

The Effect of Terrorism on Economic Growth in Southern Thailand

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Abstract:- The data used is in the form of quarterly data starting from 2004Q1 to 2018Q4. The Autoregressive Distributed lag (ARDL) approach is applied to see the cointegration between variables in the model using the Eviews 10 application. The results obtained indicate cointegration between government spending, investment, terrorism, and unemployment on economic growth in Southern Thailand. Government expenditure and investment variables have a positive and significant effect on economic growth only in the short term, while they do not get significant results in the long run. The variables of terrorism and unemployment have a negative and significant effect on economic growth in Southern Thailand, both in the short and long term. The implication is that the government must eradicate terrorism, focus government spending on the productive sector, equitable development to attract investors to invest and improve the workforce's skills.

Keywords:- Terrorism, Economic Growth, ARDL Model, Southern Thailand.

I. INTRODUCTION

The term terrorism has no universal interpretation because the views of terrorism from each country are different. The American and European countries see that all kinds of acts of violence are terrorism. At the same time, the OIC (Organization of Islamic Cooperation) states that all acts of violence for independence are virtues. However, there are several definitions of terrorism from the literature.

GTD (Global Terrorism Index) defines terrorism as the use of illegal violence by non-state actors to achieve religious, political, economic and social goals through coercion and intimidation. Meanwhile, terrorism is violent behavior committed by sub-national groups in the form of threats, brutality, intimidation of communities generally aimed to achieve political ends, religion, and ideology [1]. Based on this definition, it can seem that terrorism is a political factor and has ideological, social and economic factors. In addition, terrorism is not merely a common economic problem, but terrorism has economic consequences. Terrorism is one factor that hinders economic growth. Based on the Global Terrorism Index (2019), countries experiencing high-level armed conflict will experience high economic suffering. For example, Afghanistan, Turkey, Iran, Pakistan, and Israel, where these events disrupt economic growth so

that GDP per capita has decreased by 5% per year. One of the challenges of a country's development is a conflict with internal and external conflicts [2].

Acts of terrorism will create political instability and then will increase uncertainty. This uncertainty will disrupt economic activity. Thailand has faced all threats of terrorism since 2004. Terrorism in Thailand has resulted in thousands of deaths, maiming and loss of physical resources. The GTI (Global Terrorism Index) report published by the IEP (Institute for Economics and Peace) ranks countries in the world according to their level of terrorist activity on a scale of 0-10. Based on this scale, the higher the score reflects that the country is the impact of terrorism. Thailand recorded as Asian countries that a high impact that terrorists are in the rank 17th in the world with a score of 6.252 and the second country in the Asia Pacific after the Philippines, which has the number of deaths due to terrorism, namely 57% in 2017.

Terrorism in Thailand is located in the southern part, clustered in the three provinces of the Thailand-Malaysia border; Pattani, Yala, Narathiwat. The three provinces connect with the history of the "Melayu Kingdom of Patani", terrorism in the South is an act of separatism due to dissatisfaction with the radical government system, political, social and economic disparities [3]. The origin of this incident came from the attack on the Krom Luang Rajjanakharin military camp, which was located in Ban Pileng, M'aru Bo Ok District, Cho-i-rong District, Narathiwat Province, on January 4, 2004. The role of the government is to overcome this problem by issuing several laws and regulations along with extraordinary budget disbursements. However, acts of terrorism have not been resolved continuously until now.

This study analyses the effect of terrorism on economic growth in Southern Thailand using quarterly data from 2004 to 2018. In this context, the rest of the paper is organized as follows; The next part is a literature review that includes previous research relevant to this research, the third section reveals the data and methodology used, the empirical results are discussed in the fourth section, and the last part is the conclusion.

II. LITERATURE REVIEW

There are two streams of income regarding the causality between terrorism and economic growth. Stream first, poor economic conditions are a triggering factor for terrorism. According to Ted Robert Gurr [4] the term "Frustration Aggression" that the disappointment of the social and economic conditions faced will trigger political violence. On the other hand, even if the financial condition is quite good, it is not evenly distributed. There is an imbalance between the people; it can become a factor for public complaints to increase participation in terrorist organizations.

The second stream argues that terrorism is the cause of the shrinking economy. The World Bank (2020) reports that countries in a state of conflict will be poorer when compared to countries without conflict. Such is the report from the United Nations, which states that war is one of the causes of the high level of poverty. Based on these two schools, it can conclude that terrorism is not an economic cause, but terrorism has economic consequences.

In recent years research into terrorism and economic growth has attracted the attention of academics. Many studies have examined the economic impact of terrorism using various models and data sets, but the results have been different. The difference in results is due to the other political conditions, geography and types of terrorism from one location to another.

