State-Owned Entreprises (SOEs): The Role in Economic Development and The Determinant of Its Performance

Badan Usaha Milik Negara (BUMN): Peranannya dalam Pembangunan Ekonomi dan Penentu Kinerjanya

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ABSTRAK

Pemerintah Indonesia melakukan beberapa strategi untuk meningkatkan kinerja BUMN. Namun, beberapa indikator keuangan menunjukkan bahwa program reformasi belum optimal mencapai tujuan untuk meningkatkan kinerja BUMN. Oleh karena itu tulisan ini bertujuan untuk membahas beberapa faktor yang mendasari yang mempengaruhi kinerja BUMN. Akibatnya, studi menemukan bahwa kontribusi BUMN Indonesia terhadap perekonomian relatif rendah dan stagnan. Selain itu, masih banyak BUMN yang belum beroperasi secara optimal. Hasil regresi menunjukkan kondisi keuangan BUMN semakin baik ketika perusahaan memiliki kemampuan yang lebih tinggi untuk menghasilkan keuntungan dan melunasi hutang. Selain itu, kemampuan melunasi utang lebih penting untuk menjaga kinerja keuangan BUMN, daripada kemampuan menghasilkan laba. Studi ini juga menunjukkan inefisiensi dalam pengelolaan pegawai dan perumusan kebijakan di BUMN Indonesia.

Kata Kunci: BUMN, kinerja keuangan, profitabilitas, solvabilitas, PCA

ABSTRACT

The Indonesian government conduct several strategies to enhance the SOE's performance. However, some financial indicators show that reform program has not optimally achieved the objective to enhance the SOE performance. Therefore this paper is aimed to discuss some underlying factors that influence the SOE performance. As a result, the study found that contribution of Indonesia SOEs to economy is relatively low and stagnant. Besides that, many SOEs have not yet operated optimally. The regression result show the financial condition of the SOE is getting better when it have higher ability to generate profits and pay off debts. In addition, ability to pay off the debts is more important to maintain the financial performance of SOEs, than ability to generate profit. This study also indicate inefficiency in managing employee and policy formulation in Indonesia's SOE.

Keywords: state-owned enterprises, financial performance, profitability, solvency, PCA
JEL classification: D04, E70, H11

INTRODUCTION

There are some studies that had been conducted to reveal the importance of state-owned enterprises to determine regional or national economic development. A cross-countries studies focus on non-financial company of SOE did by The European Bank (2020) identified the contribution of SOEs to Gross Domestic Product range from 1.5% in Poland to 5.5% in Montenegro. The study also depicts that on average the non-financial SOEs absorb 5% of total employment. This finding shows the crucial role of SOEs to influence the regional economic development and also social welfare in general.

Similarly, Naqvi and Ginting (2020) state the role of SOE in shaping the commercial and policy landscape in Asia. SOEs have substantial contribution in providing vital infrastructures and public services in many sectors such as energy, transportation, water management and exploration of natural resources. In addition, SOEs are also identified to have significant share in creating Gross Domestic Product (GDP). The SOE's share of GDP will be higher in developing countries compared to developed countries. Based on World Bank report in 2014 (Naqvi and Ginting, 2020), SOE may contribute 10 to 40% for countries in Central Asia while the figure only 5% for member of OECD (Organization for Economic Cooperation and Development) which represent developed countries.

In case of Indonesia, SOEs also present important role for economic development. One of noticeable positive impact of SOE is the financial contribution to the state. According to the performance report of Ministry of SOEs in 2019, it is mentioned that SOEs provided a contribution as much as 456 billion rupiah which consist of tax, dividend and state revenue other than tax (Ministry of SOEs, 2020). The SOEs financial contribution had increased by 68% in 2019 compared with 2011. The contribution of SOEs to Gross Domestic Product (GDP) as 14.95% to 15.51% in 2015-2019. Besides the financial contribution, SOEs also influences the national development through job creation and provision of important product to fulfill population's need

which obviously determines the social welfare. In 2019, SOEs have absorbed up to approxmately 700 thousand workers.

Despite of its role and importance, Indonesian SOEs are not without problems. There is an acknowledgement that in the previous era, SOEs is imaged as mismanaged, inefficient, open to corruption and act as cash cow for the ruled political party (Cochrane, 2007 cited in Khatri and Ikhsan, 2020). Then in the last decade, the Indonesian government conduct several strategies to enhance the SOE's performance. Some programs such as privatization and modernization of SOE has been initiated. However, some financial indicators show that reform program has not optimally achieved the objective to enhance the SOE performance. For example, percentage of SOE value added to Indonesia GDP slightly over 8% in 2014 but then decrease to just under 6% in 2016 even though the figure went up slightly in 2017. Besides that the asset turnover ratio (= revenues/assets) for nonfinancial SOEs dropped to almost half, from nearly 80% in 2013 to 42% in 2017, suggesting a substantial and rapid decline in effectiveness with which SOEs were converting assets into revenue (Naqvi and Ginting, 2020). As companies that receive direct funding from the government, SOEs are expected to achieve economic results and more importantly, make the most of them. Understanding where SOE performance should improve is a potentially useful tool for policymakers. It can also help boost a country's economic output, especially if SOE make up a large portion of the economy. Therefore, this study aims to discuss some underlying factors that influence the SOE performance. The result is hoped to provide specific recommendation to enhance the SOE contribution for Indonesian economic development.

State-Owned Enterprises (SOEs) is a business enterprise that is fully owned or majority-owned and controlled by the government through direct participation derived from the separated state assets (via the Ministry of SOEs or the Ministry of Finance). The term SOEs is used in this paper does not cover enterprises that are owned and directly controlled by local governments (provinces,

regencies, and municipalities) or those recently created under the Ministry of Finance for supporting infrastructure development. According to Law Number 19 of 2003 defines two types of SOEs:

a. A persero is a limited liability company whose capital is divided into shares of which the Government of Indonesia owns all or at least 51%. Perseros should be highly competitive and provide high-quality goods and/or services to pursue profits and increase business value.

b. A perum is a special purpose entity whose capital is wholly owned by the state and is not divided into shares. Perums conduct business to serve the public by providing quality goods and/or services at affordable prices based on sound business management principles.

