DETERMINANT OF DEFENSE EXPENDITURE IN THAILAND: AN ADRL APPROACH FOR ANALYSIS OF 1992-2022

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Abstract

A nation's defense budget reveals its security anxieties and projected military strength. While Thailand ranked 27th globally in 2022, 3rd in Southeast of Defense spending, the value and necessity are a public debate, and the factors that related are crucial in political science and economics due to their significant impact on the nation's economy and society. Understanding defense expenditure is a vital to public policy and other fields, encompassing studies on its connection to economic impact, its key determinants, and its spending patterns. This paper delves into how Thailand's defense expenditure from 1992-2022, has been shaped by both internal and external factors. Using an Autoregressive Distributed Lag (ARDL), result explores how adapted model from the neo-classical perspective, Keynesian and other theories influence military spending in Thailand. Results of the study illustrates the determinants of defense expenditure in Thailand can be extended to four factors. Economic growth, national security concerns, political factors like protests and coups all play crucial roles in determining how much Thailand invests in its military, and population growth. The proposed model helps identify how changes in GDP, income inequality, external threats, and political status impact defense budgeting. By estimating the coefficients, the ARDL model can provide insights into the relative significance of these factors in determining the defense budget policy and reforms. Moreover, findings contribute new knowledge to the field of public policy and economic for domestic and aboard A propose model can be alternative tools for effective budget allocation and reforms.

Keywords: Defense Budgeting in Thailand, Defense Expenditure in Thailand, ARDL for Defense Budgeting, Military Budgeting Theory, Thailand Military Budget Policy

Introduction

A military expenditure is the state's dedication of the financial resources amount in order to raise and maintain an armed forces or other methods essential for the purposes of defense. The size of a budget is also a reflection of the country's ability to fund military activities. Such factors include the country's economy size, the entity's other financial demands, and the willingness of that entity's government or people to fund such military activity, including of military expenditures is internal security and military modernization. The neo-classical perspective argues that increased military spending will have a negative impact on economic growth by crowding out private investment, domestic savings, and consumption, and by diverting resources from more productive sectors, such as education, health, or infrastructure (Dunne & Uye, 2010). In contrast, Keynesians view military spending as a potential economic stimulus, particularly during downturns. Keynesians perspective believe it can create jobs, boost incomes, and increase overall demand, leading to a multiplier effect that strengthens the economy. Thailand's defense budget has steadily increased since 1980, with significant rises after coups (1991, 2006, and 2014). The defense expenditure of Thailand ranked 27th globally in 2022, 3rd in Southeast Asia to maintain country security. However, there are a gap in literatures of how military expenditures were constructed and what factor effected military expenditure escalation in Thailand. Therefore, this paper examines the relationship between Thailand's defense budget and adapted economic framework, focusing on the determinants of military spending toward economic perspectives and other theories. The research aims are how has Thailand's defense budget changed and what are the drivers and implications in the past 30 years (1992-2022) by using ARDL technique. Research findings are military budget driven by both internal (politics, economy) and external (security threats) factors. GDP growth, regional wars, elections, and political rallies have significant positive relationships with budget increase. A new model proposed for the determinants of military expenditure in Thailand from academic perspective, which offers insights for budgeting policy reform. It informs public policy decisions regarding defense spending optimization and offers new knowledge and insights into the complex relationship between defense budgets and national security. Moreover, finings offer impact variable of expenditure process for better military modernization, regional stability, and alliance management. Therefore, benefits of this study are to discover the key determinants of defense expenditure, to find causal relationship of defense expenditure, and to develop practical model to enhance effective defense budgeting policy and reforms in Thailand.

Literature Reviews

Trends of Defense Expenditure in Thailand

Each fiscal year, the government budget from the fiscal year of 1992-2022 is averagely 1.90 billion baht. The government allocates around 7.6% of the total budget to the Ministry of Defense as the military budget. Figure 1 illustrated the trend of military budget in 30 years.
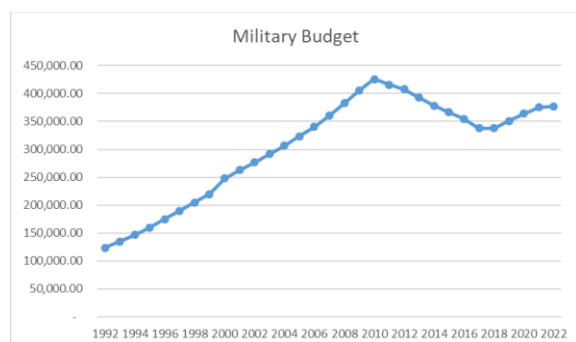

