Spillover Effects of Thailand GDP Announcement Surprise to AEC Stock Markets

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จุฬาลงกรณ์มหาวิทยาลัย
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This study examines how Thailand GDP announcement surprise affects AEC stock markets which are Thailand, Indonesia, Malaysia, Singapore, Philippines, and Vietnam. In the sample of 44 GDP announcements in Thailand during 2009-2019, our result suggests that there is no impact to AEC stock markets on GDP announcement date. However, we find pre-and post- GDP announcement effect spillover to other countries in AEC. In addition, the direction of Thailand GDP announcement has no reaction on abnormal return on AEC stock exchanges. In contrast, our findings report the influence of macroeconomic conditions in Thailand on the abnormal return in Malaysia, Singapore, and Philippines.

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1. Introduction

In this research, we examine how Thailand Gross Domestic Product (GDP) announcement surprise can affect AEC stock exchanges, which are Thailand, Indonesia, Malaysia, Singapore, Philippines, and Vietnam. We adopt the difference between the actual GDP announcement and the forecasted GDP as GDP announcement surprise. We use the surprise following the result of previous research (Giovannelli & Pericoli, 2020; Marfatia et al., 2017) that reported the macroeconomic surprises has more effect on stock market than either actual or forecasted data.

GDP is another key indicator for investor and widely used around the world as it shows the overall performance of the country, so most of economic agents try to estimate GDP to plan the policy and design the tools to implement. When GDP is announced, there might be the difference between real data and forecasted data which is GDP announcement surprise. Therefore, GDP announcement surprise might affect to the reaction of economic agents and market participants through the stock prices which we can see from the return of the stock markets.

The impact of economic announcement widely affects through stock markets as they are actively traded around the world. Furthermore, past financial research revealed that economic announcements had a major impact on stock prices.(Fama et al., 1969; Mitchell & Mulherin, 1994). As the world economy becomes more globalized and integrated, the surprise from one country can spread to other countries through various transmission channel such as credit and trade channel. In addition, developing open economies mostly receive the effect of the international economy and financial system outlook (Pham et al., 2020). Moreover, (Yang & Hamori, 2014) also found the impact of US policy rate to stock markets in ASEAN.

In the past few decades, the emerging market have experienced substantial economic and financial growth. They appeal the capital around the world flow into the markets

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which lead researchers to study about emerging markets (Kang et al., 2019; Yang & Hamori, 2014). One of the emerging market countries is ASEAN Economic Community (AEC). It is the integrated economics of ASEAN countries set up in response to strengthen the economic zone. The characteristics of AEC are free movement of goods, services, investment, and capital flow between members, so the direction of fund flow can be easily changed in response to the economic announcement. Moreover, Thailand GDP accounts for 17% of AEC's GDP (Fig.1). As a result, the spillover effect from Thailand GDP announcement surprise to other countries is expected to be found in AEC.

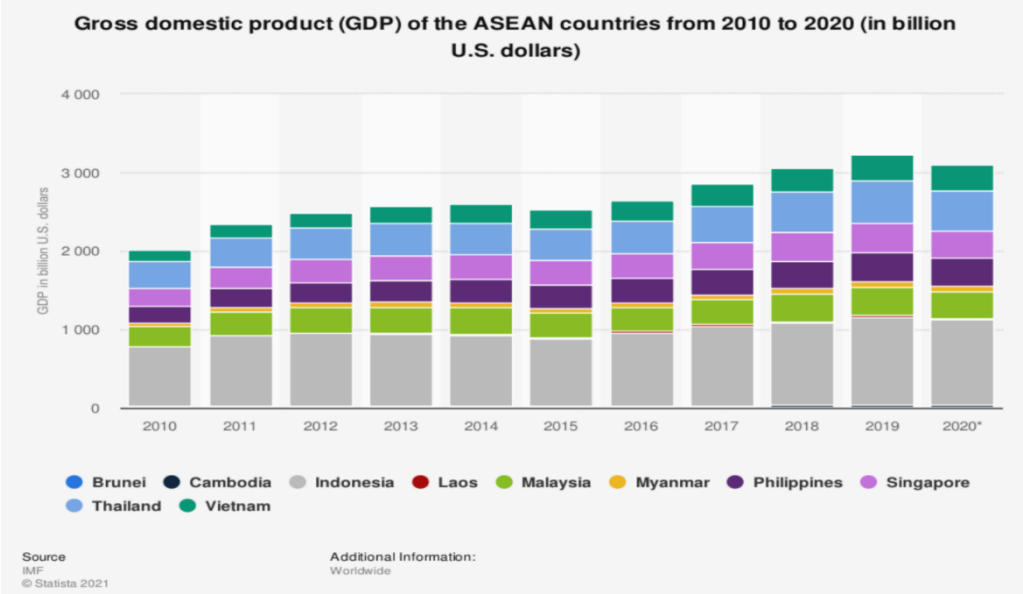

Fig. 1 Gross Domestic Product of the ASEAN countries from 2010 to 2020. (In billion U.S. dollars)

The objectives of this paper are;

(1) To investigate the response of Thailand GDP announcement surprise on the AEC stock exchanges to see the direction of abnormal return of AEC stock exchanges react on GDP announcement surprise. and,

(2) To extend previous literature, I would like to measure the magnitude of Thailand GDP announcement surprise effect on the AEC stock market to see which countries are sensitive to Thailand GDP announcement surprise.

