THE IMPACT OF INFORMATION ANNOUNCEMENTS ON STOCK VOLATILITY

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ข้อมูลมีความสำคัญสำหรับชีวิตประจำวัน ซึ่งมีผลต่อการรับรู้ของนักลงทุนต่อการลงทุนในหุ้นของตลาดหุ้น ปฏิกิริยาต่อการประกาศข้อมูลใดๆย่อมขึ้นอยู่ว่าข้อมูลในการประกาศนั้น ๆ มีผลมากน้อยเพียงใดต่อนักลงทุนในตลาด การวิจัยนี้มีวัตถุประสงค์เพื่อพิจารณาผลกระทบที่สำคัญของการประกาศข้อมูลที่เกี่ยวกับเศรษฐกิจมหภาคและจุลภาค ทั้งต่างประเทศและในประเทศที่เกี่ยวเนื่องกับความผันผวนของราคาหุ้นในตลาดหลักทรัพย์แห่งประเทศไทย โดยการดำเนินการวิจัยจะพิจารณา 8 กลุ่มอุตสาหกรรม ซึ่งประกอบด้วย 27 หมวดธุรกิจ (sector) และจำนวนหุ้นมากกว่า 500 หุ้น ระยะเวลาของการเก็บรวบรวมข้อมูลคือ ช่วงปี ค.ศ. 2004-2007 และ 2008-2010 ซึ่งหมายถึงช่วงเวลาก่อนวิกฤตการเงินในสหรัฐและหลังวิกฤติการเงินในสหรัฐตามลำดับ ผลการศึกษาพบว่าจำนวนเปอร์เซ็นต์ของหุ้นในตลาดหลักทรัพย์แห่งประเทศไทยมีปฏิกิริยาตอบสนองต่อผลกระทบของการประกาศทั้งเศรษฐกิจมหภาคและจุลภาค ทั้งต่างประเทศและในประเทศต่ำกว่า 40 เปอร์เซ็นต์ ซึ่งถือเป็นผลกระทบไม่มาก บนความผันผวนของราคาหุ้นในตลาดหุ้นไทย ความสัมพันธ์ของข้อมูลการประกาศที่ใช้ในการศึกษานี้ รวมถึงความผันผวนของหุ้นถูกมองว่าขึ้นอยู่กับการรับรู้ของนักลงทุนในตลาดเกี่ยวกับสภาวะของเศรษฐกิจเป็นสำคัญ

Abstract

Information is vital for everyday life. It affects investor's perception of what stock investment to undertake in the stock market. Reacting to an announcement depends on how much impact the announcement is meant to have on the market. This research aims to determine the impact of both foreign and domestic key macroeconomic and microeconomic announcements on stock volatility of the Stock Exchange of Thailand. The research was conducted on eight industries which comprises of 27 sectors and over 500 stocks in these sectors. The period of data collection was 2004 - 2007 and 2008 - 2010 which represents the pre-crisis and post-crisis periods of the U.S. financial crisis, respectively. Results showed that the percentage number of stocks of the Stock Exchange of Thailand that reacted to the impact of both foreign and domestic macroeconomic and microeconomic announcements was below 40% and this is considered a small impact on the stock volatility of the Thai stock market. The relationship of the information announcements and stock volatility was seen to depend on the perception of market participants on the state of the economy.

Keywords: Information Announcements, Stock Volitility, U.S. Financial crisis

INTRODUCTION

Information has been seen to have an effect on investor's perception of what stock investment to undertake (Baird and Zelin, 2000). The information sought for by investors will range from microeconomic issues such as merging companies, productivity, earnings (financial performance), change of management and even shutting down to macroeconomics issues such as change in interest rate, fiscal and monetary policies, oil price, natural disasters and political unrest. Announcements about these issues are very important to investors.