The Law also defines the purpose of creating SOEs and the SOE objectives as follows:

a. Contribute to the development of the national economy in general and state revenue in particular.

b. Pursue profit.

c. Provide the public with high-quality goods and/or services.

d. Pioneer business activities which the private sector and cooperatives have not yet undertaken.

e. Guide and assist entrepreneurs of economically weak cooperative and community groups.

SOEs play an important role in Indonesia as a tool to promote social and economic development. However, SOEs' activities are more directed towards commercial activities. SOEs are more involved in corporate social activities beyond profit maximization due to increasing pressure from stakeholders on companies to work for social and public interests. SOEs are generally debated because of a lack of corporate governance, unclear goals, underperformance, and crowding out of the private investment (Nasir, 2017).

Numerous studies have been undertaken in different countries to assess the factor which contribute to the economic performance of SOEs with various variable and analysis method. In fact, researchers use different approaches to analyze financial performance of SOEs. A study conducted by Assagaf and Ali (2017) using seven SOEs as sample, revealed that the factors which significantly affect the financial performance of SOEs, which is illustrated by Altman Z-Score, are government subsidy, profitability, and capital structure. Similarly, Sayidah et al (2019) have also identified that subsidies and firm size is signficant affect on the financial health SOEs in Indonesia, but profitability and earnings management have no substantial impact to determine financial performance. Moreover, Taghizadeh-Hesary et al (2019) developed a comprehensive evaluation framework using data of 1 148 SOEs. The research concludes that profitability, solvency, per employee costs and per employee productivity are key components to influence the SOEs' performance. This study uses debt due days instead of Altman Z-Score to measure performance of SOEs. Another study conducted by Jakob (2017) measures the performance of SOEs in terms of profitability and efficiency. This study uses return on assets (ROA), return on sales (ROS), and net income to assess the profitability, while the indicator to assess the efficiency are sales/employee and sales/assets. The analysis reveals that private firms perform better compared to SOEs in terms of profitability and efficiency in the strategic sectors in a competitive environment.

The other empirical studies have shown that state ownership affects firms' performance. For example, Astami et al. (2010) conducted a study of 157 Indonesian SOEs in 2006, and confirmed the significant effect of ownership on SOEs performance. The result of study depicts that SOEs entirely owned by the government demonstrate lower performance levels compared to SOEs that are partly owned by the public. Further, Boubakri et al. (2005) have found significant increases in profitability, efficiency, investment, and output following privatization of SOEs. This study examined 230 multinational firms in developing countries.

In contrast, Eforis (2018) conducted research on SOEs in Indonesia that were listed in the Indonesia Stock Exchange (IDX) between 2011 and 2015 to investigate the relationship between state ownership and firm's performance. The authors showed that state ownership has a positive

influence on the company's financial performance. According to Sun *et al.* (2002), government ownership has a positive relationship with firm performance based on performance measured using the market-to-book ratio (MBR) as a proxy for Tobin's Q. This conclusion is resulted from the observation on the relationship between government ownership and all listed companies' performance during the 1994-1997 period based on the PRC's privatization experience.

SOEs are often claimed to have lower economic performance than non-SOEs. Based on that, many studies measure the performance of SOEs by comparing them with private firms. Abramov *et al.* (2017) evaluate efficiency characteristics of SOEs in Russia using various financial indicators such as revenue per employee, return on equity (ROE), profit margin and debt burden. The study on the sample of 114 major Russia companies showed that the dominance of shares owned by the state has a negative effect on the performance characteristics, and its increase is associated with an increase in the debt burden of the companies. The study also shows that increases in the size of government ownership led to lower labor productivity and profitability. In Taiwan, Liou (2007) found that Taiwan's SOEs are less efficient and less profitable than the similar private entreprises. Li *et al*. (2014) studied a panel dataset of more than 200.000 Chinese manufacturing firms during 2000-2005 to determine whether SOEs and private corporations performed differently in terms of their ROA, ROE, ROS, labor productivity, and sales growth. This research discovered that the industrial SOEs performed worse than private corporations in terms of all of the categories investigated. A similar result was achieved by Goldeng, Grunfeld, and Benito (2008), who studied differences in performance between state and private ownership with the emphasis on the impacts of the market structure. Using ROA and cost/sales revenue to measure the performance of all registered companies in Norway in the 1990s. The data analysis found that private corporations performed significantly better than SOEs. Another evidence also obvious from a study by Phi *et al*. (2019) who employed various empirical methods to investigate the relationship between ownership identity and the performance of firms in terms of profitability and solvency. Using variable ROA, solvency, firm size, labor size and labor intensity, they shown that SOEs tend to be less profitable than private-owned enterprises. SOEs are also more dependent on debt and financial support from outside sources rather than equity. Additionally, SOEs are more labor intensive and have higher labor costs.

Another alternative indicator to measure SOE financial performance is Grover Score. Fauzan and Sutiono (2017) and Verlekar and Kamat (2019) conclude that Grover model is the most accurate method to assess financial health of go public banking company. Syamni et.al (2018) and found that the bankruptcy prediction model can be used as one of the approaches to measure performance of the coal mining companies. The study uses four bankruptcy prediction models and the Grover provide the best result in evaluate financial health of the coal mining companies. Hastuti (2015) aim to determine the most accurate bankruptcy prediction model and its application to manufacturing companies in Indonesia. After determine the difference of four models, the study reports that Grover models achieve the highest-level accuracy compared with Springate, Altman and Ohlson models. Another study, by Oktaviandri et. al (2017), show the same result that Grover Model is the best prediction model in analyzing bankruptcy of companies in the agricultural sector listed on the IDX for the period 2011-2015. More evidence showing the advantage of deploying Grover score is stated Hirawati (2017) who mentioned that Grover model more accurate than Altman model as financial distress prediction models for manufacturing company listed in Indonesia.

