



CHAPTER 2

AN APPROACH ON STOCK RETURN AND STOCK VOLATILITY

2.1 The Shifts of Volatility of Emerging Market Return

In the world of stock market, there are many countries that investors or fund managers interest to put their money to invest. But each country will have a difference return and volatility depending on economic situation, political factor, country risk, country rating and so on. Emerging market is one of the markets that most of investors are interested as a result of return on the market. Reena Aggarwal, Carla Inclan, and Ricardo Leal (1999)¹ studied for the shifts of volatility of emerging market return and the events that are associated with the increased volatility. They use data on stock index and exchange rate in each country such as Argentina, Brazil, Chile, Mexico, India, Korea, Malaysia, Philippines, Taiwan, Thailand, Hong Kong, Singapore, Germany, Japan, UK and US. They saw the return in local currency and dollars are examined during the period 1985-1995.

Then they used GARCH model to study for volatility of those countries and plot that result to be the graph. After that they looked for the period of time that have more volatility and explain it by using the event that have effect to the index. For example, there are seven significant volatility shifts in Argentina during 1985-1995. The annualized standard deviation was as low as 23.9% and as high as 146.0%. The large changes in volatility seem to be related to important country-specific political, social, and economic events. These events include Mexican peso crisis, periods of hyperinflation in Latin American, the Marcos-Aquino conflict in Philippines, and the stock market scandal in India. The October 1987 crash is the only global event in the last decade that caused a significant jump in the volatility of several emerging stock markets.

Their studies were just looking at the volatility of market and explained by using of the events that happened during period of time. For example, in Thailand the market would jump up and down or the another word high volatility when the government devalue the Baht currency on June 2, 1997. We have a suggestion that volatility of market was not only depending on the events but we have to see what all of investor thinks about the market in the future or at that time. Some of them

¹ Reena Aggarwal, Carla Inclan, and Ricardo Leal, "Volatility in Emerging Stock Markets," Journal of Financial and Quantitative Analysis 34, No.1 (March 1999), pp. 29-39.

might think that the market would be good as a result of increasing of export produces but some of them might think about the inflation. In Thailand, foreign investors may come into buying stocks because of the price was low and can buy more volume of stock as result of Baht was weak. So they should be looking more net buying/selling of all type of investors, local investors, institution investors, foreign investors to compare with the return (changed) on market.

2.2 Determinant of Return of Foreign Portfolio

There are many variable factors that would be affecting to SET (Stock Exchange of Thailand) and also investors' portfolio. Nongnuch Soonthornchawakan (1990)² studied for determinant of foreign portfolio in Thailand. She studied about determinant of foreign investment in Thailand stock market by using OLS (Ordinary Least Square) model. From her study, she found the factors that would make an effect to net foreign portfolio investment in Thailand stock market are:

1. The domestic rate of return on Thailand stock from SET index.
2. The rate of return on the rest of the world from world stock index by using Dow Jones Industry Average (DJIA).
3. The standard deviation of return on Thailand stock and the standard deviation of return on the rest of the world by computed from SET index and Dow Jones Industry Average for daily data. And the standard deviation of return on Thailand stock is indicated about the risk of Thailand Stock.
4. The exchange rate risk.
5. The Domestic political shock in Thailand.
6. The foreign income.

We think she should look more variables such as NASDAQ index, Hang Seng index, or Nikkei 225 index because of foreign investors would invest in not only Thailand but also other countries around Asia. So his or her portfolio would have more determinants to effect.

In her study, she used OLS (Ordinary Least Square) model to found the answer of determinants of foreign portfolio, but we have a suggestion that she should think about the error term in OLS model. This error term can come from insider information, rumor, changing of corporate

² Nongnuch Soonthornchawakan, "Determinant of Foreign Portfolio in Thailand," (Master's Thesis, Faculty of Economics, Thammasat University, 1990)

policy, extra dividend payment.

So we suggest she should use some another technical econometric model that called GARCH (Generalized Autoregressive Conditional Heteroscedasticity) to reduce the error term. For GARCH model will be explained in the next chapter

2.3 Forecasting Stock Index Volatility

For forecasting stock index volatility, Bevan Blair, Ser-Huang Poon and Stephen J Taylor (1999)³ studied for low-frequency (daily or weekly) index return and implied volatility have produced conflicting conclusion about the information efficiency of S&P 100 option market. They used ARCH model to find no evidence for incremental information in daily index return beyond that provided by VIX index of implied volatility.

The extension of the historic information set to include high-frequency (five-minute) return shows, furthermore, that there appears to be no incremental information in high-frequency returns; this information is subsumed by implied volatility. Then their comparisons of volatility forecast show that VIX provides more accurate forecasts than low-frequency index returns, regardless of the definition of realized volatility and the horizon of the forecasts.