Bartolini, Goldberg and Sacarny (2008) concluded that different economic news announcements do have either a strong or weak effect on financial markets. Also, research paper (Su, 2010) stated that microeconomic news announcements such as dividend and earnings or profit announcements have an effect on financial markets. This research will look at certain microeconomic and macroeconomic announcements and their impact on the volatility of Thai stock return.

One of the objectives of investors is to make profit. Before an investor invests or buy stocks of a company, his primary concern is to know the expected return of the stock he is buying and the risk associated with it (Haugen, 1993). In the Stock Exchange of Thailand, both foreign and local investors invest in the market and they continuously update themselves with both current and past events that concern the stocks they have in their portfolio or the stocks they intend to combine in order to have an efficient portfolio. It is therefore important for investors in the Thai stock market to know the impact of both domestic and foreign microeconomic and macroeconomic announcements on the volatility of Thai stock return. This research seeks to determine the impact of Information announcements on the Stock Exchange of Thailand.

LITERATURE REVIEW

Different researchers have perceived information announcements differently. In this research paper, information announcements are broadly divided into domestic and foreign announcements as implied by Nikkinen and Sahlstrom (2004). Both domestic and foreign announcements are further subdivided into Macroeconomic and Microeconomic information announcements as used by Albuquerque and Vega (2006) in their research paper.

