

## Article

# The Financial Sustainability of State-Owned Enterprises in an Emerging Economy

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**Abstract:** When the government creates state-owned enterprises (SOEs), one of the primary purposes is to reduce its financial burden in the long run, also called financial sustainability. Nonetheless, previous research has pointed out that SOEs struggle to achieve financial sustainability due to government intervention. In this study, we examine the relationship between the financial sustainability of SOEs and government intervention in Malaysia. We take a novel approach, using share ownership to measure government intervention. Our results show that the threshold effect of government ownership on financial sustainability in Malaysia is around 27%. The findings prove that the SOEs of an emerging country could reach financial sustainability only if the government ownership is below the threshold. Finally, this study discusses the policy implications of our findings for SOEs. The government of Malaysia should propose a road map to gradually reduce its ownership of SOEs below the threshold.

**Keywords:** financial sustainability; state-owned enterprises; emerging economies; government ownership; threshold effect



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## 1. Introduction

The origins of state-owned enterprises (SOEs) can be traced back to neoliberalism in the 1970s (Harvey 2005). Neoliberalism came into vogue because of the problems faced by many governments in the Golden Age. According to Papenfuß (2014), many firms in many industries are substantially subsidized by the government. On the one hand, the government maintains high spending levels or public debt to support these businesses. On the other hand, they also need high taxes to balance the books. The result is a very high percentage of government spending on GDP. High tax rates and a lack of investment opportunities in many industries also crowd out private investment. To make matters worse, those highly subsidized enterprises are often characterized by bureaucracy, inefficiency, low quality and a lack of accountability (Papenfuß 2014). Over the years, many governments have experienced huge deficits to subsidize those lose-making SOEs.

To solve the high subsidies and huge deficit problems, neoliberals see privatization as one of the solutions. In the UK, Margaret Thatcher began a series of privatizations in the 1980s aimed at finding income for the public coffers by selling formerly publicly owned businesses such as British Telecom and British Airways. Such sales, they claimed, also help ease the government's burden of continuing to subsidize loss-making state companies. Neoliberals argue that private enterprises perform better because they have the right to operate independently and face competition from other private enterprises. However, not all privatizations have had the desired results. Whitfield (2014) describes some examples of failed privatizations, including railways, hospital cleaning, UK energy, bus services, prisons and social care. Failures include poor performance, service quality and declining

employment benefits. In the case of British Energy, the government needed to bail out the company with taxpayer money and delist the company from the London Stock Exchange.

State-owned enterprises (SOEs) are one route to privatization. SOEs are usually established with a primary commercial objective, but the government maintains some control over decisions, such as appointing board directors and management (Menon and Ng 2017). On the one hand, it aims to establish a business objective that enables state-owned enterprises to improve efficiency, quality and profitability like private enterprises. Conversely, the government needs to maintain tight control; therefore, SOEs can continue to support the country's economic and strategic purposes (Wisuttisak and Rahman 2021), such as preventing the threat of foreign ownership (Boko and Qin 2011), providing public goods at affordable prices (Abdullah et al. 2019) and increasing employment opportunities.

However, there are occasional conflicts between commercial objectives and government control. The latter is sometimes referred to as government interference. Many studies (Boko and Qin 2011; Chen 2005; Mbo and Adjasi 2017) point to the dilemma that the original purpose of SOEs, such as reducing the financial burden, improving efficiency, productivity and profitability, precisely, is undermined by political interference. Although many studies report a significant improvement in SOE performance after privatization, not all reports are consistent (Gakhar and Phukon 2018). Some reports even point to the deteriorating performance of some state-owned enterprises over the past few decades, which is understandable. Neoliberals argue that private companies should perform better because they are given autonomy in management. However, political interference limits this autonomy. A specific example is China Airlines in Taiwan (Niu et al. 2016). In 2016, to please the ruling party, the new management team complied with all demands of the union to stop a strike. However, such a move further worsened the company's financial health. Political interference has created other problems for SOEs, including confusion about business and social goals (Boko and Qin 2011), incompetent management teams (Chen 2005), inefficiency and weak governance (Wisuttisak and Rahman 2021).

