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The impact of Political Events and Covid-19 pandemic on Return Volatilities of 3 Sectors in the Stock Exchange of Thailand during 2019 to 2021

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Abstract

The objective of this paper is to study the impact of political events and Covid-19 pandemic on return volatilities of the sectorial stock market in Thailand. The researcher specifically used ARMA model for main equation and one EGARCH model for the volatility equation. This model is applied to the daily returns relevant to three selected sector indexes of stock exchange of Thailand from 25 March 2019 to 24 March 2021. To test the impact of political events and Covid-19 on banking, consumer product, and service sectors indexes stock market return volatility. The results show that both political events and Covid-19 pandemic have significant impact on return volatility of the selected sector indexes. However, the return volatilities of Service sector are not impact by Covid-19 pandemic. In part of political events, student's protest has impact continuously 3 days. And other political events have significant impact on second and third day after the situation. Meanwhile, all of situations have negative impact, except student's protest. Furthermore, results confirm that main three political events and Covid-19 pandemic have stronger impact on return volatility of selected sector index stock market in Thailand.

Keywords: Political events, Covid-19 pandemic, Stock market return volatility, EGARCH, Granger Causality analysis.

1. Introduction

1.1. Introduction of the study

Political events are a situation of uncertainty and unrest in the political system. Thailand has a long history of political protests since 2004, but now a new protest starting again in early 2020. Which the main cause of the protesting in Thailand is anti-government of Prime Minister Prayut Chan-o-cha by university students are leaders for call-out for major democratic reforms1. Demonstrations started in university campuses at the beginning of the year 2020 in response to a court decision to dissolve the Future Forward party. This political party was popular among young generation people and support the return of Thailand to democracy following a 2014 military coup. The protests have become an unprecedented event over recent month. In Thailand today, it was the most damaging situations to economic growth.

General elections are one of political events. It is the major role in political development of Thailand. The voters are the keys for changing in the outcome and in the composition of the government, which is the result in policy change through elections. The demonstrations by all groups of people both for and against the government could be affected economy. Many perspectives on many different things of voters also play an important role in causing political risk in Thailand. The weakness of political system is caused decline in the economic performance and less development of the countries. Moreover, instable political conditions and different political events could affect the stock market in Thailand and also affect investors' decision to invest in the stock market (Pástor & Veronesi, 2013).

It could bring the investors in part of raising capital of firm and generating earnings. Therefore, this study investigates on how much stock market will fluctuate due to different political events which can also affect the economy in both positive or negative way (Suleman, 2012).

The ongoing global, COVID-19 pandemic has created new economic and social disruption around the world including Thailand. The pandemic was initially identified in Wuhan, China in December 2019. The most impact from the Covid-19 is business and financial attitudes, which this situation made several business shutdowns and in part of financial market also has negative impact2.

As a result, investors and traders are more concerned about market situation. Moreover, the COVID-19 pandemic has continued to be a source of volatility in financial markets, for example, stock markets, exchange rate markets, and credit markets. Therefore, this crisis might

affect the relationship between Covid-19 pandemic and return volatilities on stock market.

This study aims to analyses the political events including students' protest, violent protest, Thai general election and Covid-19 pandemic. For stock market return volatility is Bank sector, Consumer Product sector and Services sector. This study is used daily time series data for the period March 2019 to March 2021. Moreover, this study using GARCH models in order to determine the influence of these factors among the selected sectors on stock market.

1.1 Research Objectives

The objective of this paper is to test the impact of the political events and Covid-19 pandemic and three selected index sectors including Bank sector, Customer product sector, and Service sector. The study used daily data between March 2019 to March 2021 and employed the Generalized Autoregressive Conditional Heteroscedasticity (GARCH) to forecast the return volatility of stock market of Thailand. The full detail of research objective is as follow:

To test whether student's protest, violent protest, Thai general election, and Covid-19 pandemic have significant impact the return volatilities of Bank, Consumer Product, and Service sector index of the Stock Exchange of Thailand.

1.2 Scope of the research

This financial research used the three political events including, students' protest, violent protest, and Thai general election and Covid-19 pandemic which may have the impact on three selected sector indexes of the Stock Market of Thailand including, Banking, Consumer product, and Services. The daily data was collected from the Stock Exchange of Thailand from 25 March 2019 to 24 March 2021 only on operating days of each stock. The researcher used ARMA and EGARCH-typed models for testing the relationship.