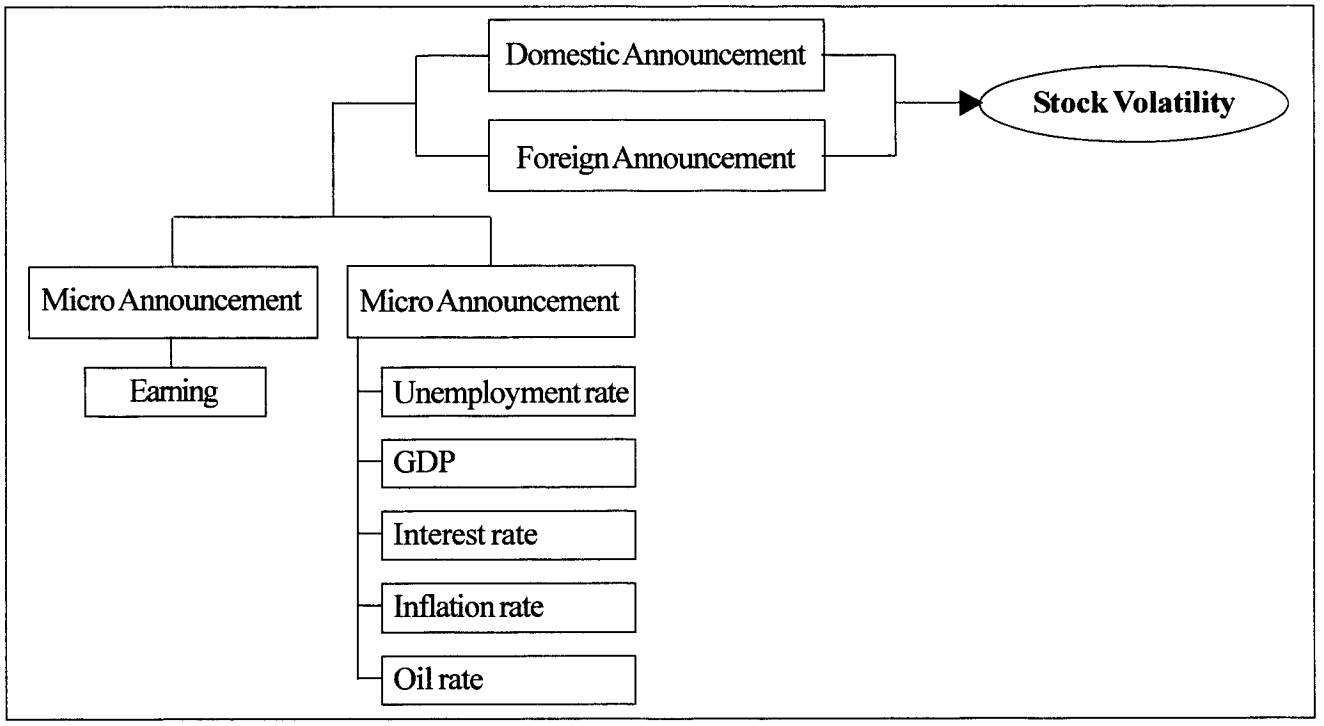
Macroeconomic Announcements

A research on the effects of macroeconomic announcements on stock returns by McQueen and Roley (1993) found that when economic growth is strong, the stock market responds negatively to good news about real economic activity. Prag (1994), Siklos and Anusiewicz (1998) showed in their research papers evidences that stock returns respond more to monetary news than non-monetary news. Veronesi (1999) also confirmed in his findings that there is a significant effect of macroeconomic announcements on stock returns. Contrary to all these findings, Mitchell and Mulherin (1994) found that there is little or no relationship between macroeconomic news and stock returns. Another research of macroeconomic news and its effect on stock return in the United States and Germany by using GARCH model inferred that for German stock returns, foreign news is least important as compared to domestic news and that their effects vary with the state of the economy (Funke and Matsuda, 2003). Nikkinen and Sahlstrom (2004) stated that there was no effect of domestic news and a significant impact of US foreign news on German and Finnish stock markets. Nikkinen et al (2006) stated that there was no effect of US foreign macroeconomic announcements on the stock market of Central and Eastern European countries, Russia and Slovakia.

In this research paper, information announcements on five macroeconomic variables have been chosen and they are GDP announcement, Unemployment rate announcement, Inflation rate announcement, Interest rate announcement and Oil price announcement.

Microeconomic announcements

Microeconomic announcements are announcements that contain information about a firm or company. Common microeconomic announcements will include announcements about Merging, Stock splitting, Corporate governance, Layoff, Expansion of firm, Management personnel, Profitability and Shutdown. Before an investor invests in a firm, the investor tries to gather as much information on the benefits and risks associated with the firm. Investors are very much concerned with the information announcements of a firm at both domestic and foreign levels. This concern has prompted many researchers to study the relationships between microeconomic information announcements and stock returns. Further findings show that there was no significant fluctuation of Thai stock returns around the announcement of corporate governance rating by TRIS (Nittayagasetwat and Nittayagasetwat, 2006). In the microeconomic level, Profit or Earnings for companies is the only variable that is seen to have a time frame for most companies. It was chosen because of the availability of information and its importance in providing information to the stock market (Ball



Source: Developed for this study

and Shivakumar, 2008). Earnings Announcement as defined in Investopedia, 2010 is an official public statement of a company's profitability.

CONCEPTUAL FRAMEWORK

If the announcements listed above significantly affect the stock volatility of the Stock Exchange of Thailand, the stock returns should reflect the available announcements as stated in the efficient market theory or there should be an anomaly of over- reaction or under- reaction. The magnitude of significance of the above listed announcements on the stock volatility of the market would be determined by the percentage of stocks significantly affected by the announcements. The null hypothesis (H0) is that the impact of information announcement on stock volatility is insignificant while the alternative hypothesis (H1) is that the impact of information announcement on stock volatility is significant.

Data collection was from January 2004 to December 2010. Due to the financial crisis that became obvious in 2008, it is assumed that a general result cannot be used to show the behavior of stocks to economic announcements before and during the financial crisis. This would lead to a bias in results due to abnormalities of the economy during the financial crisis. The data collected was split into pre-crisis and post-crisis periods. The pre-crisis period is from 2004 - 2007 while the post-crisis period is from 2008 - 2010.