A particular issue that caught our attention was the sustainability of SOEs, especially financial sustainability. Sustainability means that a company can continue its business activities indefinitely (Filene 2011), whereas financial sustainability means whether an organization can continue to operate without government subsidies (Putra et al. 2021). One of the economic issues in the Golden Age era was that governments faced a situation of both high deficit and high taxes, which in turn caused decades of stagnation. If SOEs can achieve financial sustainability, it can somehow alleviate the situation. Nonetheless, political interference can affect the financial sustainability of an SOE both directly and indirectly. In direct ways, the government sometimes forces SOEs to provide goods or services at prices less than costs (Boko and Qin 2011), or to keep redundant employees to alleviate unemployment problems. Indirectly, governments may appoint top managers who do not have expertise in the industry in which the SOE operates but have close connections with the government, such as retired officers. All these actions may hurt profitability in the short run and financial sustainability in the long run.

This study attempts to investigate the financial sustainability of state-owned enterprises in an emerging economy (i.e., Malaysia). We chose Malaysia as a sample for emerging countries due to the following reasons. First, Malaysia follows the typical type of privatization, called the BOT (build, operate and transfer) process, to improve SOE performance. Initially, the government funded, designed, built and owned the project because, sometimes, such projects required large amounts of money, and private investment was not of interest (Boko and Qin 2011). Once operations begin, ownership transfers to private companies. The purpose is to survive independently for a long time to reduce the financial burden of the government. Second, government interference faced by SOEs in Malaysia is also similar with other emerging economies. The government holds relatively large stakes in these state-owned enterprises and exercises other controls, such as appointing politicians to become directors of SOEs. Third, the direct government ownership of SOEs, such as ministries, agencies and biros, reduced dramatically after privatization. However,

the government's power rebounded in the latest two decades by increasing ownership of SOEs from government-related funds, such as the Employees Provident Fund Board, Amanah Saham Nasional Bhd, Khazanah Nasional Bhd, etc.

This study generates several fresh insights into the financial sustainability of SOEs in emerging countries. First, to the best of our knowledge, this is the first study to adopt government ownership as a threshold variable to examine whether the financial sustainability of SOEs differs across the share portion held by the government. Second, it is well-known that the COVID-19 pandemic had a huge impact on firms' financial sustainability, and SOEs were affected by it. What is less clear is the interaction effect between government ownership and the COVID-19 pandemic. This study sheds light on how government ownership affects SOE financial sustainability during COVID-19 periods and non-COVID-19 periods. Finally, this study uses dynamic panel thresholds to explore SOE financial sustainability caused by various sizes of government ownership. It can reveal the difference in the nonlinear impact of government ownership on SOE financial sustainability in different regimes (below the threshold and above the threshold). The findings can provide decision support for implementing appropriate policies that promote sustainable SOEs. The main findings show that SOEs of Malaysia cannot reach financial sustainability if the government ownership is higher than the threshold (i.e., 27%). In other words, Malaysia's government should limit its ownership of SOEs, which is less than 27%, to restrict its intervention but continue to support SOE financial sustainability. This finding also can be a reference for other emerging countries to promote SOE financial sustainability.

This study is organized as follows. Section 2 reviews the literature related to the problems of SOEs, SOE financial sustainability and SOE performance with government ownership. Section 3 describes the data and discusses the methodology. Section 4 discusses the empirical results. Finally, the last section presents a conclusion and policy recommendations.

## 2. Literature Review

### 2.1. Prior Studies on SOEs

Previous research on SOEs has mainly focused on comparing the financial performance of SOEs and private firms, especially profitability and efficiency. Some studies report no significant difference in financial performance between the two. For example, [Kole and Mulherin \(1997\)](#) surveyed 17 companies and found that their financial performance did not differ between periods of private ownership and partial or full U.S. government ownership. Likewise, [Omran \(2004\)](#) examined 54 newly privatized Egyptian companies with a matching number of state-owned enterprises between 1994 and 1999. Again, they found no significant difference in financial performance between the two groups of entities. However, other studies report a different picture. [Goldeng et al. \(2008\)](#) compared all companies registered in Norway and reported that private companies significantly outperformed state-owned companies in terms of return on assets and cost relative to sales revenue. [Boardman and Vining \(1989\)](#) compared 500 non-US industrial firms, including private firms and some or all state-owned firms and found that, in a competitive environment, private firms were more profitable and productive than state-owned firms. [Dewenter and Malatesta \(2001\)](#) also showed that private companies are significantly more profitable than state-owned companies by comparing Fortune 500 companies. Similar results were recently reported by [Phi et al. \(2021\)](#) when they surveyed 25,000 companies worldwide.