Figure 1 Defense expenditure (1992-2022)
Source: Budget Bureau (2022)

Ground Theories

There are two major economic theories towards defense expenditure i.e. Neo-classical and Keynesian. The neo-classical perspectives argues that increased military spending will have a negative impact on economic growth by crowding out private investment, domestic savings, and consumption, and by diverting resources from more productive sectors, such as education, health, or infrastructure (Dunne & Uye, 2010; Kay et al., 2008; Pesaran, 1997). This approach views the state as a rational actor, balancing opportunity costs and security benefits of military expenditure to maximize a national interest. Captured in a social welfare function, arms-related spending is seen as a public good and the economic effects on military expenditure is determined by its opportunity cost, the tradeoff between it and other spending. Early models of economic growth, which assumed exogenous technical change, have been extended to allow for the effects of changes in education and technology that produce endogenous growth.

In contrast to the neo-classical view, Keynesian economists believe that increased military spending can boost economic growth and a tool for economic prosperity (Brauer & Dunne, 2004). Elveren (2019) mentions it is crucial to avoid simplistic conclusions of military expenditure to economic system and instead engage in a comprehensive evaluation of both the potential benefits and drawbacks, taking into account the specific economic and security context of the country. In this way, increased military expenditure can lead to increased capacity utilization, increased profits, and hence to increased investment and growth of GDP. The combines a Keynesian perspective also emphasized which military expenditure can lead to industrial inefficiencies and to the development of a powerful interest group composed of individuals, firms, and organizations who benefit from defense spending, However, from literature stream neo-classical and Keynesian perspective illustrated no indication of the impact of political status and social structure of the country such as, population and education. A good military budget practice for economic growth is one that balances the security and economic needs of a country, and considers the opportunity costs and trade-offs of different spending choices (Collier & Hoeffler, 2012).

Empirical Evidence of the Determinants of Defense Expenditure

There are two main variables related to the analysis of defense expenditure of a country which might be able to separate into two categories i.e. external (security and economic) and internal (political, decision making, and population). These factors are used to determine the pattern, sized and other factors that have effects on the defense expenditure of a country from literature stream.

Security Factors

Security provision on lives and properties of citizens has been acknowledged as a fundamental function of government military and paramilitary agencies that cover mainly on intervening in inter-state boundaries disputes, common conflicts both national and international such as global conflict and civil wars together with the participation in both regional and international peace in order to missions and ad-hoc joint task forces operations (Collier & Hoeffler, 2012; Oladotun et al., 2019; Pesaran, 1997). In political science, a main dissimilarity between high and low politics is made to conduct examination on every matter, influencing an existence of the nation and defense spending as a regard of one of the most significant factors of the nation due to security enhancement (Brauer & Dunne, 2004).

Economic Factors

The economic downturn can decrease defense expenditure as described in Tao et al. (2020). The main focus is to identify economic determinants and its relationship with defense expenditure. Figure 2 illustrate the adapted framework of military budgeting which focus on GDP, in come per capita, and available resources which are essential to military budgeting. Looney (1989) asserted that economic variables at the aggregate level such as GDP growth rate, budget extension, income inequality and disparity level should be highlighted as an

important factor determining on defense expenditure. Sheikh et al. (2013) presented that GDP, GINI, investment, foreign exchange, international trade, central government expenditure and non-military government expenditures should be considered as economic determinants of defense expenditure. Neo-classical scholars argued that defense spending was unproductive, diverting resources from wealth-generating activities (Dunne & Uye, 2010). Meanwhile, Keynesians argued that government spending could stimulate economic activity during recessions. Keynesians saw defense spending as a potential tool for job creation and boosting aggregate demand (Dunne & Tian, 2013).