2. Review of Related Literature

Ahmed (2017) studied the impact of political instability on daily data of the EGX market index with eight sectorial stock market indexes during the period 2011 to 2014. Ahmed used a VAR-EGARCH mode with selected events to determine the result. The result showed that the political instability is affected the risk returns of the major market sectors.

Chau et al. (2014) studied the case of the "Arab Spring" on stock market volatility in six MENA countries. This research determined the influence by using different GARCH models on stock market volatility in six MENA countries. In this study, they found that the volatility of Islamic indices increases during the period of political turmoil while there was little or no impact on the volatility of conventional indices.

Laverde et al. (2009) tested the impact of crime, political events to market returns volatility in Colombia. They adopted daily data during July 2001 to October 2006 to confirm a link between variables. Their results show that the uncertainty in politics and crime are important determinants of market returns volatility. Market returns are also partly influenced by crime while political uncertainty has negative impact on market returns of Colombia. Therefore, political stability could affect the growth in long run period.

Aggarwal et al., (1999) studied the volatilities in developing stock markets and tested internal and external events to check the impact events to the volatility. The different political events become the main source of volatility in stock market in different countries. The result also shows that domestic reforms generate more impact than international events such as Mexican exchange rate crises, high inflation at Latin America, etc. The stock markets become volatile for ten years period with only single international event.

Döpke & Pierdzioch, (2006) conducted the research to watch how stock market depends on political events. They used VAR-based and popularity functions to test the relationship between variables. The results suggest that there is a weak relationship between political events and stock market. It also concludes that exchange of government between political parties does not make the stock market more volatile. Moreover, in the voting period, they did not find the effect on the German Stock Exchange. Political events have strong impact on stock returns.

Hussain and Qasim (2007) studied the effect of social unrest on the economic situation by using the stock market as indicator of economic development. They used the data during 1960 to 2002. Results of this study shows that stock market was at normal condition around 1980s but gained energy after the liberalization during 1990s. The result supports that the stock returns was fluctuated with different political events.

Qureshi et al. (2010) investigated the effect of political instability on growth of country by using stock

market returns as the indicator for economy. This research adopted the political instability index. This study also used data from 1971 to 2012 and find out that the average economic growth rate in the past is good at 5% approximately. The result shows that, the volatility in stock returns and economic development was high during the period of high political instability.

Ramelli and Wagner (2020) tested the relationship among cross-sectional reactions to COVID-19 in the U.S. stock market by using the Russell 3000 index. The result shows the strong evidence for the role of international trade and value chains on company value, especially with China. That is, investors perceived companies in the U.S. more favorably when the COVID-19 situation in China was better.

Davis et al. (2020) investigated the impact of the market to the news about COVID-19 pandemic by using the risk factors of U.S. companies. The result shows that the bad news generate significant negative abnormal return for firms with high exposures to COVID-19 pandemic such as firms in travel and lodging sectors.

Baker et al. (2020) studied the impact of the U.S. stock market on daily stock movements. This paper found that an unprecedented pandemic of COVID-119 on daily stock movements being more severe compared to the Spanish Flu of 1918–1919 and the influenza pandemic of 1957–1958.

Roberts (1990) studied the impact of the US presidential election outcome in 1980, and the victory of Ronald Reagan on the change in stock prices of military related companies. The result showed that there was a positive effect on stock prices.

Niederhoffer et al.(1970) analyzed the reaction of stock market to the results of the presidential election over a long period of time. It shows that the stock market reaction on the first day and first week after the election can be different depending on who is the winner candidate. The results show that, the market increases after the victory of the Republican candidate and decreases after victory of the Democratic candidate.

3. Conceptual Framework

3.1 Research Conceptual Framework

As the Figure 1 shows, based on the several previous studies. There are five variables in the conceptual framework. Which separate to two independent variables are political events and Covid-19 pandemic. There are three dependent variables which include Bank sector, Consumer product sector, Service sector in the Stock Exchange of Thailand between year 2019 and 2021.