The percentage return on the day of the announcement (closing price) of the stocks was used in this research paper. The difference in the natural log form of the closing price on a particular day with that of the previous day was used to obtain the change in daily returns. The value obtained is then converted to its percentage form. This can be represented as follows:

$$\Delta R = \log (R_t) - \log (R_{t-1})$$

$$\Delta R \times 100 = \% \Delta R$$

Where

ΔR = Return on day (t)

R_t = closing price or return on day (t)

R_{t-1} = closing price or return on the previous day

$\% \Delta R$ = percentage return on day (t)

It is essential to find the natural log of the closing returns in order to avoid the bias brought about by units of measurement.

The stock return data is a time series data as its information is collected over a period of time. Time series data are mostly characterized by its non

normal return distribution and is seen to possess the traits of non- linearity, leptokurtosis, volatility clustering, leverage effects, non- stationary and heteroscedasticity. All these attributes can cause error or bias in econometric data analysis and result. Time series data are usually non-linear. Because the EGARCH model is modeled to solve the problem of non- linearity of time series data, the non- linearity test was not carried out. The EGARCH model is the preferred model of this research paper.

Financial data are collected over a period of time. This cuts across different time intervals or periods which have different characteristic features. This can cause bias and error in results. Nelson and Plosser (1982) found that many macro and financial data are not stationary in level. The Dickey - fuller test was used to test for stationary.

The ADF tests the null hypothesis (H_0) against the alternative (H_1) hypothesis;

H_0: Each economic variable has a unit root
H_1: Each economic variable does not have a unit root

The ADF test is first carried out on the set of data in Levels at trend, trend and intercept and none positions to determine if it is stationary (having no unit root) or non-stationary (having unit root). If the data has a unit root, the ADF test is done again on the set of data in the First difference and Second difference. Most time series data that are not stationary in Level are seen to be stationary at First difference.

Econometric Regression Model

The general EGARCH (P, Q) model as proposed by Nelson for conditional variance is given as:

$$\log(\sigma^2_t) = \omega + \alpha \sum_{j=1}^{p} \beta_j \log(\sigma^2_{t-j}) + \sum_{i=1}^{q} \left(\alpha_i \left|\frac{\varepsilon_{t-i}}{\sigma_{t-i}}\right| + r_i \frac{\varepsilon_{t-i}}{\sigma_{t-i}}\right) + c_1 \text{Announcement}_t$$

For this research paper, the EGARCH (1, 1) model for the percentage return on stock returns which is regressed with announcement dummy variables is shown in the explicit form below as stated by Silli (2003).

Where

σ^2_t = Conditional Variance
α = GARCH effect
β = Persistence in conditional volatility
r = Leverage effect
ε = Error term
c_1 = Coefficient of announcement dummy

σ^2_t is the conditional variance while α, β, r and c_1 are parameters to be estimated. In order to determine the impact of announcements on Thai stock returns, it is important that the values of the above parameters are determined and interpreted.

RESULTS

In the sector level, the percentage of impact of the various announcements on stock volatility ranged from 0% to 100%. At the industry level, the percentage of the impact on stock volatility by the considered announcements was seen to range from 0% to 70%. This research paper found that the impact of both foreign and domestic macroeconomic and microeconomic announcements on the volatility of the stock return of the Stock Exchange of Thailand is below 40% and this is considered a small impact on the stock market.

The result can be summarized in the percentage significant of market as Table below:

Table 1: Result of the Impact (% significance) of Economic Announcement on Stock Volatility in Market

Macroeconomic Announcement	Pre-Crisis (2004-2007)	Post-Crisis (2008-2010)
Inflation Rate (Thai)	32	35
Inflation Rate (U.S.)	29	32
Interest Rate (Thai)	22	30
Interest Rate (U.S.)	27	25
GDP (Thai)	28	21
GDP (U.S.)	28	33
Unemployment Rate (Thai)	28	29
Oil Price (Thai)	41	36
Oil Price (U.S.)	35	34
Microeconomic Announcement	Pre-Crisis (2004-2007)	Post-Crisis (2008-2010)
Earnings (Thai)	38	34
Earnings (U.S.)	34	33