As of our knowledge, our study shed the light on the effect of GDP announcement surprise to stock markets in the economic community. First, we can improve the investment decision about the regional allocation following the economic announcement. Second, this study also gives more understanding of market reaction which beneficial to The Securities and Exchange Commission (SEC) to improve the investment regulation. Lastly, it can support the policy makers to design the strategies through the spillover effect between countries about exchange rate and capital flow. When the spillover effect of economic announcement come through the country, there will be the movement of capital flow into the country that reported good data which could affect the exchange rate. Therefore, the central bank should concern the capital flow and the exchange rate as a result of GDP announcement.

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2. Literature Review

2.1 Macroeconomics effect and asset prices

Numerous studies have examined the macroeconomic effect throughout the stock prices. Early research suggests that the changes in policy rate influence the stock prices and other variables. Based on (Thorbecke, 1997), The share prices positively react on the easing monetary policy as the expectation of an expansionary monetary

policy (e.g., decrease the interest rate) will promote more investment which in turn boost the overall economy, therefore it potentially increases the opportunities of the company to expand their business that bring the expected cash flows of the firm increasing. Consequently, the stock prices should be increased due to the expansionary monetary policy. Oppositely, the tightening monetary policy will affect the opposite way to the economy and to the stock prices consecutively. Similarly, (Rigobon & Sack, 2004) also suggest the changes in policy rate react on the securities price is contrast as an increasing in interest rate in short term cause share prices to fall. (Bernanke & Kuttner, 2005) show that the securities prices might increase associated with the unexpected Fed fund rate cut which is one of the easing monetary policies. Support with (Farka, 2009) reports the similarity about increasing in interest rate trigger the declining in asset prices such as stocks. The result of (Duran et al., 2012) studies the influence of monetary policy on asset price in Turkey is consistent with the prior research that rising in policy rate result in a declining in share prices and raise the government bond yields. Moreover, latest studies also show the shock in monetary policy negatively affect the asset prices for example (Singh & Nadkarni, 2020) suggest that the unexpected in monetary policy influence the asset prices in emerging markets as tightening monetary policy leads to declining in stock price persistently and signifcantly.

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(Fama, 1970) suggest Efficient Market Hypothesis that stock prices immediately and fully reflect all public information. In addition, (Mitchell & Mulherin, 1994) investigate the relationship between the announcement of news and the trading activity of securities market. They found that they are directly related. So, the stock price should receive the effect only from the surprise change in interest rate policy. To get along with this paper, several studies try to estimate the surprise change in monetary policy rate via several methods. For instance, (Bernanke & Kuttner, 2005) employ the difference between the real Federal fund rate and the forecasted Federal fund rate. (Farka, 2009) investigate the surprise change in policy rate by using a change in Federal funds futures over one-day

period during the announcement date. (Reinhart & Simin, 1997) adopt a difference between an announcement of real rate and a market expectation rate as a forecasted rate. Some scholars such as (Cochrane & Piazzesi, 2002) suggest adopting the variation of Eurodollar rate over one-month around the change of interest rate target as a representative for the policy rate surprise.

Previous studies suggest the impact of monetary policy to the asset prices is asymmetric. For instance, (Vithessonthi & Techarongrojwong, 2012) find that the response of share prices on the repurchase rate change is asymmetric as the securities prices react negatively to the expected repurchase rate changes but have no response to the unexpected change. Several scholars also suggest the asymmetric effect of share prices to the monetary policy rate such as (Bernanke & Kuttner, 2005), (Basistha & Kurov, 2008), and (Farka, 2009).

2.2 Spillover Effect through other country

Empirical evidence found the spillover effect from economic information and news in one country to other country both directly and indirectly. Traditional studies mostly investigate about the spillover effect of major countries such as Japan and U.S. to Asian stock exchanges. Early papers indicate that stock markets have comovement between U.S. and Asian markets during the post-October 1987 period (Arshanapalli et al., 1995). In addition, (Ng, 2000) investigate the size and fluctuating nature of volatility spillovers from Japan and U.S. to Asian stock exchanges and conclude that there are a number of factors (e.g. exchange rate changes, size of trade, number of DR listings, etc.) influence the spillovers from the region to many Asian countries. (Wongswan, 2006) provide mixed evidence of spillover effect of Fed fund rate news to the stock markets in many countries and his result suggest the significant linkage between macroeconomic announcements in developed markets and developing countries about equity trading volume and

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volatility in short term. (Kim & Nguyen, 2009) report the result of spillover effect of European Central Bank (ECB) and U.S. Fed's target rate on stock exchange return in Asia- Pacific and found the stock exchanges report the significant negative effect to the unanticipated rate increases. However, (Yang & Hamori, 2014), they examine the spillover effect of US monetary policy to stock exchanges in ASEAN and indicate that there is the effect during the normal time and these effect fades during economic crisis periods.

3. Data Description

To examine Thailand GDP announcement surprise impact on the stock markets in AEC, we collect the stock indices based on 6 markets which are Thailand, Malaysia, Indonesia, Singapore, Vietnam, and Philippines as these data cover my sample period start from quarter 1, 2009 to quarter 4, 2019. The data of The Stock Exchange of Thailand (SET), Jakarta Stock Exchange Composite Indices (JKSE), Malaysia KLCI (KLCE), Straits Times Indices (STI), PSEi Composite (PSI) and VN (VNI) are obtained from Datastream.

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To calculate the abnormal return on stock markets, following (MacKinlay, 1997) employ the market model, which is the securities return depend on the market portfolio return. To evaluate the market return, we use MCSI ASEAN Index obtained from www.msci.com as the proxy of market return as it covers the countries that we use in the sample.