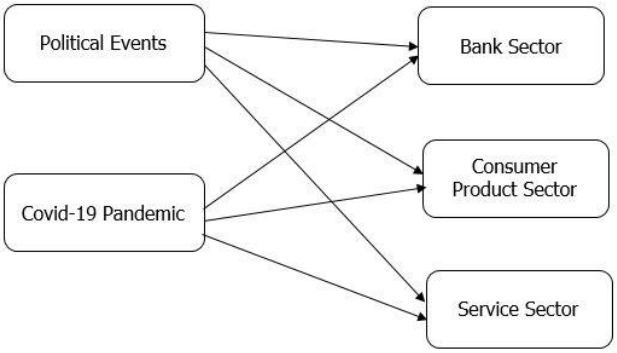

Figure 1: Conceptual Framework of the study

3.2 Research Models

According to the factors which were investigated previously, the researcher designed the model for this research to test whether the impact by using the selected factors which are include students' protest, violent protest, Thai general election, and Covid-19 pandemic on bank sectors, consumer product sectors, and service sectors stock market return volatility. Dummy variables representing the events of political events and Number of Covid-19 pandemic infection people were inserted in the conditional variance equation of the best EGARCH-typed model for each stock sector index as follow:

$$\sigma_t^2 = [\text{selected EGARCH typed model}] + \beta_1 Pol1_{t-k} + \beta_2 Pol2_{t-k} + \beta_3 Pol3_{t-k} + \beta_4 Covid_{t-k}$$

where σ_t^2 = volatility of the selected sectorial stock market index return
Pol1 = dummy variable of Political Event 1 (day of student protest = 1, day of no protest = 0)
Pol2 = dummy variable of Political Event 2 (day of violent protest = 1, day of no protest = 0)
Pol3 = dummy variable of Political Event 3 (day of general election = 1, day of no general election = 0)
Covid = Number of Covid Infected people in Thailand on a specific date
t = day t
k = number of lag day (1,2, or 3)

3.3 Research Hypotheses

This study has 12 hypotheses to present the relationships between the political events and Covid-19 pandemic impact on the three selected stock market indexes sector in Thailand on return volatilities during 25 March 2019 to 24 March 2021. The null hypotheses for testing are listed as following.

H1o: Students' protest doesn't significant impact the return volatility of Bank sector index.
H2o: Violent protest doesn't significant impact the return volatility of Bank sector index.
H3o: Thai general election doesn't significant impact the return volatility of Bank sector index.
H4o: Covid-19 pandemic doesn't significant impact the return volatility of Bank sector index.
H5o: Students' protest doesn't significant impact the return volatility of Consumer product sector index.
H6o: Violent protest doesn't significant impact the return volatility of Consumer product sector index of the stock market of Thailand.
H7o: Thai general election doesn't significant impact the return volatility of Consumer product sector index.
H8o: Covid-19 pandemic doesn't significant impact the return volatility of Consumer product sector index.
H9o: Students' protest doesn't significant impact the return volatility of Service sector index.
H10o: Violent protest doesn't significant impact the return volatility of Service sector index.
H11o: Thai general election doesn't significant impact the return volatility of Service sector index.
H12o: Covid-19 pandemic doesn't significant impact the return volatility of Service sector index of the stock market of Thailand.

4. Data Analysis and Results

4.1 Data Collection

In order to do the research, the wide range of the data was collected to test the hypothesis. There are all together five variables tested in this research. All data are gathered in term of daily data. The three selected sectors were collected from the Stock Exchange of Thailand (SET) through https://www.setsmart.com. Daily observations used in this study are from the period of March 2019 to March 2021. For the main factors of Political events were collected from https://www.wikipedia.org and the number of infected people from Covid-19 pandemic, the researcher used the data during 13 January 2020 to 24 March 2021 which collected the data from https://covid19.thaipbs.or.th/timeline/.

4.2 Unit Root Test

As seen in Table 1, the unit root test based on the Augmented Dickey-Fuller (ADF) was applied. All of the sector indexes were trnasformed into the log returns and are stationary. It means that all variables can be used to estimate the ARMA and EGARCH model in the next step.

Variable	ADF t-statistic	p-value	Result
BANK	-7.449102	0	Stationary
CONSUMP	-22.15289	0	Stationary
SERVICE	-24.31475	0	Stationary

Table 1: Results of Unit Root Test on Sector Index Returns

4.3 Statistical Treatment of Data

First step of the research, the Augmented Dickey-Fuller (ADF) test was being used in order to detect the stationary of data. After finished tested about the unit root test, all sectoral stock market indexes can be used with ARMA and EGARCH models to estimate variances in this step. The autoregressive moving average (ARMA) linear models, is widely used in many fields of time series forecasting. There is strong evidence that suggests that EGARCH model is strong in volatility forecasting than other historical models (Liu and Morley, 2009). Therefore, the event variables will be tested with the most fitted EGARCH model. The best ARMA and EGARCH model of each sector stock index are listed in table 2.