Bloomberg et al. [5] investigated the macroeconomic consequences of international terrorism. They used an unbalanced panel data set including 177 countries with 1968-2000 data. They performed cross-sectional and panel growth regression analysis and structural VAR models. They conclude that terrorism has less of a negative effect on growth than external wars or internal conflicts. In addition, terrorism causes economic activity to be diverted from investment to government spending.

Gaibulloev & Sandler [6] used data from 1971-2004 for 18 Western European countries. They used the two-way random effect estimation from the growth model as the estimation method. According to research results, both transnational and domestic terrorism had a negative impact on per capita income growth in Western Europe during 1971-2004.

Gupta et al. [7] examined 22 terror incidents during the period 1985-1999. The results show that conflict and terrorism have a significant negative effect on growth and change the composition of government spending. One more effect is that armed conflict has a negative impact on growth, regardless of government spending.

Gries et al. [8] confirmed the relationship between economic growth and terrorism for seven western countries. They cover the time from 1950 to 2004. They use the Hsiao granger causality test, the bivariate and trivariate causality test. Their results show that the economic performance in influencing the threat of terrorism appears to affect some

countries significantly. In contrast, the economies that are under attack are pretty good at adjusting to violent terrorism.

Meierrieks & Gries [9] examined the causative relationship between terrorism and economic growth in 160 countries. They cover data sets from 1970 to 2007 and use a granger causality test with panel data. They found a causal coalition between terrorism and economic growth.

Shahbaz et al. [10] examined the causality relationship of terrorism and the economic growth of cases in Pakistan using data from the 1973-2010 period. They used the ARDL and VECM models to look for cointegration and causality. The finding is that there is a one-way relationship between terrorism and economic growth in the long run. In the same year, Shahbaz [11] used the same model, but the data used were from 1971-2010. researchers found that terrorism is related in one direction to economic growth in the short term. Rauf [12] uses the 1981-2016 data set; the result is that terrorism has a negative relationship with economic growth both in the short and long term.

Terrorism in Turkey has a negative and significant impact on economic growth in the short and long term [13]. The negative effects are most pronounced in Southeastern provinces compared to Western and Eastern regions [14]. Research by Chuku et al. [15] in Nigeria finds that the negative impact of terrorism on economic growth appears to be in the short term. The decline in economic growth in India is influenced by the incidents of terrorism [16], where the frequency of terrorism has more effect than its brutality [17]. Most of the study findings show that terrorism has a negative impact on economic growth. Still, these negative effects differ in the short term or the long term, the overall loss of economic activity depends on the nature and incidence of terrorism [18], apart from geographic areas, economic development, political systems and so on [13].

III. RESEARCH METHODS

3.1 Data

This study investigates the effect of terrorism on economic growth in Southern Thailand by using quarterly data from 2004: 1 to 2018: 4. Economic growth is measured by GRDP per capita; other macroeconomic data, including total government expenditure, unemployment, and private investment, are obtained from the National Statistical Office of Thailand (NSO), the Thai Budget Bureau and the Thai Ministry of Manpower. The data on terrorism is taken from the Deep South Coordination Center (DSCC), managed by Songkhla Nakharin University, Pattani.

The measurement of terrorism used in this study is based on (Eckstein & Tsiddon, 2004), namely the terrorism index as the following equation;

Where $TERR_1$: the number of terrorist attacks, $TERR_2$: the number of fatalities due to terrorism attacks, $TERR_3$: the number of injuries due to terrorist attacks.

3.2 Methodology

The empirical model used in the research can be expressed as follows;

Where $\log GRDP$ is per capita income; $\log GX$ is total government spending; $\log IV$ is a private investment; $\log TERR$ is a terrorism index; UEM is the unemployment rate, and e is the error term.

Autoregressive Distributed Lag (ARDL), developed by Pesaran et al. [19], is used to seek cointegration between economic growth, government spending, terrorism, unemployment, investment in Southern Thailand. Autoregressive Distributed Lag Model or ARDL is an econometric model that combines the lag of the dependent variable with the lag of the independent variable. Using this approach model is because it is suitable for studies that use a small sample [20]. The advantages of using this model are;

- 1). This model can be applied when the variables have a different order of integration I (0), I (1).
- 2). The ARDL model is suitable for small observational data.
- 3). Not only differentiating between the dependent and independent variables but also estimating the relationship between variables [21], thereby eliminating the problem of autocorrelation.