Many studies use agency theory to explain SOE performance ([Mbo and Adjasi 2017](#)). Agency theory assumes that agents gain their benefits at the expense of their principles ([Boko and Qin 2011](#)). Nonetheless, the definitions of principle and agent can sometimes complicate investigations. In some cases, principles may include the government, the current ruling party, politicians, constituencies and the public. On the other hand, agents may also include management boards, executive departments and ordinary employees. Therefore, their interconnections sometimes become difficult to describe clearly. In this study, we still employ agency theory for our investigation, but we try to simplify the

definition by taking the public as the principle and the management of the SOE as the agent. The role of the government is seen as political interference. The subsidies and guarantees mentioned above are not the only factors that influence the financial performance of SOEs. Some researchers have pointed out that other government interventions can also adversely affect financial performance. Examples include the government's requirement of SOEs to promote the national agenda (Wisuttisak and Rahman 2021), the need to satisfy competing stakeholders' needs (Mbo and Adjasi 2017), the appointment of politically affiliated individuals as high-ranking officers (Wisuttisak and Rahman 2021) or inflexible human resources policies to prevent unemployment (Boko and Qin 2011). This study contributes to the literature by using a novel indicator to study this relationship. In our analysis, we use the government's percentage of ownership in SOEs as a proxy for political interference because the management of SOEs succumbs to government demands simply because the government has the most significant vote within the SOEs.

It seems that the above empirical evidence shows that private companies are better than SOEs in terms of profitability. In many cases, profit maximization is not the only goal of many SOEs. As pointed out by Kowalski et al. (2013), sometimes SOEs try to set prices at socially optimal levels under positive externalities. Another example is that some SOEs in the transportation industry need to provide services to less populated areas, even if these services are not profitable. Therefore, a more relevant question for SOEs is whether they can accept lower levels of profitability and still survive in the long run, or, in short, are they financially sustainable?

## 2.2. Prior Studies on Financial Sustainability

Financial sustainability means whether an SOE can continue to operate without government sustainability (Putra et al. 2021). Sadly, very few studies have investigated the issue. Nonetheless, the issue is essential. For example, the Minister of Finance of South Africa, in his 2018 budget speech, recognized that the business models of some SOEs are unsustainable, and their capital structures are too reliant on debt. He emphasized that state-owned enterprises are expected to fund their operations. This argument is sensible, as subsidies ultimately depend on taxes (Boko and Qin 2011). In the long run, the public suffers higher taxes to keep underperforming SOEs afloat.

Some researchers have focused on the debt levels of SOEs or on the subsidies provided by the government. Marimuthu (2020) recently looked at the problems in South Africa and concluded that government intervention, including guarantees and subsidies, contributed to the negative performance of SOEs. Phi et al. (2021) also found that SOEs are more leveraged than non-SOEs. They argue that the government does not allow SOEs to go bankrupt or that SOEs can borrow at lower rates. In Indonesia, Assagaf et al. (2017) found that government subsidies significantly negatively impact the financial performance of SOEs. Nonetheless, debt levels may not represent financial sustainability because the latter is more long-term focused.

Financial sustainability is defined as the ability of an enterprise to continue business operations indefinitely (Filene 2011). To achieve financial sustainability, Said et al. (2019) emphasized that an enterprise must manage three segments well: healthy cash flow, substantial capital for growth, and smooth product and service provision. Therefore, the essential requirement to achieve financial sustainability is that revenues of enterprises are sufficient to cover their costs, such as the cost of capital, operating costs and inflation (Mia et al. 2016). However, Ayayi and Sene (2010) argued that only covering costs by revenues does not mean financial sustainability. The Australian Local Government Association (2006) suggested that measures of financial sustainability should consider an entity's ability to repay its present and future obligations. This view is supported by Amani and Fadlalla (2015), who wrote that future earnings and sales growth are essential to achieving financial sustainability. Together, previous studies have indicated that financial sustainability is the ability of an enterprise to earn profit and grow, maintain healthy cash flow and strong

liquidity, and have the capability to repay its present and future obligations (Kakati and Roy 2021).