For Thailand GDP, we obtain the actual GDP growth from Office of National Economic and Social Development Council (NESDC). For the forecasted GDP growth, we use Bloomberg's survey as a representative for the market expectation of the GDP growth rate.

In our study, the sample period covers the period from Year 2009 to 2019 as during that time, it is the period after Hamburger crisis and before COVID-19 that implies the normal period of the stock markets. So, we got 44 events in each country. The final sample consists of 264 events.

4. Methodology

4.1 Event study methodology

Following (Bernanke & Kuttner, 2005), we adopt event study method to define the response of stock price on Thailand GDP announcement. The event date is Thailand GDP announcement date $(t = 0)$. The event window consists of 11 days which considers only trading days $(t = -5 \; to \; t = +5)$. The estimation period is 40 trading days before the first day of the event window $(t = -5)$ (Fig.2).

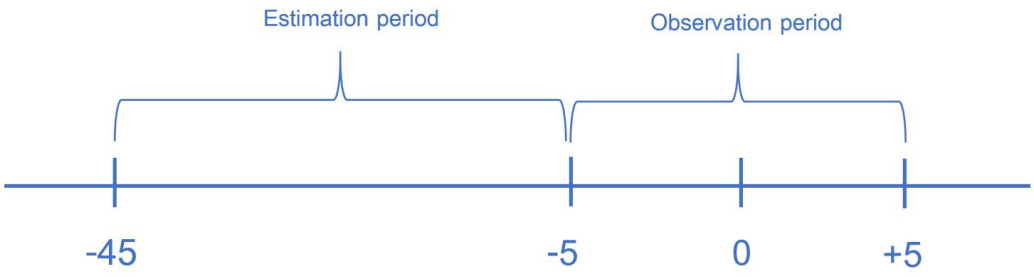

Fig. 2 Event Study Timeline.

We investigate the abnormal stock return during observation period to test the impact of GDP announcement surprise on stock markets by adopting the market model, see (MacKinlay, 1997) as follow;

$$AR_{it} = R_{it} - (\alpha_i + \beta_i R_{mt}) \quad (1)$$

Which AR_{it} denotes abnormal return country i time t; R_{it}denotes actual return on country i time t; Alpha (α_i) and Beta (β_i) are the parameters of the market model and R_{mt} denotes the return of reference market return which is MSCI ASEAN Index return on day t.

We compute the actual return (R_{it}) by taking natural logarithm of each market closing index on day t $(index_{it})$ divided by its closing index from day $t-1$ $(index_{it-1})$.

$$R_{it} = \ln\left(\frac{index_{it}}{index_{it-1}}\right) \quad (2)$$

In this study, I calculate MSCI ASEAN Index return by taking natural logarithm of MSCI ASEAN Index on day t $(MSCI_t)$ divided by its index from day $t-1$ $(MSCI_{t-1})$.

$$R_{mt} = \ln\left(\frac{MSCI_t}{MSCI_{t-1}}\right) \quad (3)$$

For α_i and β_i parameters are calculated over estimation period, and they are used to predict errors during the event periods. The formulas are below;

$$\alpha_i = \bar{R}_i - \beta_i \bar{R}_m \quad (4)$$

$$\beta_i = Cov(R_{it}, R_{mt})/Var(R_{mt}) \quad (5)$$

Moreover, we also calculate average abnormal return which reflect only the announcement effect.

$$\overline{AR}_{it} = \frac{1}{N}\sum_{i=1}^{N} AR_{it} \quad (6)$$

The cumulative abnormal return indicates the persistence of abnormal return.

$$CAR_{it} = \sum_{i=1}^{T} AR_{it} \quad (7)$$

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Thailand GDP announcement surprise $(SGDP_t)$ contains from subtracting the actual Thailand GDP growth announcement at time t $(AGDP_t)$ from the forecasted Thailand GDP growth at time t $(FGDP_t)$.

$$SGDP_t = AGDP_t - FGDP_t \quad (8)$$

4.2 Regression-based event study analysis

To investigate the effect of Thailand GDP announcement surprise on each stock markets in AEC, we first adopt (Bernanke & Kuttner, 2005) that they use the regression-based event study approach. In Equation (9) we regress the abnormal return country i time t on Thailand GDP announcement surprise time t as follow;

$$AR_{it} = \beta_0 + \beta_1 SGDP_t + \varepsilon_{it} \quad (9)$$

4.3 Asymmetry effect analysis

As numerous studies report the impact of monetary policy rate announcement on asset prices is asymmetry e.g., (Basistha & Kurov, 2008; Bernanke & Kuttner, 2005; Farka, 2009), which we think that the result will occur to the GDP announcement surprise as well. So, we investigate the asymmetric effect of Thailand GDP announcement surprise on AEC stock markets. We include good surprise and bad surprise dummy variable as follow;

$$AR_{it} = \beta_0 + \beta_1 SGDP_t + \beta_2 SGDP_t G_t + \beta_3 SGDP_t B_t + \varepsilon_{it} \quad (10)$$

Where G_t is the dummy variable for the good Thailand GDP announcement surprise taking the value of one when the surprise is positive and zero otherwise. The term B_t is the dummy variable for the bad Thailand GDP announcement surprise taking the value of one when the surprise is negative and zero otherwise.

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4.4 Multivariate Analysis

In this section, we investigate whether other macroeconomic factors drive the abnormal return as consistent with previous study show the relationship between macroeconomic data and stock prices (Vithessonthi & Techarongrojwong, 2013). First, we address whether interest rate differentials (ID) effect stock markets to the GDP announcement surprise since the difference in interest rate are probably affect the asset prices through exchange rates. In this paper, we compute the interest rate differential by adopting the subtracting the Bank of Thailand's actual policy rate from U.S. Federal fund rate at the end of the announcement day.