4). The ECM model can be derived from the ARDL model using simple linear specifications. The ARDL model used is as follows;

$$\begin{aligned} \Delta \log GRDP = & \alpha_1 + \alpha_t T + \sum_{i=1}^p \alpha_{GRDP} \Delta \log PDRB_{t-i} + \\ & \sum_{j=1}^q \alpha_{TERR} \Delta \log TERR_{t-j} + \sum_{k=1}^q \alpha_{GX} \Delta \log GX_{t-k} + \\ & \sum_{l=1}^q \alpha_{IV} \Delta \log IV_{t-l} + \sum_{m=1}^q \alpha_{UEM} \Delta UEM_{t-m} + \\ & \alpha_{GRDP} \Delta \log GRDP_{t-1} + \alpha_{TERR} \Delta \log TERR_{t-1} + \end{aligned}$$

$$\alpha_{GX} \Delta \log GX_{t-1} + \alpha_{IV} \Delta \log IV_{t-1} + \alpha_{UNE} \Delta UNE_{t-1} + \varepsilon_t \dots \dots \\ (3)$$

Where T is a variable trend, Δ is Operator difference; p is the dependent variable lag sequence; q is a lag sequence-independent variable, is a short-term dynamic, whereas the second part of the equation shows a long- term relationship.

The cointegration testing applied in this study is the bound test; this test can be seen from the F-statistic value obtained and then compared with the upper and lower limit values described by Pesaran et al. [19] where if the resulting F-statistic is greater than the upper limit value, can conclude that the long-term relationship in the model, on the contrary, if the F-statistic is smaller than the lower limit value, it can be concluded that there is no long-term relationship in the model. The result cannot be concluded if the F-statistic is between the upper and lower limit values. The results of these tests can indicate what model to do next. If there is cointegration, the following model applied is the Error Correction Model (ECM). On the other hand, if there is no cointegration, then the ARDL model is sufficient. The ECM model applied is as follows;

Where Δ is the difference operator; ECT_{t-1} is lagged residual term resulting from long-term equations; ε_t is error term.

IV. RESULTS AND DISCUSSION

4.1 Stationarity testing is the first step taken in this research; this test aims to find out at what level the time series data is stationary. The criteria used to test stationarity in this study is the Augmented Dickey-Fuller Test (ADF). We can see the results of the stationarity test in Table 1.

Table 1 Results Of The Unit Root Test (Augmented Dickey Fuller)

Variable	Level		1st difference		Decision
	t-statistic	Prob.	t-statistic	Prob.	
ADF with intercept					
GRDP	-1,165067	0,6827	-4,831572	0,0002***	I(1)
GX	-4,119130	0,0019***	-9,490594	0,0000***	I(1)
INV	-6,098942	0,0000***	-11,13633	0,0000***	I(1)
TERR	-1,280367	0,6319	-3,085687	0,0340**	I(1)
UEM	-2,674732	0,0849*	-13,49776	0,0000***	I(1)

Source: Results from Eviews 10, data processed

The results from Table 1 can be concluded that all the variables are stationary at the first difference level, and none of them is stationary at the second difference, so we can conclude that the ADRL model is appropriate.

4.2 Testing the cointegration bounds test after determining the optimal lag length using the Akaike Information Criterion (AIC) criteria suggested by Pesaran et al., (2001); S. Narayan and P. Narayan,[20] these criteria can select lowest and best optimal lag in the model. Then the next step is cointegration testing. The results of the bound test cointegration test are listed in Table 2.

Table 2 Bounds Test Results

Model Estimation	$\log\text{GRDP} = f(\log\text{GX}, \log\text{INV}, \log\text{TERR}, \text{UEM})$	
Optimal lag	2,2,3,2,0	
F-statistic	4,834351	
	Lower Bound I(0)	Upper Bound I(1)
10%	2,578	3,712
5%	3,068	4,334
1%	4,244	5,726

Source: Results from Eviews 10, data processed

The ARDL bound test Table 2 obtained an F-statistic value of 4.834351, which is greater than the upper critical limit value generated by S. Narayan and P. Narayan [20] at the 5% level (3,712), the null hypothesis of no long-term cointegration relationship is rejected. And the alternative hypothesis is accepted so that it can be concluded that there is a cointegration relationship between terrorism, government spending, investment, unemployment on economic growth in Southern Thailand.

4.3 Long-term and short-term coefficients, after proving a cointegration relationship between variables in the model, the next step is to estimate the long-term and short-term coefficients. Table 3 presents the long-term and short-term estimates.

According to the long-term coefficient of terrorism (TERR) and unemployment (UEM), it has a negative and significant value on economic growth in Southern Thailand. With every 1% increase in terrorism and unemployment in

Southern Thailand, the economic growth will decrease by 3.9% and 2.3%. Meanwhile, government spending (GX) has positive results, and investment (INV) has negative but insignificant.