Previous studies have proposed various measurements to proxy financial sustainability based on the above definition. The most used variables were net profit, debt and profitability ratios (Kakati and Roy 2021). Firstly, the net profit ratio aligns with the concept advocating that enough revenue should cover costs. According to Guntz (2011), there are two types of net profit ratios, namely, Operating Self-Sufficiency (OSS) and Financial Self-Sufficiency (FSS). This measurement was adopted by studies in the microfinance sector that focused on the relationship between financial sustainability and outreach (for example, Henock 2019; Awaworyi Churchill 2020; Kakati and Roy 2021). Secondly, debt as a proxy of financial sustainability is mainly applied by analysis of the public sector that focuses on the ability to repay future obligations (see Drew and Dollery 2014; Kim 2018; Rodríguez Bolívar et al. 2021). Finally, the profitability ratios such as return on assets, return on equity and gross margin have been widely adopted by studies that focus on the corporate sector. These studies claim that the corporate sector is profit-oriented; therefore, profitability ratios are good indicators for measuring financial sustainability.

### 2.3. Hypotheses Development

Theoretical studies have extensively discussed how political interference undermines SOEs' profitability and sustainability (Kakati and Roy 2021). However, the government also provides capital, contracts, networking and subsidies to SOEs, and this support can boost SOEs' probability and financial sustainability. Therefore, government intervention in SOEs needs to be restricted rather than eliminated. Very little is currently known about how much the tipping point of government ownership helps SOEs' development, but it does not endanger their financial sustainability. This study proposes two hypotheses to fill the research gap.

**H1.** *There is a threshold effect of government ownership on SOEs' fiscal sustainability; SOEs can only maintain financial sustainability if the government holds ownership of SOEs lower than a tipping point.*

**H2.** *There is a tipping point of government ownership in the relationship between ROE and COVID-19; the SOEs with government ownership lower than a tipping point had a better performance of ROE during the COVID-19 pandemic.*

## 3. Methodology

### 3.1. Theoretical Framework

Dynamic fiscal sustainability is well demonstrated by the government intertemporal-budget constraint (GIBC) (Baharumshah et al. 2017). This study modifies GIBC according to the features of enterprises and proposes an enterprise intertemporal-budget constraint to analyze its dynamic financial sustainability. Equation (1) shows the details, as below:

$$C_t + (1 + r_t)Debt_{t-1} = R_t + Debt_t \quad (1)$$

where  $C$  is the company's costs,  $r_t$  is the interest rate,  $R_t$  is the enterprise's income and  $Debt_t$  is the debt level of the company at the time  $t = 1, \dots, T$ . Therefore, the level of debt can be expressed as  $Debt_t = \varphi(R_{t+1} - C_{t+1} + Debt_{t+1})$ , where  $\varphi = (1 + r_{t+1})^{-1}$ . By repeating substitutions, assuming a constant future interest rate and solving forward, the IBC can be derived to be equivalent to the expected present value constraint,  $Debt_t = \sum_{i=1}^{\infty} \varphi^i E_t(R_{t+i} - C_{t+i})$ , which holds as long as the  $\lim_{n \rightarrow \infty} \varphi^n E_t(Debt_{t+n}) = 0$  (transversality condition) is satisfied. In other words, the enterprise's debt is sustainable if the company does not use new debts to finance old debt.



### 3.2. Model Specification

This study develops a model for SOE financial sustainability by constructing an enterprise's financial reaction function as follows:

$$ROE_{it} = \alpha_0 + \alpha_1 DE_{it-1} + \alpha_2 \ln(AGE_{it}) + \alpha_3 \ln(TA_{it}) + \alpha_4 D_{it} + \varepsilon_{it} \quad (2)$$

where  $ROE$  and  $DE$  represent return on assets and the debt-to-assets ratio, respectively.  $\ln(AGE)$  and  $\ln(TA)$  indicate control variables, and those are firm age and size, suggested to have a bearing on firm performance. This study takes the natural logarithm of these two variables as non-percentage indicators to avoid possible heteroscedasticity and extreme observations. There have been various control variables in prior studies. However, those variables are exclusive according to the business nature of the enterprise, for example, the capital-to-risk weighted assets ratio for banks (Maama 2021), donations to microfinance institutions (Henock 2019) and founder CEOs for family enterprises (Ahmad et al. 2020). Therefore, we chose the variables (i.e., size and age) consistent among prior studies as control variables.