Overall, performance of SOEs has been issue of interest among academics in many countries. SOEs play an important role in fostering economic growth by providing basic services such as water, electricity, sanitation, and transportation. However, this role is not accompanied by a good performance. Therefore, this study will analyze the determinant of SOEs that limited to profitability, efficiency, capital structure and

ownership.

METHOD

In this study, descriptive statistics, principal component analysis (PCA) and multiple regression will be employed to achieve the stated objective. Descriptive statistics is used to describe the role of the SOEs in economic development. And the combination of multiple regression and PCA are used to examine the determinants of performance of SOEs and to evaluate them. PCA is applied in order to reduces the number of variables into components (or factors) and to find out a more comprehensive model which associate all the analyzed variables (e.g. Taghizadeh-Hesary *et al.*, 2019). The selected principal components will be used as independent variables in regression by estimating the regression coefficient using the Ordinary Least Square (OLS) Method. All the analyses were carried out using R software.

Principal Component Analysis

PCA is a data-reduction technique that extracts data, removes redundant information, highlights hidden features, and visualizes the main relationships that exist between observations. It is a technique for simplifying a data set by reducing multidimensional data sets to fewer dimensions (Yoshino & Hesary, 2014). PCA simplifies a dataset and creates a set of new variables, emphasizing latent features present in the dataset. Unlike other transformation methods, PCA does not have a fixed set of vectors and adapts its basic vectors depending on the dataset, and PCA has the additional advantage of indicating what is similar and different about the various models created (Ho and Wu 2009).

In estimating the factors, the eigenvectors method is used with the following equations:

$$Y_1 = \hat{e}_{11}ZX_1 + \hat{e}_{12}ZX_2 + \hat{e}_{13}ZX_3 + \cdots + \hat{e}_{1i}ZX_i, \quad (1)$$
$$Y_2 = \hat{e}_{21}ZX_1 + \hat{e}_{22}ZX_2 + \hat{e}_{23}ZX_3 + \cdots + \hat{e}_{2i}ZX_i, \quad (2)$$
$$Y_i = \hat{e}_{i1}ZX_1 + \hat{e}_{i2}ZX_2 + \hat{e}_{i3}ZX_3 + \cdots + \hat{e}_{ii}ZX_i, \quad (3)$$

Y is the principal component; ê is the eigenvector; ZX the standardized value of the variables. We use standardized values for the extraction of the main variables.

Multiple Linier Regression Analysis

Regression analysis is a statistical method for examining, modeling, and predicting relationships between variables. The relationship of a model can be expressed in an equation that connects the independent variable (X) with the dependent variable (Y) (Montgomery *et al.*, 2012). In general, a regression model with p independent variables and n observation can be written as follows:

$$Y_i = \beta_0 + \beta_1 X_{I1} + \beta_2 X_{i2} + \ldots + \beta_p X_{in} + \varepsilon_i ;$$
$$i = 1,2, \ldots , p \quad (4)$$

Where Y is a dependent variable, $X_1,...,X_p$ are independent variables and $\beta_0, \ldots, \beta_p$ are coefficients or parameters of regression model. Regression analysis also specifies how much dependency or connection exist between "Y" and one or more "Xs".

Data

The study used annual financial report of SOEs as the main resources. The data used in this paper was secondary data which obtained from the Ministry of SOEs. Financial statements are used to assess the performance of SOEs in Indonesia. There are 79 SOEs companies with observation year 2018-2019 included in this research. The inclusion of SOEs are based on the availability of variables. In addition, this study also uses data from the Ministry of Finance and Statistics Indonesia for state budget and GDP data. Considering each variables has different units of measurement, we used the standardized data instead of using the absolute value for further analysis.

Selection of the Variables

The assessment of SOEs' financial performance in this study focus on efficiency, capital structure, profitability, and ownership. We have followed Taghizadeh-Hesary (2019), who proposed categories to evaluate the performance of firms, that is profitability, per employee, and structure indicators. Other than that, we also applied indicators of ownership (e.g. Eforis C, 2018) to assess the effect on SOEs performance. Table 1 shows the variables selected for each category that used in this study.

1. Profitability

Many previous researches has evaluate the performance of firms consider to their profitability indicators. Profitability variables can affect the health of financial condition in getting better through the company's profitability to improve its operating cash flow and facilitating the acquisition of funding bank loans, bonds and shares in the capital market (Taghizadeh-Hesary, 2019). Profitability can be measured in numerous ways, but two of the most popular metrics are Net Profit Margin (NPM) and Return on Assets (ROA) (Madison M, 2021). ROA indicates the effectiveness of the company to manage the assets either from their own capital or from borrowed capital, investors will look at how effectively a company to manage assets (Robinson *et al.*, 2015). NPM explain how well a company uses its revenue to create profit. A larger NPM means a greater margin of financial safety, and also indicates a company is in a better financial position to commit capital to growth and expansion. The formula in finding ROA and NPM based on assets are:

$$Net\ Profit\ Margin = \frac{Earning\ after\ interest\ and\ tax}{Sales} \quad (5)$$

$$ROA = \frac{Earning\ after\ tax}{Total\ Assets} \quad (6)$$

2. Per Employee Indicators

When assessing the performance of SOEs, per employee variables are essential as some firms reportedly have low productivity and are focused on employee maximization rather than profit maximization. In addition, SOEs are often overemploying (Putterman and Dong 2000) workers. Productivity and efficiency of the firms can be assessed from this indicator. In this study, four variables were chosen: profit per employee (Pe), operating revenue per employee (Ore), costs of employee divided by operating revenue (Ceor) and total assets per employee (Tae).