Based on the Error Correction Model results are displayed in Table 3, the coefficient CointEq or ETC gave a negative and significant value is -0, 084 834 (0.0000), so it can affirm that the speed of adjustment from short term to long term is equal to 84% per quarter. The short-term coefficient of government expenditure variables (GX), GX in the current quarter and GX (-1) lag 1 have a positive and significant effect at the 10% level on GRDP. GX currently has a positive and significant effect on GRDP with a coefficient of 0.016782 and a probability of 0.0708. GX (-1) lag 1 has a positive effect on GRDP with a coefficient value of 0.016218 and significant with a probability of 0.0732. Namely, in the short term, government spending for economic growth depends on spending in the current and previous quarters.

Table 3 Long Run and Short Run Coefficients

Long Run Coefficient			
Variable	Coefficient	t-statistic	Prob.
LogGX	0,159749	0,956926	0,3444
LogINV	-0,134275	-1,158717	0,2534
LogTERR	-0,389910	-4,860919	0,0000***
UEM	-0,233480	-3,081052	0,0037***
Short Run Coefficient			
Variable	Coefficient	t-statistik	Prob.
D(logGRDP(-1))	0,702224	8,304594	0,0000***
D(logGX)	0,016782	1,856403	0,0708*
D(logGX(-1))	0,016218	1,839710	0,0732*
D(logINV)	0,002642	1,075465	0,2886
D(logINV(-1))	0,008334	2,982551	0,0049***
D(logINV(-2))	0,010971	4,656541	0,0000***
D(logTERR)	-0,127625	-5,704511	0,0000***
D(logTERR(-1))	0,078413	3,634442	0,0008***
D(UEM)	-0,019807	-2,708069	0,0099***
CointEq(-1) *	-0,084834	-5,156446	0,0000***

Source: Results from Eviews 10, data processed

Investment Variable (INV), there is INV in the current quarter which does not have a significant effect on GRDP but

has a positive and significant effect on INV (-1) and INV (-2) with a coefficient and probability value of 0.008334 (0.0049)

and 0.010971 (0.0000). This means that investment in the first quarter and the second quarter previously had a positive effect on economic growth in the short term. On the other hand, investment in the last quarter did not have a significant impact.

The terrorism variable (TERR) has a TERR for the current quarter, and TERR (-1) lag 1 affects GRDP. TERR in the current quarter has a negative and significant effect on economic growth with a coefficient of -0.127625 and a probability of 0.0000. While TERR (-1) has a positive and significant effect on GRDP with a coefficient value of 0.078413 and a probability of 0.0008. This means that terrorism in the current quarter had a negative impact on economic growth in the short term. Meanwhile, terrorism in the previous quarter had a positive impact on economic growth. The difference between negative and positive signs in the short term can indicate that the impact of terrorism on economic growth is influenced by time.

The unemployment variable (UEM), UEM for the current quarter have a negative and significant effect on GRDP with a coefficient of -0.084834 and a probability of 0.0099. Namely, the increase in the unemployment rate in the current quarter will affect economic growth in the short term. From the above explanation, it can be concluded that terrorism has a negative impact on economic growth in the short and long term because terrorism is violence; Apart from affecting the damage to physical and human capital, terrorism can create instability which will lead to uncertainty which will ultimately disrupt economic development. Terrorism incidents frighten the community; namely, people do not dare to go outside to work [22]. Terrorism can also change consumption behaviour due to a lack of income, and so on, it will reduce the welfare of the community. The government intervenes by increasing the level of security of the population so that economic activity can grow again [23]. However, in the long run, continuous terrorism will hamper economic growth. This is in similar with [12], [13]. The impact of unemployment on economic growth, Okun's law, explains that persistent unemployment will hinder economic growth. Empirically, the unemployment rate has a negative effect on the economy of Southern Thailand; due to job

inequality, unskilled labour and the impact of minimum wage policies.

The effect of total government spending and private investment on economic growth in Southern Thailand is only short-term. Government spending on economic growth is insignificant in the long run because government spending is not efficient and effective; most of the government spending is in the unproductive sector. Empirically, most spending is focused on government consumption rather than investment for development programs and improving the quality of life of the people. The detrimental impact of government spending arises from an inadequate structure where the lion's share of expenditure is used for compensation for employees [24].

Solow (1956) views that there is no long-term impact of government spending on the rate of economic growth because long-term economic growth is driven by the rate of population and labour force growth and technological advances [25]. The positive effect of government spending on economic growth is more pronounced in the short term than in the long term due to the simultaneous application of fiscal policies [26].

