when open as electric payment. In addition, the new policies allow foreigners buying bonds, stocks... on financial market easier. These actions have a direct

impact on the foreign exchange supply and demand, and the supply and demand for foreign currency decides exchange rate.

In general, if the greater trade liberalization level that one country have, the more frequent trade liberalization affects exchange rate. However, the more trade liberalization a country has the greater financial risks this country has to face. Beside these factors above, from a view of foreign exchange market, we have some other factors that affect exchange rate indirectly. Factors that affect exchange rate through the effect on investors such as public debt, political stability and economic performance. Factors that affect exchange rate through the effect on speculators such as market sentiment and speculation.

### 3. Model Specification and Analysis

From the analysis above, we establish a model to evaluate foreign exchange rate risk through the raising level of foreign exchange rate. The purpose of the first model is to see the indirect impact of external factors on foreign exchange rate risk in foreign exchange business of Joint Stock Commercial Banks in Vietnam through the direct impact on foreign exchange rate that made foreign exchange rate fluctuate.

Dependent variable: Foreign exchange rate risk in relation with foreign exchange rate fluctuation is calculated by the fluctuation of foreign exchange rates from 2005 to 2014. The foreign exchange rate that we used in this model is exchange rate between VND and USD. This is the most popular rate in Vietnam. Fluctuation of foreign exchange rate of VND/USD from year  $t - 1$  to year  $t$  is calculated by using the following formula:

$$FEF = \frac{(FER_t - FER_{t-1})}{FER_{t-1}} * 100$$

Where,

$FEF$  is foreign exchange fluctuation  
 $FER_t$  is foreign exchange rate of year  $t$   
 $FER_{t-1}$  is foreign exchange rate of year  $t - 1$   
 $t$  is defined from 2005 to 2014

#### Independent variables

- Interest rate: We choose the annual base offered interest rate. Let's denote  $INT$  is interest rate,  $t$  is defined from 2005 to 2014, the we have  $INT_t$  is the interest rate of the banks in Vietnam in year  $t$ .
- Inflation rate: We choose the annual real inflation rate. Let's denote  $INF$  is inflation rate,  $t$  is defined from 2005 to 2014, the we have  $INF_t$  is the inflation rate of Vietnam in year  $t$ .
- Fluctuation of the trade balance: Fluctuation of the trade balance of Vietnam from year  $t - 1$  to year  $t$  is calculated by using the following formula:

$$TBF = \frac{(BOT_t - BOT_{t-1})}{BOT_{t-1}} * 100$$

Where,

$TBF$  is trade balance fluctuation  
 $BOT_t$  is balance of trade of year  $t$   
 $BOT_t = EXPORT_t - IMPORT_t$   
 $BOT_{t-1}$  is balance of trade of year  $t - 1$   
 $BOT_{t-1} = EXPORT_{t-1} - IMPORT_{t-1}$   
 $t$  is defined from 2005 to 2014

Let's denote  $\beta_1, \beta_2, \beta_3$  are the coefficients of independent variables, so we have anticipated regression equation:

$$FEF = \alpha + \beta_1 INT + \beta_2 INF + \beta_3 BOT + \varepsilon$$

Where,

$\alpha$  is constance  
 $\beta_1, \beta_2, \beta_3$  are coefficients  
 $\varepsilon$  is an error represents for factors that can not be showed in the model such as the level of trade liberalization of an economy, political stability, economic performance.

### 4. Results and Findings

The first time analyse regression, the result is given as follow:

Table 1: First time – Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	Constant	-0.172	0.055		-3.125	0.02
	Interest rate	2.557	0.806	1.065	3.171	0.019
	Inflation rate	-0.236	0.27	-0.313	-0.874	0.416
	Trade balance fluctuation	-0.002	0.009	-0.043	-0.178	0.865

We have regression equation:

$$FEF = -172 + 2.557INT - 0,236IFT - 0.002TBF$$

In table 2, adjusted R Square is 57,2% show us that 57,2% variation of foreign exchange rate can be explained by trade balance fluctuation, interest rate and inflation rate.

Table 2: First Time - Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.846 <sup>a</sup>	0.715	0.572	0.02502	0.715	5.017	3	6	0.045

Table 3: First time - ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	0.009	3	0.003	5.017	.045 <sup>a</sup>
	Residual	0.004	6	0.001		
	Total	0.013	9			

The Significance is 4,5% (less than 5%) means model can be existed. However, looking forward table 1, the Sig of trade balance fluctuation is 86,5% (larger than 5%) and the Significance of inflation rate is 41,6% (also larger than 5%), so these two independent variables have no statistical meaning. That's why we have to analyse regression once again.

At the second time, we have result as follow:

Table 4: Second time –Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	Constant	-0.171	0.051		-3.365	0.012
	Interest rate	2.57	0.745	1.071	3.448	0.011
	Inflation rate	-0.253	0.234	-0.336	-1.082	0.315

The regression equation is:

$$FEF = -0.171 + 2.570INT - 0.253INF$$

Table 5: Second Time - Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.845 <sup>a</sup>	0.713	0.632	0.02322	0.713	8.716	2	7	0.013

In the second time, Adjusted R Square increases and the Significance decreases, the model is getting more efficient. However, the Significance of inflation rate is still larger than 5%. We have to analyse regression once again.

In the third time, we only have one independent variable, 62,4% variation of foreign exchange rate can be explained interest rate. The Significance is 0,04%, the existence of the model is completely coherence.