3. Ownership Indicators

There is an abundance of studies that have investigated the relationship between state ownership and firm performance. This relationship has influenced many empirical studies. Two variables were chosen to represent this indicator, they are percentage of state ownership (SSO), which shows the percentage of common shares held by the government, and value of public ownership (POV), which shows the value of common shares held by the public.

Tabel 1. Model Variables

No	Symbol	Definition	Units	Category
1	ROA	Return on assets using P/L before tax	%	Profitability
2	NPM	Net Pofit Margin	%	
3	Pe	Profit per employee	Rp	Per employee
4	Ore	Operating revenue per employee	Rp	
5	Ceor	Costs of employee / Operating revenue	%	
6	Tae	Total assets per employee	Rp	
7	SSO	Percentage of state ownership	%	Ownership
8	POV	Value of Public Ownership	Rp	
9	LR	Liquidity Ratio	%	Structure
10	SA	Solvency ratio (asset based)	%	
11	Perf	Financial Performance	Score	Dependent Var.

4. Structure Indicators

There are two variables to capture structure aspect: Liquidity Ratio (LR) and Solvency ratio based on assets (SA). Solvency ratio allows assessing a firm's ability to meet its debt obligations. A low solvency ratio attests of a higher risk of insolvency and therefore potential bankruptcy. The liquidity ratio also plays a key role in evaluating solvency, as it captures the ability of a company to pay off its debts without raising external funds. Solvency is an important factor in a firm's performance, though previous studies often have overlooked it, possibly because SOEs tend to enjoy "soft budget constraints" not subject to market liquidation (Taghizadeh-Hesary, 2019). The formula in finding the liquidity ratio and the solvency ratio based on assets are:

$$Liquidity\ Ratio = \frac{Current\ Assets}{Current\ Liabilities} \quad (7)$$

$$Solvency\ Ratio\ (Assets\ Based) = \frac{Total\ Debt}{Total\ Assets} \quad (8)$$

5. Financial Performance

Financial performance will act as the dependent variable for this study. It is measured using the method of Grover Score as indicator of financial condition of a firm. Grover model is a model formed by redesigning and reassessment towards Altman Z-score model. The model was discovered by Jeffrey S. Grover in 2001 who refined Altman model by adding 13 new financial ratios. By using the samples of 70 companies which consists of 35 companies experiencing bankrupcy and 35 others do not, between 1982 and 1996. Grover (2001) in Prihanthini (2013) results in an equation as follows:

$$G = 1,650X_1 + 3,404X_2 - 0,016X_3 + 0,057 \quad (9)$$

Information:
G = Overall Index
X_1 = Working Capital / Total Asset
X_2 = Earnings Before Interest and Taxes / Total

Asset
X_3 = Net Income / Total Asset (ROA)

Based on the results of the G score from all the functional equations above. This model classifies the G-Score to determine the condition of the company as distress, gray area and non-distress (healthy). The G-Score cut off points are categorized as follows:

a. If the G-Score G ≤ -0.02 then the company is in a state of distress.
b. If the G-Score is between -0.02 < G < 0.01 then the company is in a gray area.
c. If the G-Score G ≥ 0.01 then the company is not distress (healthy).

Accuracy of Grover model is determined based on the calculation of the correct estimation between the results of the prediction of the reality of the company. The formula in finding the accuracy level and error level are:

$$Accuracy\ Level = \frac{Number\ of\ correct\ predictions}{Number\ of\ samples} \times 100\% \quad (9)$$

$$Error\ Level = \frac{Number\ of\ incorrect\ predictions}{Number\ of\ samples} \times 100\% \quad (10)$$