For small and open market economies that adopt the flexible exchange rate, the exchange rate movements, particularly in short term, are probably affect the capital flow which in turn effect the stock prices. Thus, we add an exchange rate return $(RTHBUSD)$ which is calculated from the three-day cumulative return on the THB/USD exchange rate prior to the announcement date. In this framework, we anticipate that the movements of exchange rate surrounding the announcement date will cause the response in the stock prices to the GDP surprise.

we also include a change in business sentiment index $(DBUS)$ and a change in industrial production index $(DINPRO)$ which we suppose that these variables will be reacted on the GDP announcement surprise. Two variables are computed from the percentage change in each variable over one-month period prior to the GDP announcement date.

In the context of Thailand, as the economies are mainly based on export, the change in international trade performance $(DTRADE)$ will be reacted on stock market on the GDP announcement surprise as well. This variable is measured by employing the percentage change in international trade balance over one-month period prior to the GDP announcement date.

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According to (Kwark & Lee, 2021) report that the small open countries heavily depend on the foreign transactions in the financial sector and Thailand is one of those countries. Therefore, the condition in international markets would affect the abnormal return on stock markets through Thailand GDP announcement surprise as well. So, we, especially, consider U.S. variable because this country is one of the most influential countries to Thailand. Based on Ministry of Commercial, U.S. is one of the top export partners of Thailand in the past few years. In the light of discussion, we include the percentage change of U.S. GDP Growth $(USGDP)$ in the regression to represent the financial conditions and foreign economic, respectively.

To examine the effect of macroeconomic conditions on abnormal return of stock markets associated with GDP announcement surprise, we estimate the following equation:

$$AR_{it} = \beta_0 + \beta_1 SGDP_t + \beta_2 SGDP_t G_t + \beta_3 SGDP_t B_t + \gamma_1 ID_t + \gamma_2 RTHBUSD_t + \gamma_3 DBUS_t + \gamma_4 DINPRO_t + \gamma_5 DTRADE_t + \gamma_6 USGDP_t + \varepsilon_{it} \quad (11)$$

Where ID_t is the interest rate differentials at time t; $RTHBUSD_t$ is the exchange rate return at time t; $DBUS_t$ is the change in business sentiment index at time t; $DINPRO_t$ is the change in industrial production index at time t; $DTRADE_t$ is the change in international trade performance at time t; $USGDP_t$ is U.S. GDP Growth time t; and ε_{it} is the random error term.

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5. Empirical Results

Table 1 shows descriptive statistics of key factors for our study.

Panel A - Descriptive statistics on key variables.

Variables	Mean	Median	Minimum	Maximum	S.D.	N
ML	-0.05%	-0.02%	-1.31%	0.82%	0.0049	44
SG	0.09%	0.00%	-1.69%	2.95%	0.0086	44
PHI	-0.01%	0.03%	-5.74%	4.59%	0.0148	44
INDO	-0.18%	-0.13%	-6.15%	2.00%	0.0130	44
VN	-0.07%	0.07%	-4.50%	2.56%	0.0163	44
TH	-0.20%	0.00%	-3.76%	1.15%	0.0096	44
SGDP	0.07%	0.05%	-4.70%	3.50%	0.0120	44
ID	1.35%	1.24%	-0.70%	3.42%	0.0114	44
RUSDTHB	0.05%	0.00%	-1.23%	1.27%	0.0047	44
DBUS	2.18%	0.70%	-3.29%	14.68%	0.0435	44
DINPRO	0.14%	-0.11%	-5.56%	7.12%	0.0270	44
DTRADE	283.35%	46.54%	-1145.33%	10499.79%	16.4317	44
USGDP	0.02%	-0.25%	-1.60%	2.90%	0.0110	44

Panel B - Descriptive statistics Thailand GDP variables. N = 44

Variables	No. of SGDP > 0	No. of SGDP < 0	No. of SGDP = 0
SGDP	22	19	3

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This table presents summary statistics on key factors in this study. ML denotes Malaysia. SG denotes Singapore. PHI refers to Philippines. INDO is Indonesia. VN refers to Vietnam and TH denotes Thailand. SGDP denotes Thailand GDP announcement surprise. ID is the interest rate differential. RTHBUSD is the three-day return on the THB/USD exchange rate prior to the GDP Announcement date. DBUS is the percentage change in the business condition index. DINPRO denotes the percentage change in the industry production index. DTRADE is the percentage change in international trade balance. USGDP is the percentage change in U.S. GDP.

5.1 Event study result

Table 2 reports mean abnormal returns of AEC stock exchanges for full sample ($N = 2{,}904$) around Thailand GDP announcement date. In Table 2, we find that there is abnormal return on Day 0 in each country (Panel A-F), but the results are statistically insignificant. This finding implies that Thailand GDP announcement surprise has the limited impact on the stock markets in AEC countries which we can see from the table show that in some days in the event window, the results are statistically significant, e.g., Day -2 and Day 2 in Malaysia, Day -5 and Day 3 in Indonesia, Day -4 in Vietnam, and Day -5 in Thailand. Our result is compatible with (Vithessonthi & Techarongrojwong, 2012) which also reported the limited impact of the policy rate announcement on stock market.

Table 2. Abnormal returns for each country around Thailand GDP Announcements.

