

Government Debt Sustainability in ASEAN: The Interplay of Domestic Macroeconomic Factors and External Shocks

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Abstract

Government borrowing is frequently the primary means of financing in developing countries. This borrowing is effective in the short term. Nonetheless, heavy reliance on debt financing can escalate government debt levels if not accompanied by improvements in productivity or revenue generation. This situation may challenge fiscal sustainability, increase debt servicing burdens, and constrain the government's ability to respond to future economic shocks. Therefore, this study aims to explore the sustainability of government debt in selected ASEAN countries by examining the roles of both domestic macroeconomic indicators and external shocks. Using panel data covering eight (8) ASEAN countries over 20 years, the analysis employs the Random Effects Model (REM) to examine the relationship between government debt, macroeconomic performance, and external factors. The results reveal that GDP growth significantly contributes to reducing debt levels, while foreign direct investment (FDI) has positive relationship with higher debt. Both government expenditure and lagged debt also exhibit a statistically significant positive effect on current debt levels. In contrast, neither inflation nor crisis episodes show a significant impact on debt. Overall, the findings underscore that sustained economic growth, coupled with prudent and well-designed fiscal policies, is essential for maintaining sustainable debt levels in ASEAN economies.

Keywords: Government Debt, Macroeconomic Indicators, External Shocks, COVID-19, Panel Data

Introduction

Government debt is defined as the total amount of money owed by a government to its creditors at a specific point in time. It represents the cumulative borrowing undertaken by the government from domestic (internal) sources such as its citizens and local financial institutions as well as from foreign lenders and other entities. It has become a central concern in both advanced and developing economies, as rising borrowing levels pose significant challenges to fiscal sustainability and long-term economic stability. The ratio of government

debt to GDP grew from 105.4% in 2019 to 124.4% in 2020 in advanced countries, from 55.7% to 65.8% in emerging economies and from 42.9% to 48.5% in developing countries (IMF, 2023)

Government debt is often the preferred financing option, particularly when substantial funds are needed for infrastructure and social programs in many developing countries. According to Nur Hayati (2012), public debt arises when government revenues are insufficient to meet expenditure demands. This mismatch arises because governments are responsible for a broad range of activities, yet tax revenues and other income sources are often insufficient to cover these costs fully. Consequently, fiscal deficits emerge when spending exceeds revenue. To bridge this gap, governments commonly resort to borrowing as a means of fulfilling their essential obligations. Therefore, borrowing has become a central mechanism for financing government activities. Siti Khalijah (2016) stated that borrowing directed toward productive investments has the potential to stimulate economic growth. Under macroeconomic theory, borrowing for expenditures such as education, healthcare, and infrastructure can yield long-term benefits and stimulate productivity. Nonetheless, Shaliza et al., (2022) highlighted that unchecked borrowing can generate risks, including rising interest obligations, crowding out private investment, and burdening future generations.

In the ASEAN region, several member countries have experienced rising government debt levels. According to the World Bank (2021), the ASEAN-5 countries are responsible for the largest share of the region's public debt, accounting for 63% of the total debt burden within ASEAN (Amri, Mohd Shahidan, & Hafizah, 2024). Based on Table 1, government debt in ASEAN countries varies considerably. Some countries, such as Singapore, exhibit high debt-to-GDP ratios. This is largely driven by borrowing for investment purposes, while Malaysia maintains relatively stable and moderate debt levels.

Table 1

Government Debt in Southeast Asia 2022

Rank in ASEAN	Country	Government Debt
1	Singapore	158.25
2	Laos	60.93
3	Philippines	60.92
4	Malaysia	60.30
5	Indonesia	40.14
6	Vietnam	37.14
7	Cambodia	25.04
8	Brunei	2.06

Source: The Global Economy (2023)

Table 2 also shows substantial differences across the region in foreign debt. For example, Singapore recorded the highest ratio at 167.9%, reflecting its position as a global financial center rather than excessive borrowing. Laos followed with 121%, indicating heavy reliance on external financing for development projects. While, Middle-income economies such as Malaysia (66.9%), Thailand (61.4%), and the Philippines (57.6%) maintained moderate levels, suggesting balanced fiscal management.

