

# Impact of Government Debt in the Private Investment on the Selected Southeast Asian Country

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**Abstract**— The study aims to identify and examine the impact of government debt to the private investment in the selected Southeast Asian Country by the year of 2000 to 2021. The dependent variable corresponds to the private investment measured through gross fixed capital formation in Singapore, Malaysia, and Philippines and the independent variable of this study is the government debt. This study made use of secondary data from the World Bank. This study included the years 2000 to 2021. The researcher used graphical representation, descriptive test and underwent lots of tests to test the significance of each of the variables and its status. The researcher used graphical analysis in presenting, interpreting, and analyzing the trend of private investment and government debt. The research also used simple regression to determine the responsiveness of the relationship of government debt to private investment. On the other hand, the best model based on regression result was subjected to normality, heteroskedasticity, chow-break point, autocorrelation, and multicollinearity tests. Based on the findings of the study, according to the deemed most accurate regression model, probability value of 0.0001 in the impact of government debt on private investment, which implies that government debt is significant to the private investment. In the lights of the findings, the researcher recommend policies to governments must implement policies aimed at streamlining and simplifying regulations, reducing administrative burdens, and enhancing the overall efficiency of regulatory processes for private investment.

**Keywords**— Gross Fixed Capital Formation, Government Debt, Private Investment.

## I. INTRODUCTION

In the dynamic and interconnected world of modern economics, private investment plays a pivotal role in shaping the growth and development of nations.

Private investment acts as a potent stimulant for economic expansion, serving as a major factor in fostering productivity and innovation. Due to its positive effects on productivity, innovation, and the competitiveness of domestic businesses, private investment is a key factor in determining the health of the economy. Increased capital accumulation, technical development, and better infrastructure are frequently attributes of nations with healthy private investment climates. In addition to increasing production capacity, providing job possibilities, and cultivating an atmosphere that is favorable for entrepreneurship and innovation, private organizations also contribute to these goals through allocating financial resources toward the purchase of fixed capital assets.

Private investment also encourages market efficiency, competitiveness, and effective resource allocation. Private

investors carefully choose industries with significant growth potential and long-term profitability as they work to maximize their profits through thorough market study and due diligence. This procedure aids in directing resources toward businesses that exhibit comparative advantages and long-term viability, thus enhancing the economy's overall efficiency and competitiveness. One crucial metric used to gauge the magnitude and impact of private investment is Gross Fixed Capital Formation (GFCF). GFCF represents the value of net additions to a country's fixed capital stock, reflecting the investment made in durable assets that contribute to production over an extended period.

Government debt, also called public debt, national debt, or sovereign debt in public finance, is the total level of debt owed to lenders by a country's government or state. Government debt can be separated into two categories, which are internal debts and external debts. Internal debt is known as debt borrowed by the country's citizens, while external debt is known as debt that is borrowed from foreign creditors. The government's budget deficit is a variable that indicates the change between government revenues and expenses over the span of a single year. A broad definition of government debt would include all government debt and all legally binding contracts for goods and services, including domestically and internationally. An example of government debt will be current pension accounts (Mckinney, 2013).

Government debt shows the accumulated financial obligations assumed by the public sector, whereas private investment represents the deployment of financial resources by individuals, businesses, and non-governmental entities into a variety of productive sectors. On the other hand, government debt is a result of long-term fiscal deficits brought on by a surplus between government spending and revenue. High amounts of public debt may have far-reaching effects on private investment. Government debt build up may lead to a rising interest rate, which can crowd out private investment as governments compete with private firms for limited investment funds. As government borrowing rises, capital markets become more competitive, discouraging private Investment by driving up interest rates. Higher rates and taxes raise the cost of capital, stifling innovation and productivity and slowing economic growth. Investors may begin to mistrust the government's ability to repay the debt if the trajectory of its debt spirals steadily upward. As a result, investors may demand even higher interest rates. Long in the spotlight and

the center of heated discussion in economic circles is the connection between private investment and government debt.