Meanwhile, investment has no significant effect on economic growth in Southern Thailand, or in other words, investment capacity to develop weak economic growth. Empirically, the amount of investment in Southern Thailand has shown an increase, with an average annual increase of 5.13%. However, these investments are not evenly distributed in the South. Based on the Office of the Board of Investment (BOI) (2018) report, in the last four years, 2015-2018, the most tourist destinations were Phuket, Nakhon Sri Thammarat, Songkhla and Surat Thani, which are the leading tourism cities in Southern Thailand.

4.4 Diagnostic testing is carried out if the model is classified as Best Linear Unavailable Estimation or BLUE. Following are the methods applied; Jaque-Bera was used for normality testing, Breusch Pagan Godfrey for heteroscedasticity checks, and Breusch-Godfrey LM test for serial correlation.

Table 4 Diagnostic Test Results

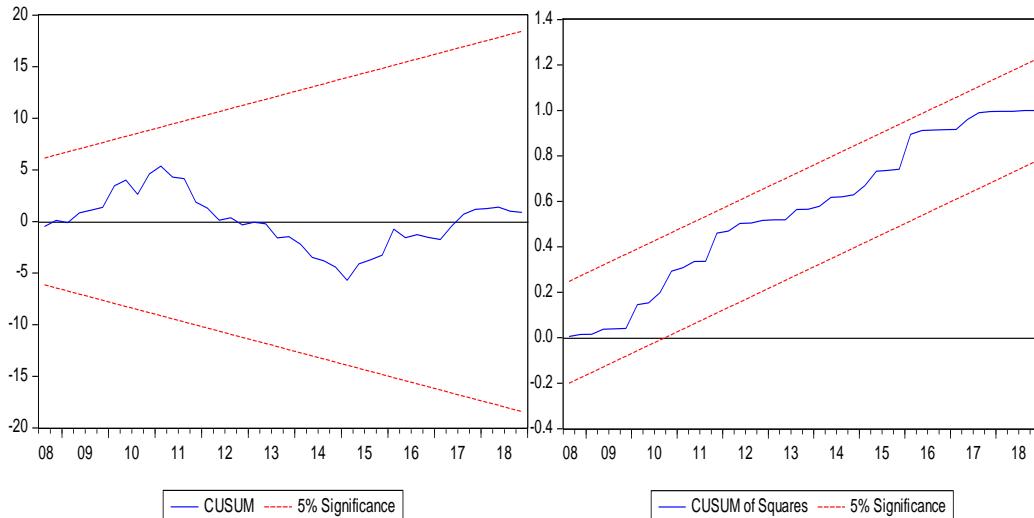
<i>Jaque-Bera</i>	0,265143
<i>Bresch Pagan Godfrey</i>	0.5381
<i>Bruesch-Godfrey LM test</i>	0.2744

Source: Results from Eviews 10, data processed

The test results diagnostic can be concluded that the specifications of the model used in this study are normal and correct.

4.5 Stability testing aims to see the stability of the established estimation model. Can do the stability test by using the CUSUM and CUSUM of square methods. It is said that the model is stable if the plot is between two significant crisis boundary lines. We can see the result in Figure 1.

Figure 1 Stability Test Result



Based on Figure 1, we can see that the CUSUM and CUSUM of Squares plots obtained in this study are between the two significant 5% crisis lines, so we can conclude that the estimated variables are structurally stable.

V. CONCLUSION

This study investigates the effect of terrorism on the economic growth of cases in Southern Thailand using quarterly data from 2004Q1 to 2018Q4. The level of unemployment, private investment, the terrorism index, total government spending are the variables used in the model. Approach Autoregressive Distributed Lag (ARDL) adopted to find cointegration between variables.

The empirical results reported a long-term and short-term relationship between unemployment, private investment, the terrorism index and total government spending on economic growth in Southern Thailand. The variables of terrorism and unemployment have a negative impact on economic growth in the short and long term, while investment and government spending positively and significantly affect economic growth only in the short term. This condition implies that the government and the private sector have not played an important role in improving the economy in Southern Thailand. Therefore, it is hoped that the government will focus more heavily on this, including government spending more focused-on development plans evenly to attract investors to save capital, equitable distribution. Investment so that it can be absorbed by labour across the South and increase efforts to improve the workforce's skills by the needs of the labour market.

The implication of this research is that policies, strategies, government efforts to increase development to achieve public welfare will not be successful if the regions is still in a state of political instability. Therefore, must prioritize the eradication of terrorism.

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