Table 2

Foreign Debt in Southeast Asia 2023

Global Rank	Country	% Debt to GDP
4	Singapore	167.9
8	Laos	121.0
64	Malaysia	66.9
74	Thailand	61.4
85	Philippines	57.6
86	Myanmar	57.5
136	Indonesia	39.0
146	Cambodia	35.3
150	Vietnam	34.0
177	Timor Leste	16.4
185	Brunei	2.3

Government debt can serve as a fiscal tool. Nonetheless, excessive dependence on debt particularly in the absence of strong economic fundamentals, can undermine macroeconomic stability. The issue of government debt in ASEAN has become an important economic concern in these countries, navigating post-pandemic recovery, global financial volatility, and structural fiscal challenges. In recent years, rising government debt levels have reflected efforts to stimulate growth, support social spending, and finance large-scale infrastructure projects. While such borrowing can promote development, persistent fiscal deficits and reliance on external financing have raised questions about debt sustainability and fiscal resilience across the ASEAN region. Besides that, ASEAN countries present an interesting case due to their heterogeneous economic structures, policy responses, and levels of fiscal discipline. Understanding how macroeconomic fundamentals and external factors influence debt sustainability in this region can provide valuable insights for policymakers and contribute to broader debates on fiscal resilience in developing economies. Therefore, this study aims to explore the sustainability of government debt in selected ASEAN countries by examining the roles of both domestic macroeconomic indicators and external shocks.

Literature Review

Government debt refers to the collective sum of money owed by the government, encompassing both international and domestic debts of the country (Ngotana, 2021). While, Beyene and Kotosz (2020) identified three main methods through which governments finance their expenditures and development initiatives: borrowing, taxation, and money creation. Likewise, Waheed (2017) highlighted four approaches to addressing budget deficits, namely money printing, depletion of reserves or resources, domestic borrowing, and external borrowing. Generally, governments rely on borrowing to enhance social welfare, foster economic growth, and meet public needs. Several economic theories, including the two-gap model (Chenery and Strout, 1966), the three-gap model (Bacha, 1989), and the growth models of Harrod (1939) and Domar (1946), have emphasized debt as a determinant of growth. However, theoretical exploration of the determinants of debt itself remains limited and this study aims to bridge this gap.

Many studies on government debt have been done in the area of examining the relationships between public debt and macroeconomic indicators such as economic growth and government expenditure. For example, Ibrahim (2023) studied the case of Ghana and

revealed a positive relationship between economic growth, government expenditure and public debt. This study employs the ARDL analysis. In the case of India, Dhir (2017) observed that internal dynamics primarily drive GDP growth, while government expenditure shows a positive relationship with debt levels. Swamy (2015) and Le Thanh (2020) showed that GDP growth has a negative relationship with public debt, supporting the debt reducing role of economic expansion. Meanwhile, the study by Mohamad Helmi et al. (2025) using panel ARDL analysis on ASEAN-5 countries finds that government debt has a positive long-run impact only in Singapore, while the remaining countries exhibit a negative long-run effect. In Malaysia, several studies (Bettina & Alfred, 2014; Shahril et al., 2021; Foo et al., 2020) using different panel data techniques have consistently reported a positive relationship among debt, GDP, investment, and government expenditure.

The relationship between inflation and government debt has been examined by Omrane (2017) and Jibir and Aluthge (2019), using different econometric models in Tunisia and Nigeria respectively. Omrane (2017) using the ARDL method, found a negative relationship between inflation and government debt. Contrary, Nastansky and Strohe (2015) found a significant positive relationship between debt and inflation in Germany, with inflation expectations being a key channel. Aimola and Odhiambo (2020) similarly reported a positive relationship between debt and inflation in emerging markets, particularly in those with underdeveloped financial systems.

The role of FDI in influencing debt remains a subject of debate. There is an ambiguous finding, for example, Kiprotich (2015) identified a positive relationship between FDI and domestic debt, while Swamy (2015) found that FDI may reduce public debt levels. This inconsistency suggests the relationship may be context-dependent and moderated by institutional factors.

Doern et al. (2019) stated that there are many definitions of public debt. Basically, external shocks from COVID-19 refer to unexpected, severe, and globally transmitted disruptions that, although originating beyond the control of individual countries, have generated significant domestic economic and fiscal consequences. Several studies have investigated the impact of COVID-19 on Government Debt. Among others, Klutse, Sugi and Kiss (2023) found that COVID-19 significantly affected the debt levels of Ghana and Kenya. This study argues that, rather than depending on widely recommended debt relief measures, countries should focus on building domestic fiscal buffers and expanding fiscal space as a more sustainable path toward long-term debt sustainability. While Srivastava et al (2020) revealed a positive relationship between COVID-19 external shocks and public debt in G20 countries.