The study evaluates how government debt affects private investment patterns while considering diverse institutional and economic circumstances by looking at empirical data, case studies, and economic theories. This study explores the relationship between government debt and private investment with the goal of understanding the complex interactions between these two factors.

*Objectives*

1. To describe the private investment measured through gross fixed capital formation of Singapore, Malaysia and Philippines from the year 2000-2021.
2. To describe the government debt of Singapore, Malaysia and Philippines from the year 2000-2021.
3. To examine the extent to which government debt affects private investment in Singapore, Malaysia, and the Philippines, with a specific focus on investigating the presence of the crowding-out effect.
4. Based on the findings, to develop recommended policy for the private investment.

II. MATERIALS AND METHODS

*Research Design*

This study focused on the Impact of Government Debt to the Private Investment in the selected Southeast Asian Country. The researcher will used ex-post facto as the research design of the study.

According to Simon and Goes (2003), ex-post facto is ideal for conducting social research when it is not possible or acceptable to manipulate the characteristics of human participants. It is a substitute for true experimental research and can be used to test hypotheses about cause-and-effect or correlational relationship, where it is not practical or ethical to apply a true experimental, or even quasi-experimental design.

*Sources of Data*

The data used in the study was gathered from a statistical website. The Government Debt of the selected Southeast Asian Country data which is measured through GDP percentage ratio will be coming from the World Bank. The data of the researcher of the Private Investment measured through Gross Fixed Capital Formation will be gathered and provided by The World Bank.

*Data Gathering Procedure*

The research involved collecting secondary data from statistical websites. The data were primarily gathered through an online source, specifically from The World Bank website. Since the data is freely accessible to the public, no permission from the relevant authorities was required. However, the confidentiality of the gathered data was ensured, and the original data remained the copyright of the respective firms. Only sufficient and relevant data was collected, avoiding any excess information, and the data was not retained for longer than necessary to achieve the research objectives. The data

were subjected to various statistical tools, performed using statistical software.

*Statistical Treatment of Data*

The EViews statistical package was used as the main instrument for data analysis during the research. The following were the specific statistical tools that were used: normality test, multicollinearity, heteroskedasticity, autocorrelation, chow-breakpoint test, and multiple regression.

III. RESULTS AND DISCUSSIONS

*1. Private Investment of Singapore, Malaysia, and Philippines*

The figure 1 shows the private investment measured through gross fixed capital formation of Singapore, Malaysia, and Philippines. The World Bank provided the data that was used to represent the data. The data is made up of 22 observations, spanning the years 2000 to 2021.