Panel A - Malaysia				
Day	Mean Abnormal return	T-Test	p-value	Observations
-5	-0.04%	-0.4698	0.6409	44
-4	-0.01%	-0.1421	0.8877	44
-3	-0.08%	-0.9440	0.3505	44
-2	-0.09%	-1.7072	0.0950	44
-1	-0.08%	-1.1419	0.2598	44
0	-0.05%	-0.6699	0.5065	44
1	0.02%	0.2560	0.7992	44
2	-0.14%	-1.8613	0.0695	44
3	-0.09%	-0.9539	0.3455	44
4	-0.03%	-0.3331	0.7407	44
5	-0.01%	-0.0737	0.9416	44

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Panel B - Singapore

Day	Mean Abnormal return (%)	T-Test	p-value	Observations
-5	-0.04%	-0.3651	0.7168	44
-4	-0.12%	-0.9593	0.3428	44
-3	-0.21%	-1.6567	0.1049	44
-2	-0.16%	-1.3748	0.1763	44
-1	-0.20%	-1.8510	0.0710	44
0	0.09%	0.7049	0.4847	44
1	-0.10%	-0.8460	0.4022	44
2	-0.07%	-0.7162	0.4778	44
3	-0.09%	-0.7967	0.4300	44
4	0.04%	0.4584	0.6489	44
5	-0.10%	-0.5580	0.5797	44

Panel C - Philippines

Day	Mean Abnormal return (%)	T-Test	p-value	Observations
-5	-0.23%	-1.5887	0.1194	44
-4	0.00%	0.0036	0.9971	44
-3	-0.10%	-0.6101	0.5450	44
-2	0.01%	0.0364	0.9712	44
-1	-0.04%	-0.2688	0.7894	44
0	-0.01%	-0.0303	0.9760	44
1	-0.04%	-0.2479	0.8054	44
2	-0.09%	-0.5626	0.5767	44
3	-0.22%	-1.5885	0.1195	44
4	-0.17%	-0.7776	0.4411	44
5	0.15%	0.9272	0.3590	44

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Panel D - Indonesia

Day	Mean Abnormal return (%)	T-Test	p-value	Observations
-5	-0.32%	-2.5890	0.0131	44
-4	-0.15%	-0.8571	0.3961	44
-3	-0.02%	-0.1050	0.9168	44
-2	0.15%	1.2825	0.2065	44
-1	-0.17%	-1.0145	0.3160	44
0	-0.18%	-0.9440	0.3505	44
1	-0.30%	-1.6807	0.1001	44
2	0.34%	1.8080	0.0776	44
3	-0.24%	-1.7694	0.0839	44
4	0.00%	0.0144	0.9886	44
5	-0.13%	-0.6641	0.5102	44

Panel E - Vietnam

Day	Mean Abnormal return (%)	T-Test	p-value	Observations
-5	-0.04%	-0.1626	0.8716	44
-4	-0.36%	-1.9870	0.0533	44
-3	0.15%	0.7233	0.4734	44
-2	0.02%	0.1058	0.9162	44
-1	0.01%	0.0424	0.9663	44
0	-0.07%	-0.2905	0.7729	44
1	-0.41%	-1.6766	0.1009	44
2	0.01%	0.0318	0.9747	44
3	-0.31%	-1.3130	0.1962	44
4	0.28%	1.5164	0.1367	44
5	0.19%	0.7517	0.4563	44

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Panel F - Thailand				
Day	Mean Abnormal return (%)	T-Test	p-value	Observations
-5	-0.29%	-2.3446	0.0237	44
-4	0.00%	0.0234	0.9814	44
-3	-0.10%	-0.7707	0.4451	44
-2	0.05%	0.4679	0.6423	44
-1	-0.01%	-0.1021	0.9191	44
0	-0.20%	-1.3726	0.1770	44
1	-0.32%	-2.2052	0.0328	44
2	-0.03%	-0.3005	0.7653	44
3	-0.20%	-1.5088	0.1387	44
4	0.14%	1.5071	0.1391	44
5	0.05%	0.2476	0.8056	44

Table 2 presents the average abnormal returns for AEC stock exchanges on and around Thailand GDP announcement date over 2009-2019. The sample covers 44 Thailand GDP announcements, 484 observations for each country and 2,904 observations in full sample.

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In Table 3, we investigate the cumulative abnormal returns over the observation perios to test the pre- and post- announcement effects. Our result suggests that there is negative cumulative abnormal return for eleven-day event window every country (Day-5 to Day 5) but statistically significant only at 10% for Malaysia, Singapore, Indonesia, and Thailand. In the first pass, this could indicate the weak evidence of pre- and post-announcement effect spill over to other stock exchanges in AEC.

Table 3. Cumulative abnormal returns over the observation period (-5,5) for each country around Thailand GDP Announcements.

Country	Mean cumulative abnormal return	T-Test	p-value	Observations
ML	-0.58%	-1.8739	0.0678	484
SG	-0.95%	-1.9282	0.0605	484
PHI	-0.74%	-1.5713	0.1234	484
INDO	-1.02%	-1.9501	0.0577	484
VN	-0.54%	-0.5376	0.5936	484
TH	-0.91%	-1.9631	0.0561	484

Table 3 presents the mean cumulative abnormal returns for AEC stock exchanges around Thailand GDP announcements during 2009-2019. The sample covers 44 Thailand GDP announcements, 484 observations for each country and 2,904 observations in full sample.