Table 6: Third Time - Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.816 <sup>a</sup>	0.666	0.624	0.02347	0.666	15.919	1	8	0.004

Table 7: Third time - Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	Constant	-0.144	0.044		-3.231	0.012
	Interest rate	1.958	0.491	0.816	3.99	0.004

We have the final regression equation as follow:

$$FEF = -0.144 + 1.958INT$$

By this equation, we can see that interest rate and foreign exchange rate fluctuation are covariance. The more increasing in interest rate, the more fluctuation in foreign exchange rate occurs. Because the interest rate we used for analyse is the base offered interest rate of VND, so when VND offered interest rate increases, the borrowing demand for VND will decrease, the demand for USD or other foreign currency will increase, VND will be depreciated and vice verse.

The inflation rate and the trade balance fluctuation could not appropriate in this model as theories that given above. This can be shortly explained that the economy of Vietnam is a developing economy, the import is larger than export, the economy depends on many external factors of the world's economy, so the fluctuation of trade balance as well as the inflation rate would be effected by external factors, such as an increasing in inflation rate of Vietnam in 2007 is 8,3% and this number up to 19,89% in 2008 due to the impact of the world's economic crisis.

The appreciated model includes three independent variables. After three times analyse, we only have one independent variable. By this analyst, we can see the impact of interest rate on foreign exchange rate fluctuation. Interest rate is one instrument of the State Bank of Vietnam using for controlling foreign exchange rate as well as management foreign exchange rate risk. It is also the reference variable of joint stock commercial banks in Vietnam in controlling foreign exchange rate risk and improving effectiveness of foreign exchange business in the process of financial liberalization.

### 5. Policy Implications recommended for joint stock commercial banks in Vietnam

The exchange rate between foreign currency and domestic currency, especially the exchange rate USD/VND and its volatility not only have a direct impact on the exporters and the importers, who use the foreign exchange services of the joint stock commercial banks but the volatility also has an impact on the joint stock commercial banks in Vietnam by giving them some foreign exchange rate risk. Controlling foreign exchange rate fluctuation and improving foreign exchange rate risk management are essential activities in foreign exchange business of joint stock commercial banks in Vietnam.

From the model above, we have found that the foreign exchange rate fluctuations are strongly affected by interest rate. Therefore, knowing the level of interest rate help the joint stock commercial banks to easily determine the speed of foreign exchange rate fluctuations in the future. It also helps executives to make accurate decisions in hedging against foreign exchange rate risk.

Using derivative instruments in order to prevent foreign exchange rate risk is the most popular method of the joint stock commercial banks in Vietnam. Derivative instruments are one type of financial risk insurance when making the economic contract that its nature is sharing implicit risks as well as bringing benefits for both clients and joint stock commercial banks. There are four popular derivative instruments:

**Forwards-** The term transaction appears as the first financial derivatives in Vietnam according to the decision No.65/1999/QD-NHNN of the State Bank of Vietnam on 25 February, 1999. Forward can be used in buying or selling contracts using USD and VND between joint stock commercial banks and imports or exports company according to the law of Vietnam.

**Futures-**The joint stock commercial banks need to determine the number of contracts that they have to sell at the price agreed upon today with delivery and payment occurring at specified future date, so the profits from these contracts have to compensate for the loss due to foreign exchange rate risk. In most cases, future market does not allow joint stock commercial banks in Vietnam adopt long-term contracts with the time-limit larger than 1 year, so the joint stock commercial banks in Vietnam must apply this method on the future market and increasing uncertainty in prices in the next contracts. That's why the joint stock commercial banks in

Vietnam do not prefer future contracts in compared with other derivative instruments.

**Options-** is an agreement between joint stock commercial bank and client that gives the client the right of buying or selling in the future at an agreed upon price. However, when using option contract, client must pay at higher price than usual. That's why the joint stock commercial banks in Vietnam provide option contract as a services in five years, the imports and exports company consider carefully when signing option contract.

**Swaps-** is a derivative in which the joint stock commercial bank and their client exchange cash flows. The cash flows are calculated over a notional principal amount. Contrary to a future, a forward or an option, the notional amount is usually not exchanged between the joint stock commercial bank and their client.

In these four instruments above, option is the most popular instrument that be used by joint stock commercial banks to cover its foreign exchange rate risk.

## 6. Conclusion

Foreign exchange business has never been simple. This activity always comes along with foreign exchange rate risk. Based on analyzing the impact of inflation rate, interest rate, trade balance on foreign exchange rate, this research established a model to evaluate the fluctuations of foreign exchange rate. The results of this model show that the more increasing in interest rate, the more fluctuation in foreign exchange rate occurred. By this way, the joint stock commercial banks in Vietnam can make rational expectations for foreign exchange rate fluctuation. The fluctuation of foreign exchange rate risk is the source of foreign exchange rate risk in foreign exchange business of joint stock commercial banks. The evidence also shows some derivative instruments that joint stock commercial banks used for hedging foreign exchange rate risk such as forward, option, future, swap. However, import as well as export companies have not cared about the foreign exchange rate risk at moderate level and the joint stock commercial banks have not developed these instruments passionately. That's why foreign exchange rate risk still has a negative impact on foreign exchange business of joint stock commercial banks in Vietnam. To success in foreign exchange rate risk management as well as maximizing profit in foreign exchange business, it is needed to improve discernment of the joint stock commercial banks as well as companies about the damage of foreign exchange rate risk and the important role of derivative instruments in hedging foreign exchange rate risk.

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