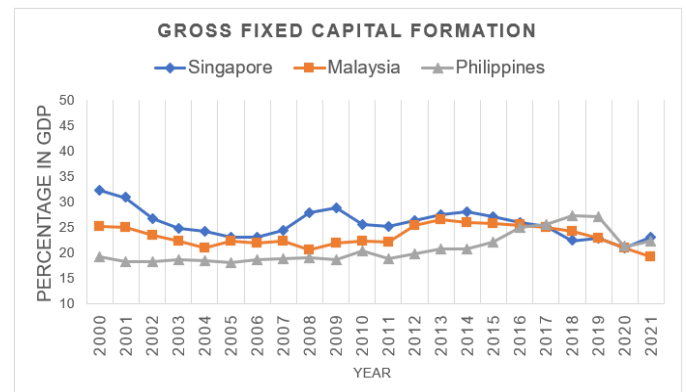


Fig. 1. Gross Fixed Capital Formation of the selected Southeast Asian Country

Figure 1 illustrates the private investment measured through gross fixed capital formation of Singapore, Malaysia, and Philippines from the year of 2000 to 2021. In 2000 to 2008 the gross fixed capital formation as to percentage of GDP of Philippines is more stable rather than the other countries, but it is the lowest among the rest. Malaysia’s gross fixed capital formation as to percentage of GDP is fluctuating while Singapore decreases in 2006 and eventually increase in 2008. In 2009 to 2021 the gross fixed capital formation as to percentage of GDP of Singapore, Malaysia and Philippines are keep fluctuating. The COVID-19 pandemic has had a significant impact on foreign private investment worldwide, including in Singapore, Malaysia, and Philippines. The gross fixed capital formation as a percentage of GDP of Singapore, Malaysia, and Philippines is declined in 2020, as compared to the previous year. The decline in private investment can be attributed to a range of factors, including the economic slowdown caused by the pandemic, travel restrictions, and uncertainty surrounding the global economic outlook. However, it's worth noting that Singapore has continued to attract significant amounts of private investment. Several variables, including investment patterns, economic policies, demography, technical breakthroughs, natural calamities, and economic cycles, have an impact on the GDP proportion of

gross fixed capital formation. Understanding these elements can assist decision-makers in deciding on economic development plans that may affect the GDP share of gross fixed capital formation.

Singapore's economy grew significantly between 2000 and 2007 before the financial crisis, thanks in large part to active investment activity. The country's concentration on capital formation and infrastructure development may have caused GFCF as a percentage of GDP to be relatively high. Global financial crisis (2008–2009): The world's economies, including Singapore's, were significantly impacted by the crisis. Considering the economic unpredictability, it is possible that the GFCF as a proportion of GDP decreased. GFCF as a proportion of GDP may have increased during the post-financial crisis recovery period (2010–2013) because of Singapore's likely return in investment levels as the world economy started to revive. This tendency may have been influenced by government programs that encourage innovation and draw high-quality investments. Growth that is steady and diversification that is continuing (2014–2019): Despite continued investment in a variety of areas, Singapore's economy remained largely stable during this time. It is possible that GFCF as a share of GDP has stayed at a high level, reflecting the nation's sustained dedication to capital development and economic diversification. Singapore was significantly impacted by the COVID-19 pandemic (2020–2021), as was the rest of the world. Due to decreased economic activity and cautious investor mood, investment levels may have been impacted, which resulted in a decline in GFCF as a proportion of GDP.

According to the Department of Statistics Malaysia's report 2021, between 2000 and 2007, there was a lot of investment activity and Malaysia's economy saw considerable growth. The fact that GFCF as a percentage of GDP remained high shows the country's emphasis on building infrastructure and attracting foreign direct investment. One of the numerous strategies and programs the government implemented to promote investment was the development of economic corridors and industrial parks. The global financial crisis of 2008 to 2009 had a substantial impact on Malaysia's economy since it reduced investment and decreased GFCF as a percentage of GDP. The crisis resulted in decreased investor confidence, slower economic expansion, and more difficult access to credit. The Malaysian government responded by launching infrastructure projects and stimulus plans to increase investment and hasten economic recovery. After the global financial crisis, Malaysia experienced an economic expansion and recovery period. GFCF as a percentage of GDP increased, a sign of resurging investment activity. In particular, the government works hard to promote investment in sectors including manufacturing, services, and tourism. For instance, Malaysia's competitiveness was to be increased by the Economic Transformation Program, which aimed to attract high-value investments.

The Department of Statistics Malaysia's study further adds that in 2014, GFCF increased by 4.8 percent (constant prices) to reach a value of RM264.3 billion. The value of GFCF was RM287.5 billion in today's money. The Services sector

continued to be the major contributor to growth, according to GFCF, followed by Manufacturing and Mining & Quarrying. In 2014, private sector investment remained the driving force behind overall investments. The GFCF for Malaysia was valued at RM302.9 billion (current prices), an increase of RM15.5 billion from the previous year, and the GFCF at constant prices came to RM274.0 billion. The acquisition of fixed assets in services, manufacturing, and agriculture was the main driver of the GFCF's increase in 2015 (from 4.8% in 2014). In terms of GFCF by sector, the private sector continued to be the dominant driver while Structure served as the asset type's anchor. Malaysia's gross fixed capital formation (GFCF) at current prices was RM342.2 billion, up RM25.4 billion from 2016, and GFCF at constant prices was RM298.5 billion. Performance of GFCF increased to 6.2 percent from 2.7 percent the year prior, driven by the robust expansion of Services and the double-digit growth of Manufacturing. The mining and quarrying industries did, however, continue to register negative growth in 2017.