The impact on stock volatility from the Thai announcements did not differ much from the impact of the U.S. announcements on stock volatility even though the effect of Thai announcements were seen to be higher than that of the U.S. announcements. The impact of Thai Earnings announcement on stock volatility was seen to drop from 38% to 34% while that of U.S. Earnings announcement was also seen to drop from 34% to 33% when the period of 2004 - 2007 was compared with that of 2008 - 2010. It can be seen that the Thai Earnings announcement had more impact on stock volatility of the Stock Exchange of Thailand than that of U.S. Earnings announcement. Stock volatility was seen to have a positive relationship with Thai Earnings announcement in both 2004 - 2007 and 2008 - 2010. U.S. Earnings announcement of 2004 - 2007 also has a positive relationship with the volatility of Thai stock returns but was seen to have a negative relationship in 2008 - 2010.

Stock volatility of Stock Exchange of Thailand was seen to respond more to Thai Inflation announcement in 2008 - 2010. The impact went from 32% in 2004 - 2007 to 35% in 2008 - 2010. The effect of the U.S. announcement also rose from 29% to 32%. Thai Inflation announcement has a greater impact than the U.S inflation announcement on stock volatility. Stock volatility was seen to have a positive relationship with Thai Inflation rate announcement in both 2004 - 2007 and 2008 - 2010. U.S. Inflation rate announcement of 2004 - 2007 also has a positive relationship with the volatility of Thai stock returns but was seen to have a negative relationship in 2008 - 2010.

The effect of Thai Interest rate announcement on stock volatility of the Thai stock market was seen to rise from 22% in 2004 - 2007 to 30% in 2008 - 2010 but the effect of U.S. Interest announcement was seen to drop from 27% in 2004 - 2007 to 25% in 2008 - 2010. Stock volatility was seen to have a negative relationship with Thai Interest rate announcement in both 2004 - 2007 and 2008 - 2010. U.S. Interest rate announcement of 2004 - 2007 has a positive relationship with stock volatility but was seen to have a negative relationship in 2008 - 2010.

The impact of Thai GDP announcement on stock volatility of the stock exchange of Thailand fell from 28% in 2004 - 2007 to 21% in 2008 - 2010 while that of U.S. GDP announcement rose from 28% to 33%. It is interesting to note that both Thai and U.S. GDP announcement had the same impact on stock volatility before the U.S. financial crisis in 2008. Stock volatility was seen to have a positive relationship with Thai GDP announcement in both 2004 - 2007 and 2008 - 2010. U.S. GDP announcement of 2004 - 2007 and 2008 - 2010 both have a negative relationship with stock volatility of the stock exchange of Thailand.

The responsiveness of stock volatility of the stock exchange of Thailand to Thai Oil price announcement was seen to fall from 41% in 2004 - 2007 to 36% in 2008 - 2010. The responsiveness of stock volatility to U.S. Oil price announcement was also seen to 35% to 34%. The responsiveness to Thai Oil price announcement was seen to be higher than that of U.S. Oil price announcement. Stock volatility was seen to have a positive relationship with Thai Oil price announcement in both 2004 - 2007 and 2008 - 2010. U.S. Oil price announcement of 2004 - 2007 had a positive relationship with stock volatility but was seen to have a negative relationship in 2008 - 2010.

The effect of Thai Unemployment rate announcement could not be determined because of the unavailability of announcement information. The impact of U.S. Unemployment rate announcement was seen to rise from 28% in 2004 - 2007 to 29% in 2008 - 2010. The U.S. Unemployment rate announcements of 2004 - 2007 and 2008 - 2010 both had a positive relationship with stock volatility of the stock exchange of Thailand.