Political Factor

Barro & Sala-I-Martin (1992) asserted that determinants of defense expenditure are not affected by only security threats and economic factors, political and environmental factors are also hosted. Ling et al. (2014) discussed that political factors include domestic and international affairs. They explored more on the following domestic factors such as democracy level such as autarchy or democratic government, militarization level of government and country, governance legitimacy and stability, as well as some international factors such as the broken diplomacy with some nations that also cause variation of defense expenditure (Dunne & Tian, 2013; Dunne & Uye, 2010; Oladotun et al., 2019). In addition, the political factors may consist of the form of anti-government, which are interest groups, and political ideology (Sheikh et al., 2013).

Decision Making

According to Easton (1976), people in political system are people with authorities which consist of senior political personnel, people in administrative and legislative sectors, executives, advisors to head of state and other political leaders which are well-known and respectable in political system. The decision guidelines is determined by the government to reach goals properly and possibly under current social circumstances (Dunne & Uye, 2010). Public policy making can be viewed as a political process of the conflicts groups (Elveren, 2019; Lindblom, 1979; Looney, 1989). It can also be viewed as conciliatory negotiation among powerful groups or center of power groups in politics, including military (Ling et al., 2014). Hence, public policy making is related to politics, economy, society, military, and administration as strategies to select the best choice or the choice which can best serve society's interests.

Population Growth

The relationship between population growth and national defense budgets is a complex and multifaceted one, with significant implications for both national security and economic well-being. Collier & Hoeffler (2012) specified determinants of defense expenditure such as the participation of armies in conflicts, defense expenditure of neighboring countries, and threat of civil war, including other factors such as GDP growth rate, dependence on international trade with basic commodities, and population size (Barro & Sala-I-Martin, 1992; Dunne & Uye, 2010; Lindblom, 1979). High population growth rates can be associated with increased poverty, unemployment, and social unrest, which can be seen as threats to national security and lead to higher military spending. As populations grow, potential threats may also increase, leading to a perceived need for stronger military capabilities (Oladotun et al., 2019). This could be due to concerns about resource scarcity, competition for territory, or the emergence of new actors on the international stage. Ling et al. (2014) mentions larger population can also translate into a larger potential workforce, making it more feasible to maintain a larger military force.

Thailand's Policies and Plans regarding National Security

According to Bank of Thailand (2023), Thailand's National Security Policy and Plan (2023-2027) focuses on the following key areas: 1) Protecting the nation's sovereignty, independence, and territorial integrity. This includes strengthening the military and other security forces, and promoting national unity and cohesion. 2) Promoting economic and social development. This

includes reducing poverty and inequality, and improving education and healthcare. 3) Ensuring environmental security. This includes protecting natural resources and addressing climate change. 4) Maintaining regional and global peace and stability. This includes promoting diplomacy and cooperation with other countries.

Thailand Military Expenditure Compare to ASEAN

The 2022 Thailand budget is estimated at 81 Billion USD, aimed to navigate a complex landscape of regional and global stability. Moreover, the budget setup to balance economic recovery from the pandemic, essential public services, and fiscal responsibility (Bank of Thailand, 2023). According to Budget Bureau (2022), Ministry of Defense received 7.21% (7 Billion USD). The defense expenditure of Thailand ranked 27th globally in 2020, 3rd in Southeast Asia (Stockholm International Peace Research Institute, n.d.).

Methodology

From the literatures above, this study will observe and analyze the relationship between each factor both dependent and independent to identify significant determinants of defense expenditure in Thailand for a period of past 30 years. The conceptual framework is shown in the figure 2. Each variable can create either positive or negative effects to the defense expenditure; however, some variables can be both determinants, depending on the situation during such period. There are 5 independent variables in this study which support by ground theory for determinants of defense expenditure which consists of security factors (SC), economic factors (EC), political factor (PL), decision making theory (DM) and population growth (PD). For the dependent variable, researcher found many linkages between all five independent variables and determinants of defense expenditure (DB). The hypotheses are the following: DB = f (SC, EC, PC, DM, and PD). Hypothesis 1: Security Factor has an effect on Determinant of Defense Budgeting DB = f (SC). Hypothesis 2: Economic Factor has an effect on Determinant of Defense Budgeting DB = f (EC). Hypothesis 3: Political Factor Implementation has an effect on Determinant of Defense Budgeting DB = f (PC). Hypothesis 4: Decision Making Factors has an effect on Determinant of Defense Budgeting DB = f (DM). Hypothesis 5: Population Demographic has an effect on Determinant of Defense Budgeting DB = f (PD).