In the full sample, we observe that the size of abnormal return on Thailand GDP announcement day is small compared to the result of (Farka, 2009) and (Chuliá et al., 2010). This can be explained by two plausible reasons. First, Thailand GDP announcement surprise contain no element of surprise since GDP have significant time lags (Urasawa, 2014) and the market participants often revise their forecast when the economic situation was changed. So, abnormal returns on the announcement day should be zero. Lastly, the possible reason depends on how strong correlation between countries in the unions. As the main economy in emerging markets such as AEC countries based on export to developed countries like U.S. (Vithessonthi & Techarongrojwong, 2012) and (Kwark & Lee, 2021), the correlation between Thailand and other AEC countries would not strong enough to affect each other.

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5.2 The regression-based event study result

Table 4 presents the results from regression of the stock return of AEC stock exchanges in one day on Thailand GDP announcement surprise in equation 9. The sample consists of 44 Thailand GDP Announcement over the period from Quarter 1, 2009 to Quarter 4, 2019. As shown in Table 4, the coefficient on Thailand GDP announcement surprise in Model 1 are small and the result are mixed, Malaysia and Philippines are positively effect to Thailand GDP announcement surprise while other countries except Thailand are negatively effect and the overall result are statistically insignificant. Our result is slightly consistent with (Bernanke & Kuttner, 2005) suggest the negative reaction of market to the change of target rate of Federal Reserves. and the result is statistically insignificant. Moreover, (Farka, 2009) also report the small effect and insignificant response on the U.S. target rate changes to stock market.

Table 3. Panel OLS Regression of the abnormal return on Thailand GDP announcement date.

Model 1	No. of observation = 44	
Country	Coefficient	S.E.
ML	0.0010	0.0629
SG	-0.0351	0.1101
PHI	0.0414	0.1900
INDO	-0.0598	0.1662
VN	-0.0275	0.2095
TH	0.0000	0.1226

This table represents the estimates of balanced panel OLS regressions in Equation 9. The dependent variable is The abnormal return of AEC Stock Exchanges on Thailand GDP Announcement Surprise.

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5.3 Asymmetric effect result

Table 5 reports the estimates of the asymmetric effect between good Thailand GDP announcement surprise and bad Thailand GDP announcement surprise from equation 10. We find that the coefficient of both direction of GDP announcement surprise are mixed, the result varies among countries. The asymmetry effect persists only for Vietnam but the overall result is statistically insignificant. This result shows that the direction of GDP announcement is not affect to market's reaction. This result is contrast with (Bernanke & Kuttner, 2005) and (Vithessonthi & Techarongrojwong, 2012). Their results provide weak evidence of asymmetry effect of monetary policy rate change on stock prices.

Table 5. Panel OLS Regression of the asymmetric effect of abnormal return on Thailand GDP announcement date in Equation 10.

Model 2					No. of observation = 44	
	SGDP		SGDPxG		SGDPxB	
Country	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.
ML	0.0182	0.0819	-0.0016	0.0032	-0.0009	0.0032
SG	-0.0878	0.1434	0.0009	0.0056	-0.0012	0.0056
PHI	0.0118	0.2459	0.0088	0.0096	0.0078	0.0096
INDO	-0.0449	0.2139	-0.0093	0.0083	-0.0088	0.0084
VN	0.1458	0.2701	-0.0005	0.0105	0.0065	0.0106
TH	-0.0197	0.1591	-0.0040	0.0062	-0.0049	0.0062

Table 5 reports the asymmetry effect results in Equation 10. G denotes the good Thailand GDP announcement surprise, which take value of one when the GDP surprise is positive, and zero otherwise. B refers to the bad Thailand GDP announcement surprise, which take value of one when the GDP surprise is negative, and zero otherwise.

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5.4. Effects of macroeconomic condition

In this section, we investigate whether the sensitivity in abnormal returns of AEC stock exchanges around Thailand GDP Announcement are driven by macroeconomic conditions in Thailand as shown in several papers indicating the effect of macroeconomics data on share prices e.g.,(Thorbecke, 1997), (Rigobon & Sack, 2004), (Bernanke & Kuttner, 2005).

In table 6, it shows the estimates of the effect of macroeconomics condition in Thailand from equation 11, which have 6 variables on abnormal return on AEC stock exchanges. The result indicates that Interest rate differential (ID) influences Malaysia stock exchange but statistically significant at 10%. Besides, we find that the one-day return on THB/USD exchange rate (RTHBUSD) has a negative effect on abnormal return in Malaysia and the result is statistically significant at 5%, suggesting that an increase in the THB/USD exchange rate results in a decrease in the abnormal return in Malaysia. Moreover, the percentage change in the industry production index (DINPRO) is positively effect to abnormal return in Malaysia and statistically significant at only 10% and DINPRO has an effect to Singapore which contains statistically significant at 5%, indicating that the increase in industry production in Thailand also increase in abnormal return in Malaysia and Singapore. The percentage change in the business condition index (DBUS) has a positive effect on abnormal return in Philippines and statistically significant at 10%. This result is not consistent with (Vithessonthi & Techarongrojwong, 2012), reporting that there is no effect of macroeconomic data on stock market.

Table 6. Panel OLS Regression of the multivariate analysis of abnormal return on Thailand GDP Announcement date.