RESULT AND DISCUSSION

Descriptive Analysis

According to the Law Number 19 of 2003, State-owned Enterprises in Indonesia are defined as business entity that entirely or partially owned by the State through a direct share-ownership that funded by a separate state's asset. And the State holds at least 51% of total shares. These percentage of ownership show the State as the major shareholders of the SOEs. In 2019, Indonesia counted 114 state-owned companies, significantly decrease from 142 in 2012 which is caused by restructuring. This number will continuously decline along with the government's objective to limit the SOE in order to increase efficiency, competitiveness, public service, and performance of SOEs.
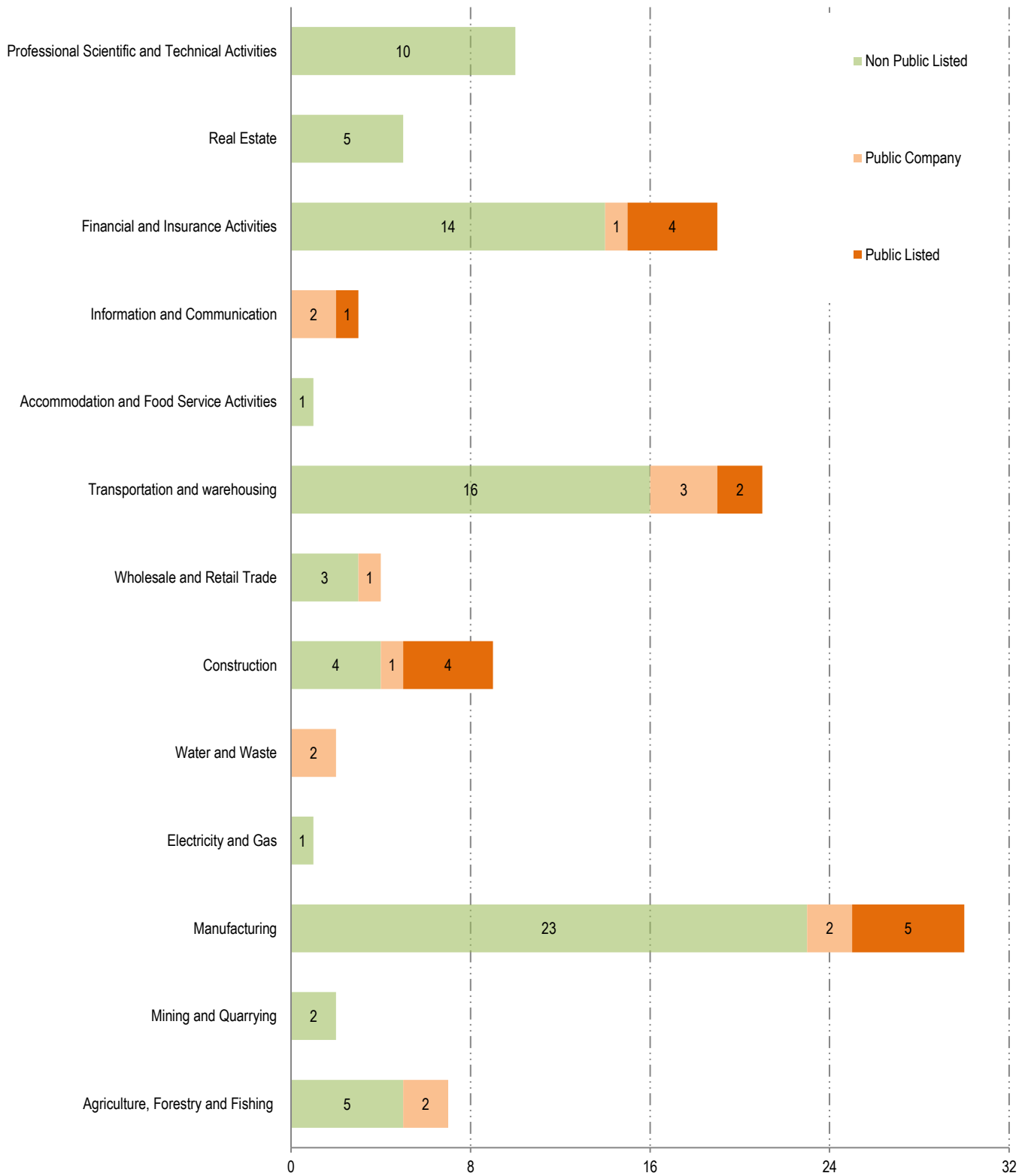
Figure 1. SOEs (State-Owned Enterprises) Sectors of Indonesia, 2019

Table 2. Financial Contribution of SOEs (*State-Owned Enterprises)* 2015-2019 (Rp Trillion).

Contribution	2015	2016	2017	2018	2019
Dividend	37	37	43	44	50
Tax	176	190	211	245	284
Other PNBP	90	82	100	167	135
Total Contribution	**303**	**309**	**354**	**456**	**469**
Total Contribution of State Revenue (%)	**20.09**	**19.86**	**21.24**	**23.46**	**23.92**
Capital Expenditure (Capex)	**221**	**298**	**315**	**448**	**367**

Source: Ministry of SOEs (processed)

In 2019, there are 16 SOEs and 13 SOE subsidiaries that are publicly listed, which is about 5% of all listed companies on the Indonesia Stock Exchange. Yet, market capitalisation of these listed SOEs comprised nearly 31.57% of total market capitalisation in the end of 2019 (Ministry of SOEs, 2020). The remaining 84 SOEs are not publicly listed (persero) and 14 SOEs are public company (perum). Indonesia's SOEs operate in all sectors of the economy, with the largest number of SOEs are in manufacturing, transport, and financial services (Figure 1). In the national economic system, SOEs have a strategic role as implementing public services, balancing the power of the large private sector, and assisting the development of small businesses/cooperatives. In addition, SOEs are also a significant source of state revenue in the form of various types of taxes, dividends (profit share), and the other Non-Tax State Revenue (PNBP). Contribution of SOEs to State Revenue for the last five years from 2015 to 2019 can be seen in following table 2.

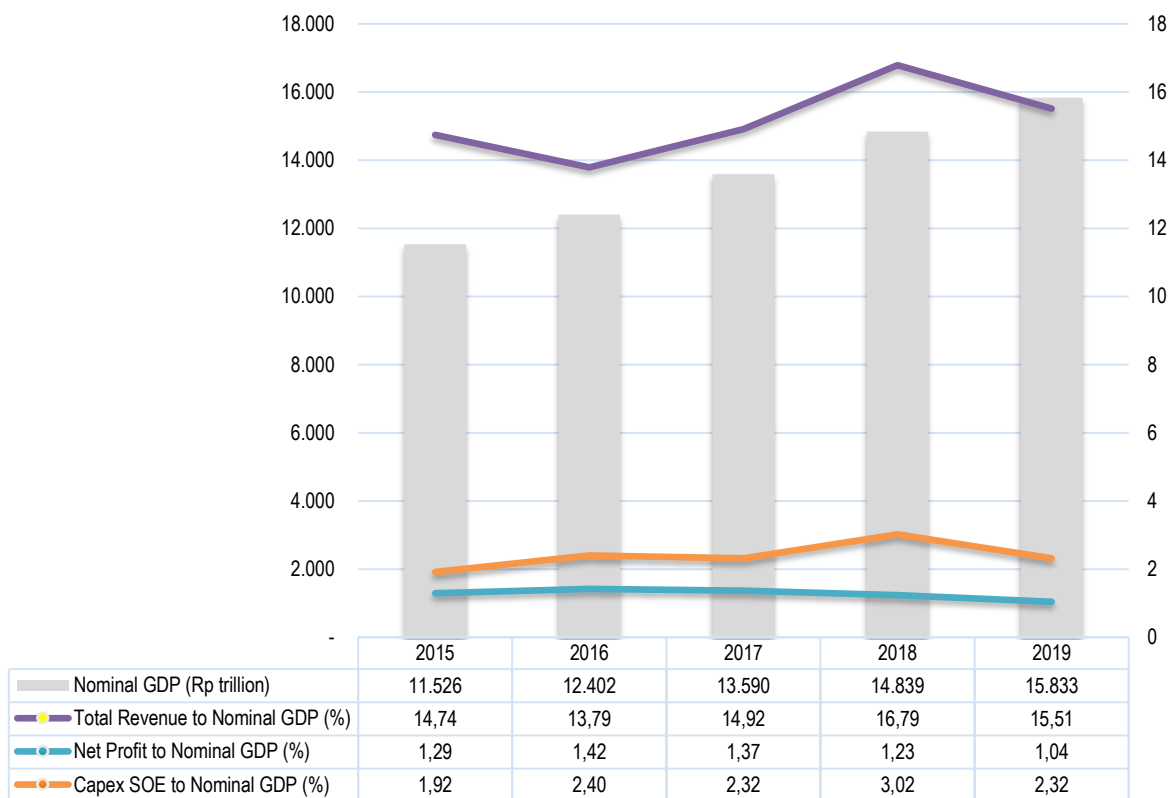|	2015	2016	2017	2018	2019
Nominal GDP (Rp trillion)	11.526	12.402	13.590	14.839	15.833
Total Revenue to Nominal GDP (%)	14,74	13,79	14,92	16,79	15,51
Net Profit to Nominal GDP (%)	1,29	1,42	1,37	1,23	1,04
Capex SOE to Nominal GDP (%)	1,92	2,40	2,32	3,02	2,32