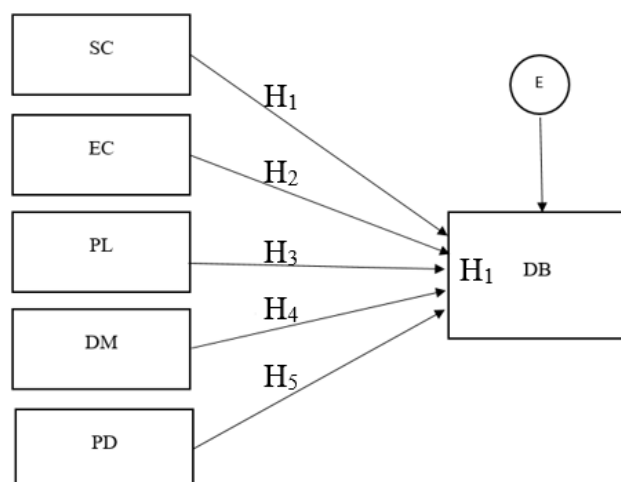**Figure 2** Conceptual Framework

ARDL method is selected because it helps define a systematic investigation of phenomena by gathering quantifiable data and performing statistical computational techniques in a time series. This research collects information from existing and official report from Bank of Thailand. Stockholm International Peace Research Institute, and Budget Bureau of Thailand, etc. from

year 1992-2022, the results of which can be depicted in the form of numerical, such as, GDP, GINI, number of political rights, major war conflicts, number of populations, and number of civilian & military government. Then data is analyzed to find a causal relationship among variables which can determine factors affect defense budget expenditure. ARDL model can employ only one equation to simultaneously find short and long run effects as well as can provide unbiased and efficient estimation. Narayanan & Shmatikov (2008) discussed that ARDL approach to co-integration can be employed in small samples while the other approaches do not perform well in small samples. This approach does not require that all variables are integrated at the same order. In this method, the variables can be integrated of order one I(1) or they can be stationary I(0) or mixture of both since it requires the dependent variable to be I(1), while independent variables are not be integrated of order higher than one. The general form employs 2 variables Xt and Yt with n lags for Yt and m lags for Xt is as follow:

$$\Delta Y_t = \alpha_0 + \alpha_1 y_{t-1} + \beta' x_t + \gamma' \Delta x_t + \varepsilon_t$$

Hence, ARDL related to the determinants of defense expenditure for Thailand is as:

$$\Delta (DB)_t = \alpha + \beta_1 (SC)_{t-1} + \beta_2 (EC)_{t-1} + \beta_3 (PC)_{t-1} + \beta_4 (DM)_{t-1} + \beta_5 (PD)_{t-1}$$

$$+ \sum_{i=1}^{P_1} \delta_1 \Delta (SC)_{t-i} + \sum_{i=0}^{P_2} \delta_2 \Delta (EC)_{t-i} + \sum_{i=0}^{P_3} \delta_3 \Delta (PC)_{t-i}$$

$$+ \sum_{i=0}^{P_4} \delta_4 \Delta (DM)_{t-i} + \sum_{i=0}^{P_5} \delta_5 \Delta (PD)_{t-i} + e_t$$

The parameters are described as:

β_i = "The corresponding long run multipliers."

Δi = "The short run dynamic coefficients of the ARDL models."

e_t = "An error term" Δ = "The first difference operator"

Data Collection

The data collection process plays a crucial role in econometric research, particularly when conducting an ARDL analysis. Collecting time series data from the Budget Bureau, Bank of Thailand and other government agencies that covers an appropriate historical period is crucial for capturing the trends and dynamics of the all variables under investigation. The study compiled comprehensive and consistent time series data of all variables from 2012-2022 that align with the specified research objectives. The null hypothesis from these tests is the variable containing with a unit root, which is not stationary. The optimal lags for a unit root test are adequate inclusion of lags for removing any serial correlation in the residuals.