Finally,  $\alpha$  is the coefficient of the variables,  $D$  is the dummy variable (set to one in 2020 and zero in other years) to capture the impact of COVID-19 on the profitability of SOEs,  $\varepsilon_{it}$  is the stochastic error term at time  $t$ ,  $i$  is the number of firms and  $t$  is the time. Equation (2) is an analogy specification from Bohn (1998) that analyzes government debt sustainability. This study modifies it for SOEs to maintain financial sustainability, and companies must improve their profit according to their debt level (this reaction is represented by  $\alpha_1$ ). They must improve profit when the debt level increases. In other words, significant and positive  $\alpha_1$  indicate financial sustainability. On the other hand, companies violate debt sustainability when  $\alpha_1$  is negative and significant, whereby there is no evidence to judge financial sustainability when  $\alpha_1$  is insignificant.

This study argues that financial sustainability should differ depending on government ownership structure. In other words, government ownership of SOEs has a threshold effect on their financial sustainability. Therefore, this study adopts a novel GMM method developed by Seo and Shin (2016). This model can determine the threshold value for panel data to better deal with potential endogeneity (Wu et al. 2019; Zhu et al. 2020). By referring to Yu et al. (2022), the econometric model to investigate the threshold effect of government ownership on SOEs' financial sustainability is shown in Equation (3):

$$ROE_{it} = (\beta_1 ROE_{it-1} + \beta_2 DE_{it-1} + \beta_3 \ln(AGE_{it}) + \beta_4 \ln(TA_{it}) + \beta_5 D_{it}) \mathbf{1}(GO_{it} \leq \gamma) + (\lambda_1 ROE_{it-1} + \lambda_2 DE_{it-1} + \lambda_3 \ln(AGE_{it}) + \lambda_4 \ln(TA_{it}) + \lambda_5 D_{it}) \mathbf{1}(GO_{it} > \gamma) + \varepsilon_{it} \quad (3)$$

Note that government ownership ( $GO$ ) is treated as a regime-dependent variable, and  $\mathbf{1}(\cdot)$  is an indicator function that takes the value of 1 if the argument is valid and zeroes otherwise.  $\varepsilon_{it}$  ( $\varepsilon_{it} = u_i + v_{it}$ ), the error term, is composed of individual fixed effects ( $u_i$ ) and idiosyncratic random disturbance ( $v_{it}$ ).  $\beta$  and  $\lambda$  are the coefficients of covariates for the lower and upper, respectively. For Equation (3), this study follows the work of Seo et al. (2019), which uses the bootstrap algorithm to test the threshold effect.  $\sup W = \sup W_n(\gamma)$  uses statistics upon the null of  $\beta = \lambda = 0$ , where  $W_n(\gamma)$  is the standard Wald statistic for each fixed  $\gamma$ .

### 3.3. Data

This study aims to investigate government ownership and its threshold effect on SOE financial sustainability in Malaysia. Therefore, the SOE selection is based on the following standard. First, the government holds at least 10% share outstanding on the selected company. Second, there are no missing data of requested variables from 2011 to 2020. A total of 28 companies fulfill the above standard from Malaysia. Table 1 shows the finalized list after filtering the published listed company from Malaysia's stock markets.

**Table 1.** List of selected SOEs.

Malaysia		
Affin Bank Bhd	Hong Leong Bank Bhd	RHB Bank Bhd
Axiata Group Bhd	Malayan Banking Bhd-Maybank	Sime Darby Bhd
Bintulu Port Holdings Bhd	Malaysia Airports Holdings Bhd	Telekom Malaysia Bhd
Boustead Heavy Industries Corporation Bhd	Malaysian Resources Corporation	Tenaga Nasional Bhd
Boustead Holdings Bhd	Maxis Bhd	TH Plantations Bhd
CCM Duopharma Biotech Bhd	MISC Bhd	Theta Edge Bhd
CIMB Group Holdings Bhd	Petronas Chemicals Group Bhd	UEM Land Holdings Bhd
Digi Bhd	Petronas Dagangan Bhd	UMW Holdings Bhd
DRB-Hicom Bhd	Petronas Gas Bhd	
Gamuda Bhd	Public bank Bhd	

All the data used in this study were obtained from the annual observation of SOEs in Malaysia between 2010 and 2020. As robustness checks, this study also considers the debt-to-assets ratio as an alternative to represent the SOE debt level. Financial data (i.e., *ROE*, *GO*, *DE*, *DA* and *TA*) were acquired from Bloomberg. Furthermore, the establishment year of SOEs was obtained from Google searches, and this information was used to compute the age of SOEs since their establishment. Table 2 describes the variables used for the analysis.