Therefore, the impact of key foreign and domestic microeconomic and macroeconomic announcements (that of U.S and Thailand) on stock volatility of the stock exchange of Thailand was seen to be small. The result obtained maybe due to the inefficiency of the Stock Exchange of Thailand in reacting to public announcement. The Stock Exchange of Thailand may be said to be a weak, semi- strong form of market as these announcements are not reflected immediately in the stock prices. The market is more insensitive to announcements as market participants do not attach so much importance on the announcements. An economy that has very stable macroeconomic and microeconomic variables or is perceived to have a steady growth can cause the market to become more insensitive to its macroeconomic and microeconomic announcements. Another possibility for the small im-

pact might be the inability for market participants to fully understand and interpret information announcements at the time they are released. The relationship of the Thai announcements to the volatility of the stock returns during the pre-crisis and post-crisis period remained the same even though the impact increased for some announcements and decreased for others. The Thai Inflation rate and Thai Oil price announcements were seen to have a different relationship with stock volatility when compared to the expected result of this research paper. The relationship of the information announcements and stock volatility of the stock exchange of Thailand could be explained as a result of the world economic recovery and growth seen after 2002. The Thai economy grew strong and was booming at this period. The inflation rate and Oil price also rose due to the pressure from economic growth. The Bank of Thailand's report in 2005 stated that in 2004 and 2005, the effect of the rising Oil price was negligible on the Thai economy. It also stated that even though the inflation rate rose, it did not exceed the target range during this period. During the financial crisis, the Thai economy only slowed down in its growth but it was still among the countries with the highest amount of foreign reserves in the world. Speculators, investors, brokers and the market in general had a high positive expectation and so reacted positively to Thai Inflation rate announcement and Thai Oil price announcement as well as Thai Earnings announcement and Thai GDP announcement both in the pre-crisis period and post-crisis period. The negative relationship of stock volatility to Thai Interest rate announcement might be a result of the market's skepticism about the Bank of Thailand's use of the monetary policy to control inflation in both periods.

For most U.S. announcements, their relationships with stock volatility were not the same during the pre-crisis and post-crisis period. Most announcements showed a negative relationship in the post-crisis period. During the pre-crisis period in the U.S., the Federal Reserve continued to increase the interest rate from time to time. The cost of borrowing was expensive which in turn caused the cost of production to become expensive in the U.S. Outsourcing became the way out for U.S. firms. The unemployment rate in the U.S was also low during the pre-crisis period. These economic condition of the U.S. economy accounted for the positive reaction of stock volatility of the stock exchange of Thailand to U.S. earnings, Inflation rate, Unemployment rate and Interest rate announcements respectively. The U.S. economy grew before 2004 but was seen to fall at a steady rate after 2004. The negative relationship of stock volatility to U.S. GDP announcement in 2004 - 2007 may be due to speculation that the U.S. economy was unstable. Even though the effect of the U.S. financial crisis was fully felt in 2008, the crisis had already started before 2008. The negative reaction during the post -crisis period might be as a result of skepticism that investors, speculators, brokers and the market in general had on the U.S. economy during the crisis period. The economic situation of the country was not getting any better and there were fears of further recession. Unemployment rate rose sharply, the economic growth fell at a fast pace and the Interest rate was close to zero.

RECOMMENDATIONS

After analyses and interpretation, the impact of information announcements on the volatility of the stock returns of the stock exchange of Thailand was seen to be small. In the industry and sector level, significant impact of information announcement on some industries and sectors respectively were noted. Risk advert investors and those who intend to save their money in financial assets should invest in stocks or sectors or industries that are insensitive to the key macroeconomic and microeconomic announcements analyzed in this research paper. Risk loving investors that venture in the sensitive stocks or sectors should understand the impact of key macroeconomic and microeconomic announcements. The persistence of the impact should always be considered before making decisions.

After analyses and interpretation, the relationship of information announcements to the volatility of the stock returns of the stock exchange of Thailand depends on the perception of the market participants (speculators, investors and brokers) on the economy. In periods of boom and positive expectation, the volatility of the stock returns reacted positively information announcements. During periods of uncertainty, the volatility of the stock returns reacted negatively to information announcements. Market participants that

understand this trend can predict and forecast the reaction of the volatility of the stock exchange of Thailand to information announcements in the future.

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