Model 3																		No. of observation = 44
Variables	SGDP		GSGDP		BSGDP		ID		RTHBUSD		DBUS		DINPRO		DTRADE		USGDP	
Country	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.
ML	-0.0391	0.0962	0.1243	0.1029	-0.3697	0.0996	-0.1225*	0.0703	-0.3548**	0.1598	0.0024	0.0163	0.0490*	0.0279	0.0000	0.0000	-0.0106	0.0717
SG	-0.1166	0.1968	0.1367	0.1942	-0.1105	0.1880	-0.2183	0.1327	0.1488	0.3016	-0.0058	0.0307	0.1117**	0.0526	-0.0001	0.0001	0.0076	0.1352
PHI	-0.0780	0.3398	0.1824	0.3502	-0.0449	0.3390	-0.2904	0.2394	-0.1776	0.5439	0.1001*	0.0553	0.0213	0.0948	0.0001	0.0002	0.0039	0.2439
INDO	-0.2302	0.3006	0.0591	0.2985	-0.2258	0.2873	-0.2891	0.2029	-0.6359	0.4609	0.0215	0.0461	-0.0346	0.0803	0.0001	0.0001	-0.2998	0.2067
VN	0.2422	0.3988	-0.0124	0.3925	0.2464	0.3799	0.1085	0.2683	-0.4313	0.6095	0.0145	0.0620	0.1783	0.1062	0.0001	0.0002	-0.5670	0.2733
TH	-0.0578	0.2214	0.1874	0.2179	-0.0656	0.2109	-0.1702	0.1489	-0.4232	0.3383	-0.0429	0.0344	0.0733	0.0590	0.0000	0.0001	-0.0566	0.1517

6. Conclusion

We examine the effect of the abnormal return of AEC stock exchanges which include 6 countries, Thailand, Malaysia, Indonesia, Singapore, Vietnam, and Philippines, from quarter 1, 2009 to quarter 4,2019. Our study differs from (Bernanke & Kuttner, 2005), (Farka, 2009), (Chuliá et al., 2010) and (Vithessonthi & Techarongrojwong, 2012) in two dimensions. First, we examine GDP announcement surprise, rather than monetary policy, thereby we can provide another examination of the effect of economic data on stock markets. Second, we use abnormal return in AEC stock exchanges, rather than one stock exchange. So, we can investigate whether the economic data in one country can spill over to other countries. The empirical result reveal that Thailand GDP announcement surprise provide no impact on AEC stock markets on the announcement date, but we find pre- and post- GDP announcement effect spillover to other countries. Moreover, we examine the magnitude of Thailand GDP announcement surprise effect on abnormal return on AEC stock exchanges. We find that there is no response of market

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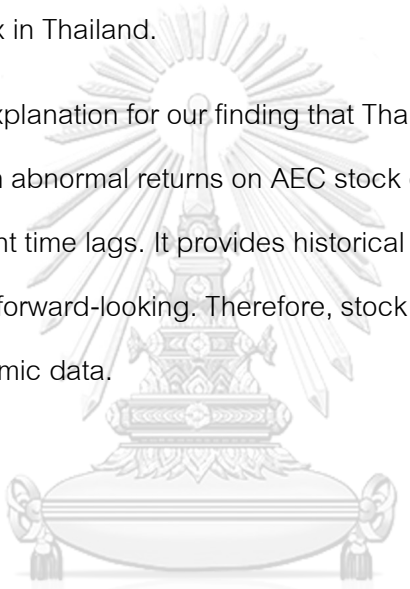
participant to GDP announcement surprise and no reaction of direction of GDP announcement.

We also add other macroeconomic data in Thailand that might drive the abnormal return. The result shows that the interest rate differential between Thailand and U.S. and the USD/THB exchange rate return impact the abnormal return in Malaysia stock market. In addition, the industrial production index in Thailand drives the abnormal return in Malaysia and Singapore stock market. Moreover, Philippines receives the effect from the business condition index in Thailand.

Overall, one plausible explanation for our finding that Thailand GDP announcement surprise has no effect on abnormal returns on AEC stock exchange is that GDP published after significant time lags. It provides historical information of the economy while stock markets are forward-looking. Therefore, stock markets might not react to the announcement of economic data.



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REFERENCES

Arshanapalli, B., Doukas, J., & Lang, L. H. P. (1995). Pre and post-October 1987 stock market linkages between U.S. and Asian markets. *Pacific-Basin Finance Journal*, *3*(1), 57-73. https://doi.org/https://doi.org/10.1016/0927-538X(94)00025-3

Basistha, A., & Kurov, A. (2008). Macroeconomic cycles and the stock market's reaction to monetary policy. *Journal of Banking & Finance*, *32*(12), 2606-2616. https://doi.org/https://doi.org/10.1016/j.jbankfin.2008.05.012

Bernanke, B. S., & Kuttner, K. N. (2005). What Explains the Stock Market's Reaction to Federal Reserve Policy? [https://doi.org/10.1111/j.1540-6261.2005.00760.x]. *The Journal of Finance*, *60*(3), 1221-1257. https://doi.org/https://doi.org/10.1111/j.1540-6261.2005.00760.x

Chuliá, H., Martens, M., & Dijk, D. v. (2010). Asymmetric effects of federal funds target rate changes on S&P100 stock returns, volatilities and correlations. *Journal of Banking & Finance*, *34*(4), 834-839. https://doi.org/https://doi.org/10.1016/j.jbankfin.2009.09.012

Cochrane, J. H., & Piazzesi, M. (2002). The Fed and Interest Rates - A High-Frequency Identification. *American Economic Review*, *92*(2), 90-95. https://doi.org/10.1257/000282802320189069

Duran, M., Özcan, G., Özlü, P., & ÜnalmıŞ, D. (2012). Measuring the impact of monetary policy on asset prices in Turkey. *Economics Letters*, *114*(1), 29-31. https://doi.org/https://doi.org/10.1016/j.econlet.2011.08.024

Fama, E. (1970). Efficient market hypothesis: A review of theory and empirical work. *Journal of Finance*, *25*(2), 28-30.