For normality and multicollinearity testing, the study decided to use Augmented Dickey Fuller (ADF) test to examine the integration properties both stationarity and non-stationarity of all the series of the variables. Before applying ADF test, the order of integration of all variables was determined in order to certify that the variables are not I(2), and avoid false outcomes" (Pesaran, 1997). The dependent variable is military expenditure of Thailand in the period of 1992-2022 to explain or forecast rational of budget setting motive, while the independent variables is the variables that affect or are related to the dependent variable. These are the observation of a lag order of 2 for military expenditure in Thailand. Researcher included the current value and the previous two values of observe variables in the model. The optimal lag order should balance between capturing the dynamics of the data and avoiding overfitting or multicollinearity.

It is important to identify non-stationary time series before modeling or forecasting them. If a non-stationary time series is not made stationary, the results of the model or forecast will be

unreliable. Hamilton (1994) defines a stationary time series as one whose statistical properties, such as its mean, variance, and autocorrelation, do not change over time. Enders (2004) describes the ADF as a test for the presence of a unit root in a time series. A unit root is a non-stationary component that can lead to spurious regression results. Non-stationary time series are more difficult to model and forecast than stationary time series, and can lead to spurious results in statistical analysis. Stationary time series are easier to model and analyze than non-stationary time series" (Gujarati & Porter, 2009). One common approach is to transform the non-stationary time series into a stationary time series. This can be done by differencing the data, taking logarithms (ln) or using other statistical transformations.

Table 1 Unit Root Test value.

Variable Name	ADF Statistic	P-Value	Results
military_budget	-0.89	0.031	Stationary
gdp	-0.579	0.041	Stationary
gini	-5.138	0.791	Non-stationary
population	-2.86	0.875	Non-stationary
In_(gini)	-14.256	0.000	Stationary
In_(population)	-11.74	0.001	Stationary

The ADF results show that military budget (military_budget) and gross domestic product (gdp) are statistically significant in this test. This means that the data has the characteristics of a unit root. While the population (population) and inequality coefficient (gini) have no statistical significance value so Natural Logarithm is required before using them in the ARDL model. As illustrated in table 1, after treatment, all variables are stationary.

Cointegration Analysis

To test if the variables have a long-run relationship, the F-test will be performed. The test involves computing equation. Since the variables in the simulation model are both I(0) and I(1), testing the long-term equilibrium relationship. The ARDL bounds test is based on an assumption, where the variables are I(0) or I(1). Unless any series are integrated of order I(2) or higher, the calculated F-statistic becomes invalid (Ouattara, 2004). Also, a non-stationary variable creates an outlier among other variables so as to the inclusion can significantly influence an outcome of the empirical analysis. The most appropriate method is the method proposed by Pesaran et al. (2001), which is based on a simulation model. From table 2, the F statistic is 4.784, which is greater than the Upper Critical Bound (or called I(1) Bound) at a significance level of 1 percent, that is, the variables in the simulation model have a long-term equilibrium relationship. The results of estimating the long-term equilibrium relationship coefficient of the simulation model are shown in table 2.

Table 2 Cointegration value

	Critical Value Bounds		
	Significant Level	I(0)	I(1)
F-Value 4.784	10%	1.86	2.87
	5%	1.84	3.44
	1%	2.45	3.71

Bound testing approach is tested. It is based on F-statistics and two critical values which are called I(0) and I(1) bound. If the F-statistics is greater than I(1) bound, the variables are cointegrated. On the hand if values are less than I(0), the variables in equation are not cointegrated. If it falls in between the two it is said to be inconclusive. As it is shown in the table 2, the F-statistics from the regression of Thailand military expenditure data are above I(1)

at 1% level of significance for sample size of 30. Thus, result can conclude that the variables
are cointegrated. It implies that this data has a long run relationship.

Findings

Determine the optimal lag order for each variable using information criteria or other methods
is essential. The lag order refers to the number of past values of each variable for military
expenditure from 1992-2022 that are included in the model. This research is using Lag = 2 (L0,
L1, L2) the equation equal to Y = military_budget (t) x = military_budget (t-1, t-2), gdp (t, t-1,
t-2), gini (t, t-1, t-2), population (t, t-1, t-2), ASEAN war(t, t-1, t-2), Global war (t, t-1, t-2),
Government Demonstration (t, t-1, t-2), Election (t, t-1, t-2), and Coup (t, t-1, t-2).