The report also discusses the increase in Gross Fixed Capital Formation (GFCF), which reached 2.7% thanks to stronger growth in the services sector and persistent manufacturing dynamism. Nevertheless, the decline in mining and quarrying has affected the performance of investments in 2016. The private sector has consistently taken the lead in investing in fixed assets. Structure, meanwhile, was the primary influence on asset kind. Nominally, GFCF increased even more, rising to RM316.8 billion from RM302.6 billion the year before. With the GDP's rebasing to 2015, Gross Fixed Capital Formation (GFCF) for the years 2015 to 2018 has been realigned. Malaysia's GFCF in 2018 totaled RM350.3 billion at current prices, a gain of RM6.4 billion from the previous year, and RM335.6 billion at constant prices. GFCF reported an increase of 1.4% from 6.1% the year before, driven by the purchase of fixed assets in the services and construction industries. GFCF, the second-largest contributor to GDP, gave the whole economy a share of 24.6% (2017: 25.5%). GFCF was fueled by private sector investments for the 2018 calendar year.

Malaysia's Gross Fixed Capital Formation (GFCF) in 2019 was RM346.8 billion at current prices, down RM3.5 billion from the previous year, and RM328.4 billion at constant prices. Due to fewer purchases of fixed assets in the Manufacturing and Mining & quarrying sectors, GFCF had negative growth of 2.1 percent from 1.4 percent the previous year. With a proportion of the entire economy of 23.1 percent (2018: 24.6%), GFCF is the second-largest contributor to GDP. Between 2014 and 2019, the GFCF as a percentage of GDP remained at acceptable levels, and Malaysia's growth trajectory was mostly stable. The government has continued to give infrastructure projects, such as ports, energy projects, and transportation networks, priority to encourage investment and support economic growth. Initiatives were also done to diversify the economy and promote investment in high-tech industries including renewable energy, aerospace, and electronics.

Furthermore, the COVID-19 pandemic, which had an impact on all economic activities, caused Malaysia's Gross

Fixed Capital Formation (GFCF) growth to decline 14.5 percent in 2020 as opposed to the prior year's negative 2.1 percent growth. This was the greatest fall since the GFCF fell by 43.0 percent in 1998 during the Asian Financial Crisis. Reduced investments will result in a decreased production capacity in the future, which will affect prospective output. With a percentage of the entire economy of 20.9% (2019: 23.1%), GFCF remained the second-largest component of Gross Domestic Product (GDP). The private sector has consistently taken the lead in investing in fixed assets. According to asset classes, Structure was the main contributor to GFCF. The COVID-19 epidemic had a significant negative impact on Malaysia's economy, resulting in a decline in investment and a reduction in GFCF as a proportion of GDP. The world's supply networks were disrupted, and lockdown measures were put in place, which decreased business activity and investment options. The government nevertheless introduced several stimulus measures and recovery initiatives to aid enterprises and encourage investment in crucial industries including healthcare, digitization, and sustainability (Mahidin, 2021).

Gross Fixed Capital Formation (GFCF) in Malaysia reached RM298.1 billion in 2021, up RM1.5 billion from 2020, and RM278.7 billion at constant prices. In comparison to a negative 14.4 percent decline the year before, GFCF had a marginal decline of 0.9 percent at constant prices. Except for Manufacturing, practically other industries' sluggish performance contributed to the decline. With a contribution to the GDP of 20.1 percent (up from 20.9% in 2020), GFCF remained the second-largest contributor (Razak, 2022).