Figure 2. SOEs (State-Owned Enterprises) Performance on the Economy

Table 3. Financial Indicators of SOEs (*State-Owned Enterprises*) in 2019

Data for 2019	Assets	Equity	Revenue	Net Profit
Total all SOEs (Rp trillion)	8.739	2.664	2.456	165
Ratio to GDP (% of GDP)	55.2	16.8	15.5	1.0
Top 20 SOEs (% of total)	92	93	85	107
Top 10 SOEs (% of total)	82	84	73	96

Source: Ministry of SOEs and Statistics Indonesia (processed)

During the period 2015 to 2019, total contribution of SOEs to state revenue, through tax, dividend, and other PNBP, increases steadily to 469 trillion rupiah in 2019 or about 23.92% of total state revenue. The largest contribution comes from tax payment which has proportion about 60% of total contribution. Meanwhile, profit share of SOEs has the lowest contribution, which is about 11% of SOEs' total contribution or 2.5% of total state revenue. Statistic shows that the existence of SOEs has a significant influence to state revenue.

Further, SOEs also contribute to the economy through their capital expenditure (Capex). These expenditure contribute to national economic growth in terms of expenditure which will increase demand and encourage national economic turnover. SOEs' capital expenditure are fluctuating for the last five years, ranged from 220 trillion rupiah to 450 trillion rupiah.

Indonesian SOEs' performance, in terms of revenue, net profit and capex, on the economy are fluctuating with downward trend in 2019. Total revenue, relative to GDP, decrease in 2019 after experiencing successive increases in the previous two years. The ratio ranged from 13% to 16% during 2015-2019. Meanwhile, SOEs' net profit contribution amounted to 1.04% in 2019, lowest in the last five year. The net profit to GDP ratio continues decline since 2016, in the range below 1.5% . Further, SOEs' capex contribute to GDP fluctuate with a range 1.9% and 3%. Generally, contribution of SOEs to economy is relatively low and stagnant. This performance still needs to be improved.

Available evidence suggests that the financial performance of SOEs have improved in the past decade. SOE profits grew at a compound annual rate of 61.8% between 2010 and 2019, while asset and equity SOE has increased by 2.6-fold and 3.3-fold respectively in the same period. However, SOE performance is not uniformly positive. Based on data, the share of SOE performance is disproportionate. SOE asset, equity, revenue, and net profits are highly concentrated. In 2019, the 20 largest SOEs in asset size accounted for 90% of total SOE assets, while the 10 largest SOEs comprised 80% (Table 3).

Table 4. Result of Accurate Level Measurement of Grover Score Model.

Recapitulation		Prediction			Total
		Distress	Non-distress	Gray Area	
Real	Distress	33	-	2	35
	Non-distress	2	182	-	184
	Gray Area	3	-	-	3
Total		**38**	**182**	**2**	**222**
Accuracy level (%)					**96.85**
Error Rate (%)					**3.15**

Table 5. Correlation Matrix.

	ROA	NPM	Pe	Ore	Ceor	Tae	SSO	POV	LR	SA
ROA	1.000									
NPM	**0.766**	1.000								
Pe	0.354	0.427	1.000							
Ore	-0.019	0.028	**0.692**	1.000						
Ceor	0.210	0.109	-0.159	-0.358	1.000					
Tae	-0.075	0.096	**0.694**	**0.893**	-0.298	1.000				
SSO	-0.134	-0.220	-0.265	-0.190	0.182	-0.239	1.000			
POV	0.164	0.082	0.216	0.130	-0.127	0.100	-0.484	1.000		
LR	0.381	0.302	0.068	-0.084	0.227	-0.067	0.056	-0.113	1.000	
SA	-0.413	-0.489	-0.169	0.078	-0.189	0.120	0.017	-0.033	-0.492	1.000

Also, the top-ten SOEs together made up around 80% of equity; around three quarters of revenue; and almost entirely of total net profit. Based on these, SOEs in Indonesia shows a pareto condition, in which, around 80% of the total contribution of SOEs revenue is only contributed by about 20% of the total company. This means that many SOEs have not yet operated optimally.