Table 3 ARDL Results

Variable Name	Coefficient	Standard error	t-statistics	P-value
military_budget.L1*	0.956	0.176	5.421	0.003
gdp.L0	0.095	0.362	0.265	0.802
gdp.L1*	1.431	0.582	2.460	0.047
gdp.L2*	-1.255	0.514	-2.443	0.048
population.L0	2.163	3.260	0.664	0.536
population.L1	-3.012	5.067	-0.595	0.578
population.L2	0.147	4.911	0.030	0.977
gini.L0	0.001	0.003	0.569	0.594
gini.L1*	0.006	0.003	2.242	0.075
gini.L2	0.004	0.003	1.378	0.227
asean_war.L0	0.067	0.036	1.868	0.121
asean_war.L1*	0.122	0.049	2.496	0.005
asean_war.L2	0.044	0.043	1.018	0.355
global_war.L0	-0.014	0.043	-0.332	0.753
global_war.L1	0.043	0.083	0.529	0.619
global_war.L2	0.067	0.081	0.836	0.441
gov_demonstation.L0*	0.087	0.040	2.175	0.002
gov_demonstation.L1	-0.030	0.032	-0.940	0.390
gov_demonstation.L2*	0.081	0.035	2.436	0.049
election.L0*	0.118	0.038	3.083	0.027
election.L1*	0.088	0.038	2.168	0.022
election.L2	0.025	0.035	0.732	0.497
coup.L0	0.003	0.087	0.036	0.973
coup.L1	0.076	0.118	0.648	0.545
coup.L2	0.030	0.080	0.376	0.722

n = 30, P < 0.05, R-squared = 0.68

The findings of ARDL analysis of statistically significant factors at $P < 0.05$ can be written as
follow:
ln_military_budget = (0.956) ln_military_budget$_{(t-1)}$ + (1.431) ln_gdp$_{(t-1)}$ + (-1.255) ln_gdp$_{(t-2)}$
+ (0.006) gini$_{(t-1)}$ + (0.122) asean_war$_{(t-1)}$ + (0.087) gov_demonstation$_{(t)}$ + (0.081)
gov_demonstation$_{(t-2)}$ + (0.118) election$_{(t)}$ + (0.88) election$_{(t-1)}$
Findings found that the growth of gross domestic product (GDP) in the previous year had a
positive and statistically significant effect on the military budget, meaning that if the economy
grows by 1%, the military budget is likely to increase by 1.43%. In contrast, GDP in the
previous two years had a negative relationship with the military budget, meaning that if the
economy grew by 1% in the previous two years, the military budget is likely to decrease by

1.25%. The study also found that the inequality coefficient in the previous year had a positive and statistically significant relationship with the military budget. This means that if the inequality coefficient increases by 1 unit, the military budget is likely to increase by 100% * 0.0064 = 0.6%. This indicate the economic factor has impact the determinant of military expenditure and support the work of scholars like Dunne & Tian (2013), Dunne & Uye (2010), Sheikh et al. (2013), and Tao et al. (2020).

The study also found that wars in the ASEAN region have a more significant effect on Thailand's military budget than wars in other regions. As Oladotun et al. (2019) discuss how one of the most important jobs of governments is to ensure the safety of their citizens and their belongings. This is typically done by military and police forces, which are responsible for handling conflicts both within a country's borders and internationally. If there is a war in the ASEAN region in the previous year, Thailand's military budget in the next year is likely to increase by 0.122%. Wars in other regions do not have a statistically significant relationship with Thailand's military budget. This may be because Thailand has not participated in any other major global or regional wars in the past 30 years. Most wars in other regions do not directly affect Thailand.

One interesting finding of the study is that political factors have a statistically significant effect on the military budget, regardless of whether the government is civilian or military. This is because the military budget is likely to increase both in the year of a coup and in the years of elections and protests. The study found that if there is an election in the current year, the military budget is likely to increase by 0.118%. If there was an election in the previous year, the military budget is likely to increase by 0.088%. The study also found that the military budget is likely to continue increasing for two years after an election. The study found that if there are protests against the government in the current year, the military budget is likely to increase by 0.087%. If there were protests against the government two years ago, the military budget is likely to increase by 0.084%. The study found that the military budget increased steadily during both protests and periods of civil government and military government which support the works of expenditure (Dunne & Tian, 2013; Oladotun et al., 2019).