**Table 2.** Data Description.

Variable	Unit of Measurement	Description
<i>ROE</i> <sup>1</sup>	%	Return on equity (ROE) is a measure of financial performance calculated by dividing net income by shareholder equity.
<i>GO</i> <sup>1</sup>	%	GO is the total government ownership (such as ministries, government-held pension funds and government-held investment funds) of SOEs.
<i>DE</i> <sup>1</sup>	%	The debt-to-equity (DE) ratio is used to evaluate a company's financial leverage and is calculated by dividing an SOE's total liabilities by shareholder equity.
<i>DA</i> <sup>1</sup>	%	Total-debt-to-total-assets (DA) is a leverage ratio that defines the total amount of debt relative to the assets owned by a company.
<i>D</i>	0 = none; 1 = COVID-19	The dummy variable is used to distinguish the period of non-COVID-19 and COVID-19. This study set 2011 to 2019 = 1 and 2020 = 0.
<i>TA</i> <sup>1</sup>	Natural Logarithm	The total asset of SOEs.
<i>AGE</i> <sup>2</sup>	Natural Logarithm	Age of SOEs since their establishment.

Note: <sup>1</sup> represents the data extracted from Bloomberg, <sup>2</sup> indicates the data obtained from Google searches.

### 3.4. Descriptive Analysis

It is well-known that extreme values of panel data in corporate research may create a high standard deviation, which may cause heteroscedasticity problems. Therefore, this study follows the works of [Hou et al. \(2012\)](#) and [Li and Mohanram \(2014\)](#) and adopt the 1% winsorization (setting the values less than the 1st percentile or greater than the 99th percentile to the values at those percentiles) to clean extreme values. Table 3 presents the summary statistics of the variables used for the estimation. The results indicate that the average *ROE* (*ROA*) of SOEs in Malaysia is 16.65% (4.17%). However, the maximum and minimum *ROE* (*ROA*) of SOEs in Malaysia were 269.81% (36.54%) and −49.08% (−16.39%), respectively, indicating that some of the SOEs earned profiteering, and some

of SOEs suffered a considerable loss. On the other hand, the average *DE* and *DA* of the SOEs in Malaysia were 86.37% and 22.63%, respectively. The vast gap between maximum and minimum debt levels indicates that financial sustainability varies among the SOEs in Malaysia's *DE* (0.5% vs. 431.61%) and *DA* (0.04% vs. 59.51%). This study later explores if this could result from the differences in the government ownership (*GO*) of the SOEs. Concerning the government ownership of SOEs, the average score of Malaysia was 65.23%. This finding suggests that the government of Malaysia had high power (more than 50%) to control SOEs. However, the standard deviation of 27.36 indicates a variation in the government ownership of SOEs in Malaysia.

**Table 3.** Descriptive statistics.

Variables	Unit	Mean	SD	Max	Min	Observation
<i>ROE</i>	%	16.65	45.89	296.81	−49.08	280
<i>ROA</i>	%	4.17	7.00	36.54	−16.39	280
<i>DE</i> <sub><i>t</i>−1</sub>	%	86.37	74.77	431.61	0.05	280
<i>DA</i> <sub><i>t</i>−1</sub>	%	22.63	14.85	59.51	0.04	280
<i>GO</i>	%	65.23	27.36	98.67	1.99	280
<i>ln</i> ( <i>TA</i> )	Natural logarithm	3.80	0.92	5.29	1.31	280
<i>ln</i> ( <i>AGE</i> )	Natural logarithm	1.54	0.30	2.28	0.85	280

Table 4 presents the Pearson correlation coefficients of the independent variables examining whether the independent variables correlate. The results show that the highest correlation coefficient is between *ROE* and *ROA* in Malaysia ( $r = 0.79$ ). Apart from this result, all the other coefficients are less than 0.60. Since *ROA* is the alternative variable of *ROE* for the robustness test, the study states no multicollinearity issues among the variables.