Sectoral stock market	Best ARMA Model	Best EGARCH Model
BANK	MA(5)	EGARCH(1,1)
CONSUMP	ARMA(3,3)	EGARCH(3,3)
SERVICE	MAMA(3,5)	EGARCH(3,3)

Table 2: The best ARMA and EGARCH model for Sectoral Stock Market Index

5. Research Results

Hypothesis	Sector	Event	1-day lag	2-day lag	3-day lag	Reject Ho
H1	Bank	Students' protest	-0.08467 (0.0000) **	-0.066485 (0.0000) *	-0.121717 (0.0000) **	Yes
H2	Bank	Violent protest	0.627123 (0.0000) **	0.443591 (0.0013) **	0.9165 (0.0000) **	Yes
H3	Bank	Thai general election	0.05374 (0.0064) **	0.027398 (-0.2156)	0.116697 (0.0003) **	Yes
H4	Bank	Covid-19 pandemic	-0.000104 (0.0011) **	-0.000121 (0.0017) **	0.116697 (0.0003) **	Yes
H5	Consumer Product	Students' protest	0.533492 (0.0000) **	0.316909 (0.0134) **	0.204692 (0.0050) **	Yes
H6	Consumer Product	Violent protest	-0.335281 (-0.0914)	0.593927 (0.0146) *	0.861206 (0.0002) **	Yes
H7	Consumer Product	Thai general election	-0.192839 (-0.1722)	0.950047 (0.0000) **	-0.32919 (0.0179) *	Yes
H8	Consumer Product	Covid-19 pandemic	-0.000239 (-0.332)	-9.63E-0.5 (-0.7267)	-0.000488 (0.0194) *	Yes
H9	Service	Students' protest	-0.83285 (-0.2878)	0.520081 (0.0000) **	-0.195219 (0.0180) *	Yes
H10	Service	Violent protest	-0.568225 (0.0205) *	-0.76899 (0.0001) **	-0.041215 (-0.8196)	Yes
H11	Service	Thai general election	-0.460311 (0.0001) **	-0.396905 (-0.0554)	-0.336007 (0.0000) **	Yes
H12	Service	Covid-19 pandemic	-3.69E-05 (-0.7959)	0.000114 (-0.7872)	-0.00015 (-0.4634)	No

Note: - *, ** mean significance at 5% and significance at 1% respectively.

Table 3: The hypothesis tesing results

Table 3 shows that the null hypothesis 1 to 11 are rejected because the p-value of at least one lag test is less than 0.05. Therefore, there are significant impacts of the events to the volatilities of the selected sectorial stock indexes, except the last hypothesis. There is no significant impact of Covid-19 to the volatility of service sector stock index.

6. Discussions, Conclusion and Recommendation

6.1 Discussion and Conclusion

The study indicates that bank indexes sectors was significant impact by three political events and Covid-19 pandemic for almost every lag, except political event from Thai general election on second day lag (or previous 2 days). It can be explained that on Bank sectors stock market in Thailand, the investors are sensitive to every situation. In addition, violent protest and Thai general election have positive impact on return volatility. It refers that the stock was more volatized, so the investors face higher risk and can

possibly get more chances to get higher (or lower) return from investment.

While in consumer product indexes sector has been volatized by both political events and Covid-19 pandemic. Interestingly, for student's protest has impact for all 3 days. Other political events have significant impact on second and third day after the situation. It is possible that the political events play an important role in consumer product sector stock market in Thailand, and these situations will attract more attention of investors. However, only student's protest which have more volatize because it is positive impact. For the Covid-19 and election on 3-day lag, there are negative impacts. So, it may refer to less trades in those sectors of investors. The Covid also seems to have the weak impact to this consumer product sector, because the sales and profits of companies in this sector may not receive much impact from the pandemic.