This suggests that the military expenditure is used as a tool by both civilian and military governments to maintain their power and legitimacy. This idea also supports by the work of Stockholm International Peace Research Institute (n.d.), Brauer & Dunne (2004), when there are challenges to the government's authority, the military budget is increased in order to strengthen the military's ability to suppress dissent and maintain order. It is important to note that these are just the findings of one study, and more research is needed to confirm these results. However, the study's findings raise important questions about the relationship between political factors and the military budget in Thailand. Therefore, findings contribute valuable insights to the field of defense economics and policy analysis in Thailand.

Table 4 Hypothesis Test Results

Hypothesis	Result	Remark
H$_1$: Security Factor has an effect on Determinant of Defense Budgeting DB = f (SC).	Accepted	Wars in the ASEAN region have a more significant effect on Thailand's military budget than wars in other regions.
H$_2$: Economic Factor has an effect on Determinant of Defense Budgeting DB = f (EC).	Accepted	GDP in the previous year had a positive and statistically significant effect on the military budget. \ budget.
H$_3$: Political Factor Implementation has an effect on Determinant of Defense Budgeting DB = f (PC).	Accepted	Political factors have a statistically significant effect on the military budget, regardless of whether the government is civilian or military

Hypothesis	Result	Remark
H_4: Decision Making Factors has an effect on Determinant of Defense Budgeting DB = f (DM).	Accepted	The military budget increased steadily during both protests and periods of civil government and military government.
H_5: Population Demographic has an effect on Determinant of Defense Budgeting DB = f (PD).	Rejected	There is no statistical significance for this variable

Results of this study demonstrated that the population growth in the past 30 years has no statistically significant relationship between the change in population size and the military budget. The ARDL analysis found that the military budget is likely to increase if the economy variables (GDP and GINI), ASEAN War, political instability is escalating. ARDL results demonstrated military expenditure also increase either the government came from election or coup. The population size does not appear to have a significant impact on the military budget.

Conclusion & Recommendation

Results of the study illustrates the determinants of defense expenditure and review a trend and identify determinants of defense expenditure in Thailand over the past 30 years by ARDL model. As a results, Thailand's defense budget is influenced by both internal and external factors, including domestic political dynamics, economic performance, security challenges, and the decision-making process within the parliament. Analysis concluded the impact of economic growth, income inequality, wars in the ASEAN region and globally, government demonstrations, elections, and coups on defense expenditure.

For normality and multicollinearity testing, the study used ADF test to examine the integration properties both stationarity and non-stationarity of all the series of the variables. The results of stationarity of variables testing found. The bound testing approach is tested, F statistic is 4.784, which is greater than the Upper Critical Bound at a significance level of 1 percent. Therefore, the variables in the simulation model have a long-term equilibrium relationship (Pesaran et al., 2001). The proposed model is based on the relationship between each factor and defense expenditure in order to identify the significant determinants. ARDL equation reveals intriguing insights into Thailand's military budget allocations, highlighting the interplay of economic, social, and political factors. The research findings suggest that there are four factors that influence defense expenditure in Thailand. The causal relationship of the determinants of defense expenditure is complex and varies depending on the specific circumstances. However, it is clear that these determinants play an important role in shaping the security landscape of Thailand which this research discover new knowledge and practical model of determinant of Thailand military expenditure from ARDL analysis.

From the ADRL results, study found a strong positive correlation between the previous year's GDP growth and the military budget. A 1% GDP increase translates to a roughly 1.43% increase in military spending. However, interestingly, GDP growth from two years prior has a negative impact, potentially suggesting strategic planning adjustments based on recent economic performance. GINI co-efficiency identifies a direct link between increasing income inequality and higher military budgets. A one-unit rise in the inequality coefficient translates to a 0.64% increase in military spending, raising concerns about resource allocation priorities. This supported Keynesians and others that government spending could stimulate economic activity. Keynesians and others saw defense spending as a potential tool for job creation and boosting aggregate demand.