Method

This study empirically explores government debt in 8 (eight) ASEAN countries for 20 years, spanning from 2004 to 2023. Models used by Swamy (2015a), Ibrahim (2023), and Sahoor et al. (2022) have been adapted to estimate the determinants of government debt;

$$GD_{it} = \alpha_0 + \beta_1 FDI_{it} + \beta_2 INF_{it} + \beta_3 GE_{it} + \beta_4 GDP_{it} + \beta_5 ES_{it} + \beta_6 DEBT_{it(-1)} + \varepsilon \quad (1)$$

Where:

-GD = Government Debt

-FDI = Foreign Direct Investment

- INF = Inflation
- GE = Government Expenditure
- GDP = Gross Domestic Product Growth
- ES = External shock Dummy (1 = COVID-19 year, 0 = otherwise)
- DEBT(-1) = Lagged Government Debt
- ε = Error term
- i = Country
- t = Time period

Three models of panel static are tested to obtain the final result. These include the Pooled Ordinary Least Square Model (POLS), the Random Effect Model (REM) and the Fixed Effect Model (FEM). The equation of Pooled Ordinary Least Square is shown as;

$$Y_{i,t} = \alpha + \beta_1 X_{i,t} + \varepsilon_{i,t} \quad (2)$$

While, the Random Effect Model take the equation of;

$$Y_{i,t} = \alpha + \beta_1 X_{i,t} + (\varepsilon_{i,t} + \mu_{i,t}) \quad (3)$$

When testing to determine whether to choose Pooled Ordinary Least Square Model or Random Effect Model the Breusch Pagan Lagrangian multiplier test has been applied. The hypothesis is been set as follows;

H0: Choose Pooled Ordinary Least Square Model

H1: Choose Random Effect model

If the probability of χ^2 is less than 0.05, therefore the H0 is been rejected and the random effect model is used.

The study can be further developed using the Fixed Effect Model as follow;

$$Y_{i,t} = \alpha_i + \beta_1 X_{i,t} + \varepsilon_{i,t} \quad (4)$$

If the analysis is proceeded to decide the model of Random Effect Model or Fixed Effect Model another test of Hausman Fixed Test is applied. The hypothesis of Hausman Fixed Test is;

H0: Choose Random Effect Model

H1: Choose Fixed Effect Model

In determining to choose the Fixed Effect Model the Hausman Fixed Test, the χ^2 should be less than 0.05. This indicates that H₁ is accepted and the analysis can proceed to Fixed Effect Model.

Results and Discussion

Correlation is used to determine the association between chosen variables. The correlation result is presented in Table 3. The value of correlation ranges between -1.0 and +1.0. Based on the result, it shows that FDI and government expenditure (GE) have a positive correlation

with the Government Debt (GD). Variables that have a positive correlation indicate that the degree of movement of the variable is parallel. If one variable increases, the other variable increases and vice versa. FDI shows a negative correlation with GE ($r=-0.52$), suggesting that countries with higher government spending may attract less FDI. The inflation (INF) and GDP show a negative correlation to GD. This indicates that when two variables are negatively correlated, it indicates that if one variable increases, the other variable decreases and vice versa. Meanwhile, GDP has a positive correlation with FDI, but a negative correlation with INF and GE. The study omits the dummy variable of external shocks, COVID-19 and the lag of GD in the test of correlation.

Table 3

Correlation of Coefficient Analysis

Correlation	GD	FDI	INF	GE	GDP
GD	1.0000				
FDI	0.2628	1.0000			
INF	-0.0563	-0.0541	1.0000		
GE	0.1042	-0.5177	-0.0972	1.0000	
GDP	-0.1539	0.0135	-0.1249	-0.0257	1.0000

Furthermore, correlation analysis was employed to assess the potential presence of multicollinearity among the independent variables. The findings reveal that most correlation coefficients are relatively weak, indicating a minimal risk of multicollinearity. Specifically, no pairwise correlation exceeds the threshold of 0.8, suggesting that multicollinearity is not a significant concern in this study.

After the series of tests in determining which model should be used, the Breusch Pagan Lagrangian multiplier test has shown the p-value of χ^2 is significant. The value of χ^2 is 0.0016 which is lower than 0.05 which shows the null hypothesis can be rejected. Thus, the Random Effect Model instead of the Pooled Ordinary Least Square Model will be used. Nonetheless, this study is unable to proceed with the Fixed Effect Model as the Hausman Fixed Test shows an insignificant p-value of χ^2 . The null hypothesis of choosing the Random Effect Model is accepted. Therefore, panel data analysis of the Random Effect Model is applied to be the final analysis.