The following is the level of accuracy and error in evaluating financial distress of SOEs from Grover Score. Based on the calculation, the total correct predictions of the Grover model for financially distressed companies were 33 out of a total of 35 companies, and 182 of 184 non-distressed companies could be correctly predicted by this model. Based on the number of predictions, the Grover model was measured to have an accuracy level of 96.85% with an error rate of 3.15%. The results show that the Grover model have a good level of accuracy. PCA and multiple regression analysis in this paper only use the companies that correctly predicted by Grover.

a. Principal Component Analysis

Before performing PCA, correlation matrix of the variable was analyze to investigate how the variables correlate to each other. PCA application to the data will produce uncorrelated output which will deal with the issue of some variables being highly correlated with each other. Table 4 presents Pearson's correlation for all variables applied in this research. The table shows some highly correlated variables such as NPM and ROA, Ore and Pe, Tae and Pe, Tae and Ore among others. These correlations causes leading to unreliable and unstable estimates of regression coefficients, and can seriously distort the interpretation of a regression model. As a result, we need to create new variables using PCA.

Through PCA method, the 10 variables listed in Table 1 will be reduced and determine the number of components that can account for the correlated variance. It is a must to perform a a preliminary analysis in order to verify the adequacy of data for a factorial analysis by the Kaiser–Meyer–Olkin (KMO) test and Bartlett's test of sphericity as the initial step to conduct PCA. KMO is test to measure how suited the data to be used for factor analysis and it measures the sampling adequacy for each variable (Yoshino & Hesary, 2014).

The KMO value in this study higher than 0.5 (0.59) and shows that the data sample is accepted to be proceeded using factor analysis. Meanwhile, Bartlett's test of sphericity indicates whether the correlation matrix is an identity matrix, indicating that variables are unrelated. A significance level less than 0.05 reveals that there are significant relationships among the variables, which is the case in this study as the significance of Bartlett's test is less than 0.001. Therefore the data is valid for component analysis statistical approach.

Table 6. KMO (Kaiser–Meyer–Olkin) and Bartlett's Test.

KMO measure of sampling adequacy	**0.59**
Bartlett's sphericity test	
Approximate Chi-square	789.862
Degree of freedom	9
Significance	**0.000**

The further step is to determine how many components should be deployed in this analysis. One criterion is to decide the number of components is that the total variance explained by all components should be between 70% to 80% (Varmuza and Filmozer, 2009). Table 7 displays eigenvalues, percentage and cumulative of explained variance. The first five components explain 84% of the total variance of the performance indicators. Based on the standard procedure to conduct PCA, then this study use five components to analysis the data.

Once an appropriate number of components have been determined, the next step is to do factor rotation which is intended to understand the components. In this study, direct oblimin rotation is applies. Direct oblimin is the standard method to obtain a non-orthogonal (oblique) solution-that is, one in which the factors are allowed to be correlated. The use of oblimin often captures the best reality of the construct(s) being investigated (Tabachnick & Fidell, 2001). The component grouping based on the oblimin is shown in Table 8.

As can be seen in Table 8, Each variable weighs heavily on to only one of the factors, while the loading on each factor exceeds 0.50. Each component grouping has been represented as follows: Component 1- Percapita Productivity, Component 2-Profitability, Component 3-Ownership, Component 4-Solvency, and Componen 5- Percapita Costs.

Component 1- Employee Productivity (C1). This principal component accounts for 29.82% of the total variance and represents three variables. The variables are profit per employee (sig.= 0.79), operating revenue per employee (Sig.= 0.94) and total assets per employee (sig. = 0.97).

Component 2- Profitability (C2). The second principal component is categorized as Profitability. This component accounts for 25.97% of the variance and represents two variables. These are ROA (sig.= 0.89) and Net Profit Margin (sig.= 0.93).

Table 7. Eigenvalues of Correlation Matrix

Component	Eigenvalues	% of Variance	Cumulative Variance (%)
C1	2.981	29.818	29.818
C2	2.596	25.967	55.785
C3	1.361	13.615	69.400
C4	0.784	7.845	77.246
C5	0.736	7.362	84.609
C6	0.548	5.489	90.098
C7	0.492	4.922	95.021
C8	0.222	2.221	97.242
C9	0.208	2.082	99.325
C10	0.067	0.674	100.000

Table 8. Rotated Component Matrix (Rotation Method: Oblimin)

Variables	Component				
	C1	C2	C3	C4	C5
ROA	-0.05	**0.89**	0.03	0.03	0.09
NPM	0.03	**0.93**	-0.02	0.04	-0.05
Pe	**0.79**	0.37	0.06	-0.01	0.05
Ore	**0.94**	-0.09	-0.01	0.01	-0.07
Ceor	-0.01	0.01	-0.01	0.01	**0.98**
Tae	**0.97**	-0.09	0.00	-0.01	0.00
SSO	-0.05	-0.03	**-0.81**	-0.02	0.09
POV	-0.03	-0.05	**0.91**	-0.02	0.06
LR	0.04	-0.09	-0.03	**0.92**	0.06
SA	0.08	-0.21	-0.05	**-0.75**	0.08

Component 3- Ownership (C3). The third principal component is labeled as Ownership. This component accounts for 13.62% of the variance and represents two variables: State shareholding (sig.= 0.81) and public ownership value (sig.=0.91).

Component 4- Solvency (C4). The fourth principal component is tagged as Solvency. The component represents two items and accounts for 7.85% of the total observed variance. The items listed in this principal component are: Liquidity ratio (sig.= 0.92) and solvency asset (sig.= 0.75).

Componen 5- Percapita Costs (C5). The fifth principal component namely Percapita Costs, only represents one variable: Costs of employee per operating revenue (sig.= 0.98). This principal component accounts for 7.36% of the total observed variance.