Regional Conflicts emphasizes the significant impact of wars within the ASEAN region on Thailand's military budget. A war in the previous year leads to a 0.122% increase, highlighting the focus on regional security concerns. Wars in other regions, however, show no statistically

significant impact, possibly reflecting Thailand's limited involvement in those conflicts. While security factors in ASEAN and global arena, the occurrence of wars in the ASEAN region has a significant positive effect on changes in military budgets. Oladotun et al. (2019) suggests conflicts both national and international such as civil wars together with the participation in both regional and international peace in order to missions and ad-hoc joint task forces operations. And if considering political factors. It was found that both elections and political rallies have a significant positive relationship with military budgets. And the nature of the relationship has a continuous effect. The study found significant linkages between these factors and defense expenditure, based on previous works by Dunne & Uye (2010), Kay et al. (2008), and Sullivan et al. (2010).

Political Landscape identifies a consistent increase in military budgets regardless of government type (civilian or military). Coups, elections, and even protests trigger budget hikes. Elections in the current year and the previous year see increases of 0.118% and 0.082% respectively, with the effect lingering for two years after elections. Protests also lead to increased spending, suggesting the military budget plays a role in maintaining power and managing dissent. Dunne & Tian (2013), Dunne & Uye (2010), and Oladotun et al. (2019) found the relationship of domestic factors such as democracy level such as autarchy or democratic government, militarization level of government and country, governance legitimacy and political stability, as well as some international factors such as the broken diplomacy with some nations that also cause variation of country defense expenditure.

Recommendation is divided into 2 perspectives for public policy practice; domestic and aboard. First is recommendation to domestic policy maker. Since Thailand is the third top spending in ASEAN. The Thai government should consider the effectiveness of the armed forces rather than size by creating smart and effective military, while maintains national security and peace. Secondly, the government should focus on improving the economic conditions of the country, which could lead to enhance the perceived need for military spending. Thirdly, the government should work towards improving political stability within the country, which could lead to a reduction in the number of coups and political crises that have historically led to increased military spending. Finally, the author suggests that policymakers should take a more nuanced view of the policy making process and the relevant approaches in the process, which could lead to more rational and effective decision-making and budgeting reforms.

The significance of this study can also benefit to scholars aboard. Policy implications and utilization of ARDL equation is essential for future academic research. While the paper suggests that findings can inform policymakers and analysts in Thailand, it is essential to critically evaluate the extent to which findings from Thailand can be generalized to other countries or regions. Due to the economic fundamental, the political, economic, and social dynamics shaping, defense expenditure may vary significantly across different contexts in each country. It must be considered that time spans, the economic situation, and the political situation in each country are different. But with certain adaptation the findings are beneficial for defense expenditure framework of other countries for both policy maker and academic scholars.

In conclusion, the findings suggest that there is a positive relationship between the military budget and the explanatory variables. The ARDL coefficients indicate the respective influences of these factors on the military budget, assuming all other variables are held constant. This model can help identify how changes in GDP, income inequality, external threats, and political advancements impact defense budgeting in Thailand in the past 30 years. By estimating the coefficients, the ARDL model can provide insights into the relative significance of these factors in determining the casual effect in defense expenditure policy. It can also help policymakers and analysts in Thailand and aboard to make informed decisions regarding defense budget

allocation and resource management correctly. Therefore, this research generates a practical model for effective defense budgeting and new knowledge to academic society.

Limitation and Future Research

Military budgeting is a complex and challenging task, due to the uncertainty and volatility of the security environment, the complexity and diversity of military requirements and capabilities, the trade-offs and opportunity costs of different military options, the political and institutional influences and constraints on the budget process, and the need to align and coordinate the interests of multiple stakeholders. From this aspects, times and data availabilities are major research obstacles. This can be a significant constraint because there are many aspects of beside these 6 variables, which may illustrate the findings into a different aspect. Additionally, cost of conducting research can be expensive to complete, such as, specialized statistical software.

ARDL is particularly suitable for exploring both stationary and non-stationary time series, making it a robust method for capturing the intricacies of defense expenditure determination for this study. ARDL data must be stationary, the average value of the data should not change as time changes. Non-stationary data cause the analysis results to be distorted. Therefore, the treatment of the data before analyzing the data is essential. Moreover, the availability of data for ARDL is limit to only 30 years due to the sensitivity of national security of obtain such military data from Thai governments.

Consideration of limitations and future research directions, future study would be conduct by Structural equation model (SEM) to solve the methodological constraints and discover causality in difference aspect. Additionally, the future study will include impact of emerging security threats like cyber threats and global warm or assessing the effectiveness of defense budgeting reforms for more concrete results

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