Table 4

Random Effect Model

R Squared 0.5724		F stat (prob) = 0.000	
Variables	Coefficient	T statistics	P-Value
C	0.114741	0.2876	0.7738
GDP	-0.100515	-3.5772	0.0004
FDI	0.291427	3.5929	0.0004
INF	0.000197	-0.4033	0.6870
GE	0.009029	2.0857	0.0379
GD(-1)	0.952431	101.4363	0.0000
ES	0.015570	0.0520	0.9585

Table 4 presents the results from the Random Effects Model (REM) estimation. The model reports an R-squared value of 0.5724, indicating that approximately 57.24% of the variation

in government debt is explained by the included explanatory variables. The overall model is statistically significant at the 1% level, as indicated by the F-statistic probability of 0.000, suggesting that the selected macroeconomic variables jointly have a significant effect on government debt.

GDP shows the coefficient of -0.1005, and it is statistically significant at the 1% level (p-value = 0.0004). The negative sign of the coefficient suggests that an increase in GDP is associated with a decrease in government debt, holding other variables constant. This result is consistent with the theoretical expectation that economic growth improves fiscal health. As the economy expands, government revenues generally increase through higher tax collection and reduced need for fiscal intervention, thereby lessening reliance on borrowing. The significant t-statistic (-3.5772) further reinforces the robustness of this relationship. This finding aligns with existing literature, Swamy (2015), Le Thanh (2020), Bettina and Alfred (2014), Shahril et al. (2021) and Foo et al. (2020), which emphasizes the role of strong economic performance in enhancing debt sustainability. For instance, these studies have shown that countries with higher GDP growth tend to experience lower debt accumulation over time, as growth driven revenues reduce budget deficits and borrowing needs.

Contrary to GDP, foreign direct investment (FDI) is positively and significantly associated with government debt, with a coefficient of 0.2914 and a p-value of 0.0004. The finding may appear counterintuitive, as FDI is generally perceived as a source of external financing that supports economic growth and reduces the need for government borrowing. However, the finding is similar to Kiprotich (2015), which suggests that higher FDI inflows are associated with increased public debt, potentially reflecting increased government commitments to infrastructure, investment incentives, or co-financing arrangements.

The coefficient for government expenditure (GE) is 0.0090, with a t-statistic of 2.0857 and a p-value of 0.0379, indicating that the variable is statistically significant at the 5% level. This finding is in parallel to Dir (2017) and Ibrahim (2025). The positive relationship indicates that increased public spending contributes positively to the accumulation of government debt. The finding is theoretically plausible and reflects the typical fiscal dynamics in many developing and emerging economies, where increased public spending, if not matched by equivalent increases in revenue, tends to widen fiscal deficits and lead to higher levels of borrowing. The finding also supports the Keynesian view that expansionary fiscal policies, characterized by higher government spending, can lead to short term economic stimulus but may also result in higher debt accumulation if not accompanied by adequate revenue mobilization. In the context of ASEAN countries, this may reflect efforts by governments to support economic growth through public investments in infrastructure, health, and education, especially during or after external shocks such as the COVID-19 pandemic.

The coefficient on the lagged government debt variable (GD(-1)) is highly significant ($p < 0.0001$), demonstrating a strong degree of persistence in government debt over time. This highlights the path dependent nature of fiscal dynamics, where current debt levels are heavily influenced by past debt accumulation. Nonetheless, the magnitude of the coefficient is relatively small, suggesting that while GE contributes to rising debt levels, the impact is more modest compared to FDI. This could imply that the composition and efficiency of government spending play a critical role. Productive and well targeted public investment could have a

different long term impact on debt sustainability than inefficient or consumption based spending.

In contrast, inflation (INF) and external shocks (ES) do not exhibit statistically significant effects on government debt, with p-values of 0.6870 and 0.9585, respectively. This suggests that, within the context of this model and the sample period, inflationary pressures and external shocks do not exert a direct and immediate impact on debt levels. The constant term is also statistically insignificant, implying no meaningful interpretation when explanatory variables are held at zero. For external shocks of COVID-19, this is in contrast with the popular belief that COVID-19 will have a big impact on government debt. Nonetheless, the short period of observation of COVID-19, may affect the whole result.

Conclusion

This study empirically explored several key macroeconomic determinants and external shocks on public debt in selected ASEAN countries. The result reveals that debt accumulation is heavily influenced by its past values. This is a sign of structural fiscal inertia. GDP growth emerges as a critical factor in reducing debt, emphasizing the need for policies that stimulate sustainable economic expansion. The influence of FDI and government expenditure, suggests the importance of domestic policy environments and institutional quality. The lack of significance for inflation and crisis variables may be due to either policy interventions that buffer these effects or time lags not captured in the model. While public debt is a vital tool for development, its sustainability hinges on strategic allocation, economic performance, and prudent fiscal governance. Policymakers must manage debt accumulation carefully, ensuring that borrowing is targeted at productive investments that yield long term returns.

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