**Table 4.** Correlation matrix.

Malaysia	<i>ROE</i>	<i>ROA</i>	<i>DE</i> <sub><i>t</i>−1</sub>	<i>DA</i> <sub><i>t</i>−1</sub>	<i>GO</i>	<i>ln</i> ( <i>TA</i> )	<i>ln</i> ( <i>AGE</i> )
<i>ROE</i>	1.00						
<i>ROA</i>	0.79	1.00					
<i>DE</i> <sub><i>t</i>−1</sub>	0.50	0.12	1.00				
<i>DA</i> <sub><i>t</i>−1</sub>	0.08	−0.05	0.48	1.00			
<i>GO</i>	−0.30	−0.22	−0.30	0.03	1.00		
<i>ln</i> ( <i>TA</i> )	−0.06	−0.11	0.26	−0.17	−0.11	1.00	
<i>ln</i> ( <i>AGE</i> )	−0.13	−0.13	−0.11	−0.01	0.14	0.37	1.00

## 4. Results

### 4.1. Main Findings

This study uses government ownership of SOEs as a threshold variable representing the level of political interference. The statistical findings strongly reject the null hypothesis of the linear model; it also passes the bootstrap linearity test (1% significance level), which confirms the existence of a threshold effect. As can be seen from Table 5, the government ownership threshold of Malaysia is around 27%. Furthermore, the finding shows that the coefficient between *DE* and *ROE* is positive and significant in the lower regime, and it is negative and significant in the higher regime (lower regime + difference). In other words, SOEs can maintain financial sustainability if and only if governments limit their ownership of SOEs to lower a given threshold, which is around 27% for Malaysia. Previous studies support this finding (see Menon and Ng 2017; Wisuttisak and Rahman 2021) and demonstrate that, as government ownership becomes higher (a proxy of political interference from the government), the profitability and financial sustainability of SOEs becomes lower.



**Table 5.** Regression results of dynamic panel threshold model.

	Lower Regime ( $\beta$ )	Difference ( $\lambda - \beta$ )	Higher Regime (Lower + Difference)
$ROE_{t-1}$	0.5494 *** 0.0148	-0.1667 *** 0.1304	0.3827
$DE_{t-1}$	0.2576 *** 0.0103	-0.2765 *** 0.0130	-0.0189
$\ln(TA)$	-40.2101 *** 11.0663	4.8573 8.8092	-35.3528
$\ln(AGE)$	59.2796 *** 27.1838	-76.9148 ** 33.2905	-17.6352
$D$	-7.5180 ** 3.7167	5.6192 ** 2.8646	-1.8988
Constant	134.3511 *** 27.3089		
Threshold value	27.0951 *** 0.1975		
Bootstrap $p$ -value for linearity test	0.0000		
No. of moment conditions	148		
Observation	280		

Note: \*\*\* and \*\* denote significance at the 1% and 5% level, respectively. The statistical significance level of the higher regime is identical with the “different” column.

Another exciting finding is that SOEs with higher government ownership had better profitability during the COVID-19 pandemic. The findings show that SOEs in lower government ownership regimes suffered financial difficulties during the COVID-19 periods, and ROE is around 7.52% less than the non-pandemic period. In contrast, SOEs with higher government ownership in Malaysia had loss in periods of pandemic, but it is only around 1.90% less than the non-pandemic period. The SOEs with higher government ownership are undermined by political interference; therefore, their resilience against crises is lower than those with lower government ownership. On the other hand, firm size and firm age are control variables. Its relationship with profitability highly depends on its business nature; therefore, no interpretation is requested on these variables. This finding also accords with previous studies; Henock (2019) found that these two variables had insignificant predictors, whereas Maama (2021) discovered that the estimated result of these two variables varies in different models.

#### 4.2. Discussion

Government intervention in the economy is a hot debate topic, and in Keynesian science, the proposed fiscal policy is an efficient tool against recession. This idea is critiqued by scholars of the neo-classic school, who believe government intervention is does nothing but undermine the effectiveness of the economy. SOE is one of the battlefields under this dispute. Today, most economists agree that the government is part of the market, and its policy and reactions affect the market’s performance. The findings of this study confirm the two hypotheses contributing to shedding light on the controversy above. First, government intervention can help SOEs maintain fiscal sustainability if its ownership of SOEs is no more than a tipping point (e.g., 27%). Second, SOEs in the lower regime (government ownership less than 27%) perform better during a crisis (e.g., COVID-19 pandemic). The findings of this study reveal that government intervention (i.e., government ownership of SOEs) on an economy does not to be eliminated(deny the view of the neo-classic school) but must also keep it limited (ignored by the Keynesian school).