According to Moody's Analytics (2022), although some areas of the Philippine economy have shown indications of recovery, capital formation has lagged, which could point to economic scarring in the medium run. Due to the delayed return of investment to pre-pandemic levels, Moody's has revised its estimate of the country's medium-term growth potential from 6.6% to 6%. The perception that potential growth may have declined to approximately 6% is influenced by the fact that gross fixed capital formation (GFCF) has not yet reached its pre-pandemic levels. The third quarter's GFCF is estimated by the Philippine Statistics Authority (PSA) to be \$21.534 billion, much less than the \$28.279 billion reported in the final pre-pandemic quarter in December 2019. Moody's notes that there has been a partial reversal of the pre-pandemic progress in poverty reduction, suggesting that the financial health of some households has not yet fully recovered, despite some encouraging signs of recovery, such as the unemployment rate of 4.5% (lower than the 4.6% rate in December 2019).

Moreover, this reversal in poverty reduction may be partially due to a higher proportion of workers engaged in "elementary occupations" or informal work than in the years prior to 2020. The protracted pandemic limitations have also prevented many school-age children from having access to formal education, computers, broadband internet, and other technologies needed for distance learning. In investment service, if this educational gap is not effectively closed, it could affect how competitive the Philippine economy is in

highly skilled industries like business process outsourcing. Additionally, Moody's cautions that increased inflation might put more pressure on household balance sheets and dim the prospects for the country's continuing employment development.

In 2006, the GDP increased by 5.4% due to a significant increase in remittances from overseas workers. Net exports and personal consumption expenditures were the largest contributors, while gross fixed capital formation fell due to a lackluster investment climate and restrictions on public capital spending. This was due to a lackluster investment climate and restrictions on public capital spending needed to support the government's budgetary situation (ADB, 2006).

The Philippines had relatively low level of GFCF in the early 2000s. The country was recovering from the Asian Financial Crisis of the late 1990s, which had a significant impact on investment activities. However, GFCF began to see growth as the economy began to stabilize. The Philippines got an increase in GFCF from the middle of the 2000s to somewhere around 2007. Economic reforms, enhanced investor confidence, and higher government spending on infrastructure projects were the defining features of this time. The country's GDP growth was likewise rather rapid throughout this time. The Philippines' GFCF was significantly impacted by the global financial crisis. Due to increased caution on the part of both domestic and foreign investors because of the unstable global economic environment, the nation saw a major fall in investment activities. The Philippine economy gradually recovered after the global financial crisis. The government infrastructure projects, fiscal stimulus programs, and increasing private sector investments all contributed to the GFCF's recovery. Businesses involved in business process outsourcing (BPO), manufacturing, and construction helped the nation's economy grow steadily.

Furthermore, the Philippines went through a period of strong economic growth between 2010 and 2017, and GFCF was a key factor in this development. The government launched several programs to entice money and encourage infrastructure development, which stimulated capital formation. The nation's expanding middle class as well as consumer demand fueled investment in industries like real estate and retail. The Philippines' GFCF has been expanding in recent years, albeit at a somewhat slower rate than in the past. Globally, especially in the Philippines, the COVID-19 pandemic, which began in 2020, had a negative effect on investment activities. Foreign and domestic investments were impacted by lockdowns, travel restrictions, and supply chain delays, which temporarily slowed GFCF (Philippine Statistic Authority, 2021).

## 2. Government Debt of Singapore, Malaysia, and Philippines

The figure 2 shows the Government Debt of Singapore, Malaysia, and Philippines. The World Bank provided the data that was used to represent the data. The data is made up of 22 observations, spanning the years 2000 to 2021.