Fama, E. F., Fisher, L., Jensen, M. C., & Roll, R. (1969). The Adjustment of Stock Prices to New Information. *International Economic Review*, *10*(1), 1-21. https://doi.org/10.2307/2525569

Farka, M. (2009). The effect of monetary policy shocks on stock prices accounting for endogeneity and omitted variable biases. *Review of Financial Economics*, *18*(1), 47-55. https://doi.org/https://doi.org/10.1016/j.rfe.2008.05.003

Giovannelli, A., & Pericoli, F. M. (2020). Are GDP forecasts optimal? Evidence on European countries. *International Journal of Forecasting*, *36*(3), 963-973. https://doi.org/https://doi.org/10.1016/j.ijforecast.2019.12.003

Kang, S. H., Uddin, G. S., Troster, V., & Yoon, S.-M. (2019). Directional spillover effects between ASEAN and world stock markets. *Journal of Multinational Financial Management*, *52-53*, 100592. https://doi.org/https://doi.org/10.1016/j.mulfin.2019.100592

Kim, S.-J., & Nguyen, D. Q. T. (2009). The spillover effects of target interest rate news from the U.S. Fed and the European Central Bank on the Asia-Pacific stock markets. *Journal of International Financial Markets, Institutions and Money*, *19*(3), 415-431. https://doi.org/https://doi.org/10.1016/j.intfin.2008.12.001

Kwark, N.-S., & Lee, C. (2021). Asymmetric effects of financial conditions on GDP growth in Korea: A quantile regression analysis. *Economic Modelling*, *94*, 351-369. https://doi.org/https://doi.org/10.1016/j.econmod.2020.10.014

MacKinlay, A. C. (1997). Event Studies in Economics and Finance. *Journal of Economic Literature*, *35*(1), 13-39. http://www.jstor.org/stable/2729691

Marfatia, H. A., Gupta, R., & Cakan, E. (2017). The international REIT's time-varying response to the U.S. monetary policy and macroeconomic surprises. *The North American Journal of Economics and Finance*, *42*, 640-653. https://doi.org/https://doi.org/10.1016/j.najef.2017.09.007

Mitchell, M. L., & Mulherin, J. H. (1994). The Impact of Public Information on the Stock Market [https://doi.org/10.1111/j.1540-6261.1994.tb00083.x]. *The Journal of Finance*, *49*(3), 923-950. https://doi.org/https://doi.org/10.1111/j.1540-6261.1994.tb00083.x

Ng, A. (2000). Volatility spillover effects from Japan and the US to the Pacific–Basin. *Journal of International Money and Finance*, *19*(2), 207-233. https://doi.org/https://doi.org/10.1016/S0261-5606(00)00006-1

Pham, T. A. T., Nguyen, T. T., Nasir, M. A., & Duc Huynh, T. L. (2020). Exchange rate pass-through: A comparative analysis of inflation targeting & non-targeting ASEAN-5 countries. *The Quarterly Review of Economics and Finance*. https://doi.org/https://doi.org/10.1016/j.qref.2020.07.010

Reinhart, V., & Simin, T. (1997). The market reaction to federal reserve policy action from 1989 to 1992. *Journal of Economics and Business*, *49*(2), 149-168. https://doi.org/https://doi.org/10.1016/S0148-6195(96)00077-X

Rigobon, R., & Sack, B. (2004). The impact of monetary policy on asset prices. *Journal of Monetary Economics*, *51*(8), 1553-1575. https://doi.org/https://doi.org/10.1016/j.jmoneco.2004.02.004

Singh, B., & Nadkarni, A. R. (2020). Role of credit and monetary policy in determining asset prices: Evidence from emerging market economies. *The North American Journal of Economics and Finance*, *51*, 100874. https://doi.org/https://doi.org/10.1016/j.najef.2018.11.003

Thorbecke, W. (1997). On Stock Market Returns and Monetary Policy [https://doi.org/10.1111/j.1540-6261.1997.tb04816.x]. *The Journal of Finance*, *52*(2), 635-654. https://doi.org/https://doi.org/10.1111/j.1540-6261.1997.tb04816.x

Urasawa, S. (2014). Real-time GDP forecasting for Japan: A dynamic factor model approach. *Journal of the Japanese and International Economies*, *34*, 116-134. https://doi.org/https://doi.org/10.1016/j.jjie.2014.05.005

Vithessonthi, C., & Techarongrojwong, Y. (2012). The impact of monetary policy decisions on stock returns: Evidence from Thailand. *Journal of International Financial Markets, Institutions and Money*, *22*(3), 487-507. https://doi.org/https://doi.org/10.1016/j.intfin.2012.02.003

Vithessonthi, C., & Techarongrojwong, Y. (2013). Do monetary policy announcements affect stock prices in emerging market countries? The case of Thailand. *Journal of*

Multinational Financial Management, *23*(5), 446-469. https://doi.org/https://doi.org/10.1016/j.mulfin.2013.10.001

Wongswan, J. (2006). Transmission of Information across International Equity Markets. *The Review of Financial Studies*, *19*(4), 1157-1189. https://doi.org/10.1093/rfs/hhj033

Yang, L., & Hamori, S. (2014). Spillover effect of US monetary policy to ASEAN stock markets: Evidence from Indonesia, Singapore, and Thailand. *Pacific-Basin Finance Journal*, *26*, 145-155. https://doi.org/https://doi.org/10.1016/j.pacfin.2013.12.003

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