Surprisingly, the study shows that the volatility of the service sector index was not impacted by Covid-19 pandemic. Meanwhile, service sector index volatility receives the significant impacts from political events, such as Thai general election in 1-day lag, and also violent protest in 1-day and 2-day lag. It is possible that in part of investment in service sector indexes, the investors concerned on political events more than Covid-19 pandemic situation. In addition, all of situations have negative impact on return volatility. It is possible that service sector was less volatized. So, the investors paused trading to wait and see further situations.

6.2 Recommendation

For this study, there are several recommendations. Firstly, this research benefits to investors in term of knowledge in order to gain better decision making and reduced investment risk. In addition, the investors who invest in 3 selected sectors can use the result of this study to forecast that return volatility when political events and Covid-19 pandemic occur in the future. Specially, violent protest, student protest, and Thai general election could generate higher risk and fluctuation on return volatilities of bank and consumer product sector in some lag periods, and that means the investors will have the possibility to gain higher profit.

6.3 Future studies

There are several directions for future research. Firstly, the researchers could add more related event variables or factors and use different types of event data. For example, the changes of regulatory, taxes, interest rates, and natural disasters. Secondly, this study had focus only economic condition in Thailand only which result from this research is unable to interpret the result of other countries, so the further studies are suggested to extend investments to other countries and compare the difference such as ASEAN, Japan, and Korea. Moreover, the researcher will study furthermore on other indexes sectors such as industry sectors, tourism sectors, and agriculture sectors. Lastly, the future research can choose the different time period and use wider time lag period for testing.

References:

Aggarwal, R., Inclan, C., & Leal, R. (1999). Volatility in emerging stock markets. Journal of Financial and Quantitative Analysis, 34(1), 33-55.

Ahmed, W. M. A. (2017). The impact of political regime changes on stock prices: The case of Egypt. International Journal of Emerging Market, 12(3), 508-531.

Baker, Scott R., Nicholas Bloom, Steven J. Davis, Kyle J. Kost, Marco C. Sammon, and Tasaneeya Viratyosin. 2020. The Unprecedented Stock Market Impact of COVID-19. Working Paper Series No. 26945; Cambridge: National Bureau of Economic Research.

Chau, F., Deesomsak, R., & Wang, J. (2014). Political uncertainty and stock market volatility in the Middle East and North African (MENA) countries. Journal of International Financial Markets, Institutions & Money, 28, 1–19.

Davis, Steven J., Stephen Hansen, and Cristhian Seminario. 2020. Firm-Level Risk Exposures and Stock Price Reactions to COVID-19. NBER Working Paper 27867.

Döpke, J., & Pierdzioch, C. (2006). Politics and the stock market: Evidence from Germany. European Journal of Political Economy, 22(4), 925-943.

Hussain F., Qasim M. A., (1997) "The Pakistani Equity Market in 50 Years: A Review", The Pakistan Development Review, 36:4 Part II (Winter 1997) pp. 863-872

Institute of Integrated Development Studies, Katmandu, Nepal (2005) "The Relationship Khan, Shahrukh. "The military and economic development in

Pakistan." Political Economy Research Institute, University of Massachusetts working paper series 291 (2012).

Laverde, J. C. F., Varua, M. E., & Garces- Ozanne, A. (2009). Understanding Crime, Political Uncertainty and Stock Market Returns. World Economics, 10(2), 109-116.

Liu, W. and Morley, B. (2009). Volatility forecasting in the hang seng index using the garch approach. Asia-Pacific Financial Markets, 16:51–63.

Niederhoffer, V., Gibbs, S., & Bullock, J. (1970). Presidential elections and the stock market. Financial Analysts Journal, 26, 111-113

Pástor, Ľ., & Veronesi, P. (2013). Political uncertainty and risk premia. Journal of Financial Economics, 110(3), 520-545.

Qureshi M. N., Ali. K.., Khan I. R., (2010), "Political Instability and Economic Development:Pakistan Time-Series Analysis", International Research Journal of Finance and Economics, Issue 56 , 1450-2887

Ramelli, S.; Wagner, A.F. Feverish stock price reactions to covid-19. Rev. Corp. Financ. Stud. 2020, 9, 622–655.

Roberts, B. E. (1990). Political institutions, policy expectations, and the 1980 election: A financial market perspective. American Journal of Political Science, 34, 289-310.

Suleman, M. T. (2012). Stock market reaction to good and bad political news. Asian Journal of Finance & Accounting, 4(1), 299-312.