In the next phase, this research is applying a regression model to assess the impact of the components in SOEs performance. The results are presented in the next section.

b. Multiple Linier Regression

In this section, the results of a regression conducted using the components derived from the PCA as independent variables will be presented. We used the linier regression to estimate the determinants behind the success or failure of SOEs through the performance indicators that had been defined in the previous section. For do this, we choose Grover-score as the dependent variable in this study, interpreting it as a label of success or failure of an SOE. The higher Grover-Score, the better the success of the company. The result of the regression are summarized in Table 9. The data has been tested by using classic assumption test and it is already free from the symptoms of heteroscedasticity, multicollinearity and autocorrelation. However the data are not normally distributed. According to the Central Limit Theorem, this normality assumption could be relaxed (Gujarati & Porter, 2009).

Table 9 shows that the five variables (components) are statistically significant influencing the dependent variable SOEs' performance simultaneously according to the ANOVA statistics (F-statistics=124.6 ; ρ-value < 0.05). The model's degree of explaining the variance in the dependent variable was $R^2 = 0.80$. This means the variation of SOE performance can be explained by the employee productivity, profitability, ownership, solvency, and percapita costs amounted to 80%. Looking at these coefficients, it may said that the model is fit for the data. Further, the table also shows the significance of each explanatory variable that can be assessed through t-sig value. The result reveals that the component profitability, solvency and percapita costs have significant impact on SOEs' performance (ρ-value < 0.05). It means that profitability, solvency, and percapita costs was able to improve the financial health of the firm. The estimated coefficients for profitability and solvency display a positive sign.

Table 9. The Result of the Regression.

Variables	Coefficient	t-Statistic	Sig.
Constant	0.020	0.602	0.548
C1- Employee Productivity	0.005	0.153	0.548
C2- Profitability	0.453	11.708	0.000*
C3- Ownership	-0.008	-0.237	0.812
C4- Solvency	0.568	14.971	0.000*
C5- Percapita Costs	-0.088	-2.405	0.017*
R^2		0.808	
Adjusted R^2		0.801	
F-statistic		124.6	
Sig (F-statistic)		0.000	
Durbin Watson		1.395	

Being a profitable firm or a firm with high ability to pay off its debt increases the financial health of the firm. On the other hand, the estimated coefficients for per capita costs show a negative sign. Its supports the fact that higher costs per employee negatively affect SOEs' performance. Higher costs per employee decreases financial condition of the firm.

Moreover, the absolute value of coefficient in Table 9 indicates the order of importance of the component. The component with the highest coefficient value is relatively most important component. On examining the contributions made by the component which statistically significant to the model, it was found that solvency component made the biggest contribution with the absolute value 0.56872. It was followed by the profitability and per capita costs components that have effect on a firm's performance respective coefficients being 0.453 and 0.088 in absolute terms. According to the empirical results, solvency have the greatest deterministic power over the success or failure of SOEs. Contrary to common perception that profit is believed to be the main indicator for measuring the performance of the firm. So, ability to pay off the debts is more important to maintain the financial performance of SOEs, than ability to generate profit.

Meanwhile, other two components (ownership and employee productivity) have insignificant effect on SOEs' performance (ρ-value > 0.05). It

may say that no significant difference is found on SOE financial performance between full and partial ownership of a SOE. To some extent, it can be concluded that the government policy in managing SOEs to improve the financial performance relatively the same, because all the dominant ownership of SOEs is owned by the government. On the other side, the insignificance of employee productivity component could indicate the possibility of inefficiency in employment management in indonesia's SOE.

CONCLUSION

Based on the description, we find that Indonesia SOEs contribute to state revenue increases steadily to 469 trillion rupiah in 2019 or about 23.92% of total state revenue. The largest contribution comes from tax payment which has proportion about 60% of total contribution. Meanwhile, profit share of SOEs has the lowest contribution, which is only about 11% of SOEs' total contribution. SOEs also contribute to the economy through their capital expenditure (Capex), which fluctuate in every year. On the other hand, contribution of SOEs, in terms of revenue, net profit and capex, to economy is relatively low and stagnan. We also find that SOEs in Indonesia shows a pareto condition which means that many SOEs have not yet operated optimally.

This study aims to analyze the performance

of SOEs in Indonesia comprehensively by employing PCA which could capturing many aspect of their performance. We applied 10 variables that potentially affect firm performance based on literature. The PCA reduced the variables into five components that can explain 84% of the variation of all variables. The components are C1- Employee Productivity , C2- Profitability, C3- Ownership, C4- Solvency, and C5- Percapita Costs.

In order to assess which of these variables had the most impact on the performance of SOEs, we ran a regression using the components obtained through the PCA as independent variable. SOEs' performance as the dependent variable was measured by using Grover Score as indicator of financial health of a firm. The regression result shows that the five components are statistically significant influencing the dependent variable SOEs' performance simultaneously. And the model fits the data with coefficient of determination (R^2) of 0.80. Partially, the component profitability and solvency have significant and positive impact on SOEs' performance, which means that the financial condition of the SOE is getting better when SOE have higher ability to generate profits and pay off debts. On the other hand, per capita costs component is significant and negatively affects SOE performance, which means that higher costs per employee decreases financial condition of the firm. Meanwhile, ownership and employee productivity components have insignificant effect on SOEs' performance. That is uncommon but it might occur if SOEs are ineficient in managing employment and government policy formulation, so those aspects are statistically insignificant to influence SOE performance.

This study also show that solvency have the greatest deterministic power over the success or failure of SOEs than profitability and percapita costs. This is contrary to popular perception that profit is the main indicator for measuring the performance of the firm. So, ability to pay off the debts is more important to maintain the financial performance of SOEs, than ability to generate profit.

Then some policy recommendations such as

improving efficiency hand in hand with increasing productivity can be proposed to assure the SOEs contribution for economic development. Policy maker should focus on solvency as strategies to improve the financial performance so that SOEs maintain its contribution in economic development. SOE will keep contribute to the economics from taxes, apart from profit. In addition, policy maker also must evaluate the employee productivity, cost-efficiency, and policy formulation to create better performance therefore SOE provide higher contribution for economic growth.

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