They show the mixture of VIX and low-frequency information reveal there is little or no incremental forecasting information in daily returns. And the last they forecasted that use both implied and high-frequency information are slightly more accurate than forecast from methods that use either information source alone.

For study's Bevan, Ser-Huang and Stephen, we have some of suggestions that they used S&P 100 options index to calculate the return and implied volatility are not really correct. Option market was the right and not the obligation to buy or sell and of underling asset during a specified period. So the options index just tell how good of market that investors are thinking in the future. And also they did not have any of variables that may effect to S&P 100 option index. We suggest they should use volume of market, exchange rate, cash index such as Dow Jone Industry Average and

³ Bevan Blair, Ser-Huang Poon, and Stephen J. Taylor, "Forecasting S&P 100 Volatility," (Department of Account and Finance, Lancaster University, 1999)

NASDAQ index to see the correlation between of them.

2.4 Stock Index Return and Volatility

Stock index return is the changed of stock index. For example if yesterday the index was closed at 300 points, and then today the index was closed at 320 points that means the index was changed to be positive (+20 points). If today index was closed at 280 points then the change would be negative (-20 points). That is the meaning of return, it is difference from return on asset which means how much the profit of asset that investors are expected.

Richard T. Baillie and Ramon P. Degennaro (1990)⁴ studied about positive relationship between a stock portfolio of expected stock return and stock return volatility. They use data of stock in the United States such as S&P 500 index and one variable is Federal Fund Rate (it is that rate that Federal lend to the financial institution) to explain the volatility of stock in S&P 500. The used Federal Fund Rate because in the United States, Federal Reserve will not use monetary policy to control the stock market. M1, M2, M3 are not included money from stock market.

So the way that Federal Reserve can do or control stock market is using inflation target that why Federal Reserve use Federal Fund Rate to control market. Richard and Ramon used GARCH in mean to explain stock volatility by analysis of daily date and monthly data. Then they compare both of periods of time. They found GARCH in mean model with a conditional student t density is found to provide a good description of daily and monthly returns data.

Controlling for excess kurtosis by use of the student t density is found to be important. And the estimated model shows very little evidence for a statistically significant relationship between a stock portfolio return and it own volatility.

Both was so good in their paper, S&P 500 index is the weighted index that bring the investors to really close to the world of NYSE (New York Stock Exchange) market. This index was calculated buy using 500 stocks that have big market capital. We have a suggestion that they should use some more variable data that have effects to the S&P 500 index such as volume of the market,

⁴ Richard T. Baillie., and Ramon P. Degennaro, "Stock Returns and Volatility," Journal of Financial and Quantitative Analysis 25, No.2 (June 1990), pp. 99-109.

fund flow from foreign investors, and other stock exchange market as Nikkei 225, Hang Seng and some of emerging market like a stock exchange of Thailand, Stock exchange of Singapore.

2.5 Price Premium of Stock in Foreign Board and Main Board

In Thailand, there are two kinds of trading board. One is main board stock that provided for Thai investors, who will get the right as dividend payment, new issue of warrants, and the right to vote as SE-ED and SE-ED warrant. While the another is foreign board stock provided for foreign investors, who will get the right as dividend payment, new issue of warrant, and the right to vote as TISCO-F, TISCO-P and TISCO-C1. Phanadda Thakuldith (2000)⁵ studied for the behavior of price premium between stock price of banking sector in foreign board and stock price of banking sector in main board in Thailand stock market. She found the rank of banking corporations that have more volume were BBL, BAY, SCB, and TFB. Then she studied about correlation of return in foreign board and main board by using Co-integration test and Causality, and the other factors. She used OLS (Ordinary Least Squares) to determine the difference of stock price from foreign board and main board.

She found that price of stock in foreign board and main board were positive correlated. She also found that major factors that could influence the price of stock in foreign board and main board were demand & supply, as well as liquidity of that stock. In each period of the study, the price premium had changed. Moreover, the coefficient and correlation also changed since the foreign investors constantly changed their investment pattern in response to the changing of local and international environment.

On her study just used only the banking sector. There are other sectors that are still interested by foreign investors such as financial sector, communication sectors, energy sector, electronic sector and other. And also the other stock market as Dow Jone Industry Index, Nasdaq Index, Nikkei 225 Index, and Hang Seng Index that both local investors and foreign investors also was use its to predict Thailand stock market. We suggest her to use GARCH model to reduce the error term of data that much more efficiency than OLS (Ordinary Least Squares).

⁵ Phanadda Thakuldith, "Behavior of the Price Remium of Banking Stock in Foreign Board and Main Board of Thailand Stock Market," (Master's Thesis, Faculty of Economics, Kasetsart University, May 2000)