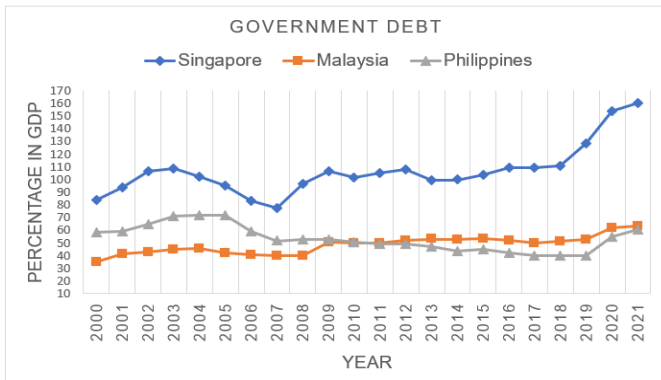


Fig. 2. Government Debt of the selected Southeast Asian Country

Figure 2 shows the government debt as to percentage of GDP of Singapore, Malaysia, and Philippines from the year of 2000 to 2021. Among the three countries, Singapore has observed to have highest government debt. In 2000 to 2003 government debt as percentage in GDP of the Singapore, Malaysia, Philippines is constantly increasing but fall in the year of 2004 to 2007. Moreover, in 2009 to 2013 the amount of government debt as percentage in GDP of Malaysia and Philippines is close to each other and Singapore government debt is fluctuating but still it has the highest amount over the other. In addition, in 2018 to 2021 the government debt as percentage in GDP of Singapore, Malaysia and Philippines is continuously increasing.

High levels of government debt can stifle economic growth by preventing a nation from making investments in worthwhile projects like infrastructure, healthcare, and education. When the government is heavily indebted, it may be necessary to take funds away from these areas to pay off the debt. A country may find it challenging to borrow money in the future if its government debt is significant because lenders may see them as riskier investments and demand higher interest rates. By limiting loan availability, this may further restrain economic growth. Lenders may demand higher interest rates when a government has a high level of debt in comparison to its GDP because they believe there is a greater danger of default. Higher interest rates make borrowing money from the government more expensive, which can exacerbate the debt issue and further restrain economic growth. Fiscal instability can result from excessive government debt because it may force the government to enact austerity measures or hike taxes to pay down the debt. Social upheaval may result from these policies if they are unpopular with the populace. A nation may under rare circumstances default on its debt, which could have detrimental effects on both its inhabitants and its economy.

The Monetary Authority of Singapore (2022) reports that following the Asian financial crisis, Singapore experienced economic uncertainty in the early 2000s. The government implemented expansive fiscal policies to promote growth, which temporarily increased the debt to GDP ratio. In the middle of the 2000s, the government made efforts to lower the debt-to-GDP ratio while maintaining its commitment to fiscal restraint. The 2007–2008 global financial crisis had a major effect on economies all across the world, including

Singapore's, and the government quickly put in place fiscal stimulus plans to aid companies, preserve jobs, and promote economic growth. To offset the crisis' impacts, the government increased spending, which briefly increased the debt to GDP ratio.

Furthermore, Singapore's economy quickly bounced back following the world financial crisis, with the government implementing policies to lighten the load of debt while upholding its commitment to economic responsibility. In response to the COVID-19 pandemic, the government put in place a number of fiscal stimulus plans and assistance programs to help financially impacted people and businesses, promoting employment retention, and strengthening the healthcare system. The debt-to-GDP ratio dramatically increased in 2020 and 2021 due to the extreme circumstances and necessary fiscal action to assist the economy during the pandemic. Singapore has been able to efficiently manage its debt levels thanks to the country's sound economic foundations, such as a diverse and resilient economy, a healthy fiscal position, and sensible fiscal policies.

The total outstanding government debt for Malaysia reached an all-time high of 80.7% in the 1990s and a record low of 31.8% in 1997. From 1990 to 2018, Malaysia's government debt to GDP averaged 50.2%. The government should cut back on spending since the debt is getting close to a 55% level before it has an impact on its financial situation. From 40% in 2003 to 45% in 2008, the government's self-imposed debt cap has been increased many times. The cap was raised to 55% in 2009, and it is remained at this level as of right now. The statutory borrowing cap has been raised by 15% of GDP in just six years, from 2009 to 2017, suggesting that Malaysia's federal government debt level has been rising far more quickly than the country's GDP growth.