#### 4.3. Robustness Test

Table 6 shows the result of the robustness test that assesses the sensitivity of the alternative independent variable (*ROE* replaced by *ROA*) and dependent variable ( $DE_{t-1}$  replaced by  $DA_{t-1}$ ). The empirical result indicates similar findings to those in Table 5. The SOEs in Malaysia can hold financial sustainability in a lower government ownership regime, less than 27%. An unsustainable performance of SOEs is found if the ownership is held by the government more than the threshold values. In conclusion, the government of Malaysia should restrict their SOE ownership to no more than 27%. This restriction can promote the financial sustainability of SOEs by limiting political interference that undermines SOE profitability and efficiency.

**Table 6.** Regression result of dynamic panel threshold model (robustness test).

	Lower Regime ( $\beta$ )	Difference ( $\lambda - \beta$ )	Higher Regime (Lower + Difference)
$ROA_{t-1}$	1.5386 *** 0.0721	−1.0183 *** 0.0513	0.5203
$DA_{t-1}$	0.5822 *** 0.1433	−0.5907 *** 0.1297	−0.0085
$\ln(TA)$	−113.3082 *** 17.2939	96.6886 *** 20.7003	−16.6196
$\ln(AGE)$	474.2582 *** 87.8850	−597.5079 *** 113.0425	−123.2497
$D$	15.5639 *** 3.9728	−18.2699 ** 5.1780	−2.7060
Constant	532.5685 *** 81.7383		
Threshold value	26.4291 0.0663		
Bootstrap $p$ -value for linearity test	0.0000		
No. of moment conditions	148		
Observation	280		

Note: \*\*\* and \*\* denote significance at the 1% and 5% level, respectively. The statistical significance level of the higher regime is identical with the “different” column.

## 5. Conclusions and Policy Implications

Overall, high government ownership can erode the financial sustainability of SOEs. The reason is that government ownership represents the power of interference from the government. As the government ownership of SOEs become higher, the intervention from the government also becomes higher, which undermines the effectiveness and profitability of SOEs by squeezing out commercial goals (Boko and Qin 2011), appointing incompetent management teams (Chen 2005) and allowing weak governance (Wisuttisak and Rahman 2021). This study uses a panel dataset covering 28 central SOEs of Malaysia from 2011 to 2020 to explore the role of government ownership in reducing financial sustainability. This study specifically employs a dynamic panel threshold regression model to explore the threshold effects of government ownership on SOE financial sustainability. The findings show that SOEs of Malaysia can achieve financial sustainability if government ownership is lower than 27%.

In a low government ownership regime, SOEs in Malaysia can maintain financial sustainability, and the coefficient between ROE and DE is positive. This indicates that those SOEs in a low regime can fulfill IBC. In other words, SOEs’ debt in a low regime is sustainable because they do not use new debts to finance old debt. SOEs with low government ownership have less interference from the government, resulting in the government not simply appointing politicians to become top managers, forcing SOEs to follow their pricing and transmitting bureaucratic culture into SOEs. Therefore, the inhibitory effect

of government ownership on SOE financial sustainability is not apparent. The second significant finding is that SOEs in Malaysia with high government ownership regimes were trapped in an unsustainable status. SOEs with high government ownership had more pressure and intervention from governments, which could undermine sustainable profit growth and reduce the autonomy and effectiveness of SOEs. Therefore, most high government ownership SOEs were suffering prolonged loss and relied on subsidies from the government to survive.

This study proposes the following policy recommendations given the above conclusions. Overall, governments should restrict their interference by reducing their ownership of SOEs. In particular, the government of Malaysia should reduce their ownership of SOEs to less than 27%. For this purpose, the government of Malaysia should propose a road map to gradually reduce their ownership and subsidies. In the same vein, SOEs with high government ownership should be aware that high government ownership erodes their financial sustainability. They must develop a strategy to reduce their dependency on government subsidies. On the other hand, SOEs with low government ownership should be alerted to interventions from the government, especially as the government tries to increase its ownership via direct investment or indirect channels (investment agency held by the government).

Another policy recommendation is that SOEs can be an alternative to outright privatization. Occasionally, privatized enterprises, combined with its monopoly power, may cause issues in social responsibilities, such as the failure to provide services to those in need. For example, private–public transport companies may not provide public bus services to rural areas. This study shows that SOEs can still attain financial sustainability given that government ownership is kept below the thresholds. These SOEs can set a maximum limit for government ownership, for example, 27% for Malaysia’s SOEs. Those SOEs can apply defensive tactics such as stock repurchases, poison pills and poison-put to restrict government ownership below the designed limit.

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