In addition to this, the debt ceiling Malaysia set for itself has been exceeded. The Ministry of Finance maintains that the debt is still controllable even if the debt to GDP ratio is approaching the upper bound. The progress and goal of Malaysia's economic reform strategy may be constrained by its substantial debt load. People get discouraged by the national debt service payment uncertainty, which eventually makes implementing economic transformation challenging. Government spending must be financed either by running a deficit and borrowing from the public, or by raising current taxes. If the government chooses to run a budget deficit, taxes will eventually need to be raised to pay interest payments in the future. In other words, the more money the government spends now and, in the future, the higher the taxes will be (Asham and Jaafar, 2020).

The Philippines experienced economic difficulties in the early 2000s, including high rates of inflation, fiscal imbalances, and a significant budget deficit. The debt-to-GDP ratio was quite high, suggesting that the nation had a heavy debt load relative to its level of economic activity. The Philippine administration acknowledged the need for fiscal changes in the middle of the 2000s to solve the nation's debt problems and attain fiscal stability. The Philippines made substantial strides towards lowering its debt-to-GDP ratio between 2004 and 2010. The Expanded Value Added Tax

(EVAT) bill, one of the government's economic measures, enhanced tax receipts and strengthened the nation's finances. Prudent debt management techniques also reduced borrowing costs and the need for external loans.

Moreover, the Philippines' economy was significantly impacted by the COVID-19 epidemic, which started in 2020, and the government increased spending on healthcare, social services, and stimulus programs to lessen the pandemic's negative consequences. Government debt levels rose as a result, and the debt-to-GDP ratio briefly increased. Statistics accessible up to September 2021 may not fully represent the pandemic's effect on the debt-to-GDP ratio (Bureau of the Treasury, 2022).

### 3. Impact of Government to the private investment in selected Southeast Asian Countries.

To achieve the fourth objective, the researcher used simple regression analysis. The models that were used in this are the Normality Test, Autocorrelation, and Heteroskedasticity. This was to assume that any interference from the result would be valid. The null hypothesis test states that government debt have no significant affect the private investment in selected Southeast Asian Countries.

**Table 1**  
Summary of Simple Regression of Government Debt to Private Investment of selected Southeast Asian Countries

Variable	$\beta$	SE	t-Stat	p-value	Decision to Ho	Interpretation
C	29.734	1.539	19.3134	0.0000	Reject	Significant
GOVDEBT	-0.092	0.021	-4.2433	0.0001	Reject	Significant

F-stat = 22.76950    p-value= 0.000000    Decision to Ho= Reject    Int. - Significant    Adj. R<sup>2</sup> = 0.501184

Using the coefficient of regression, the econometric model is:

$$GFCF = 29.734 - 0.092GOVDEBT + 2.318175$$

The regression of government debt to private investment of selected Southeast Asian Countries showed that the whole model is significant because of the p-value of f-statistic is 0.0000, which is less than five percent level of significance. Referring to the constant, there is a p-value of 0.0000, which is less than the five percent level of significance, indicating that the constant is significant. The coefficient of the intercept is 29.734, this signifies that there is factor affecting the variable. The p-value of government debt, which is 0.0001 implies that it is significant to the gross fixed capital formation.

Looking at the value of r-squared, which is 0.501184, means that 50% of the changes in the private investment can be explained by the changes in government debt. The model also shows that if the government debt increases by 1 unit, then the gross fixed capital formation decreases by 0.09 or 9%.

Results of regression analysis were supported by the study conducted by Penzin (2022), that the crowding out effect is less evident relative to the emerging economies as higher public debt stocks do not seem to significantly undermine their private investments.

Furthermore, in the study conducted by Hilton (2021), the results reveal that public debt has no causal relationship with GDP in the short run but there is unidirectional Granger

causality running from public debt to GDP in the long run. Again, investment spending has a negative bi-directional causal relationship with GDP in the short run, but they have a positive bi-directional causal relationship in the long run.

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