The Role of Small and Medium Enterprises (SMES) and Economic Growth in Indonesia: The VECM Analysis

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ABSTRACT
This study explored the causal relationship between the role of SMEs (number of SME, the workforce of SMEs) and economic growth in Indonesia. Secondary data of time series for the period 1999-2019. The research method uses Vector Error Correction Model (VECM) analysis with stationary Augmented Dickey-Fuller (ADF) test, optimal lag, Johansen cointegration test, Granger Causality test, and Impulse Response Function (IRF). The result shown that the variables of the number of SMEs and economic growth are related to one-way causality. In contrast to the variable number of workers and economic growth in Indonesia, there is no one-way or two-way causality relationship. The results of the VECM analysis also prove that in the short term there is a significant positive effect on the number of SMEs at lag-1 on economic growth and there is long-term cointegration between economic growth, the number of SMEs and the SME workforce.

Keywords: Small and Medium Industries, Economic Growth, Number of SMEs, Workforce of SMEs.

1. INTRODUCTION

Small and Medium Industries (SMEs) have a significant impact on the social development of a country, SMEs create jobs, compete with large companies, and become part of the global market [1]. Likewise in Indonesia, SMEs are an important sector in sustainable economic development, SMEs have become the backbone of the economy, around 88.8-99.9% of businesses in ASEAN countries are SMEs with employment reaching 51.7-97.2 % [2]. The existence of SMEs is the pride of every country because of the important role of these SMEs in economic development and growth. SMEs make up the majority of businesses worldwide and contribute to the creation of civilization fields [3].

SMEs role indicators can be seen from the number of SMEs and workforce of SMEs. The opportunity to develop SMEs that will enter the global market is still very promising and has considerable potential in the future to stimulate economic growth in Indonesia. In order for SMEs to have a big role in economic growth, SMEs must innovate to sell their products both domestically and abroad. According to data [3] the number of SMEs in 2017 reached 62,928,617 units and the growth of Gross Domestic Product (DGP) during

2000-2019, showed that the 2000 data amounted to IDR 397,934.30 billion Rupiah continued to increase until 2019 amounting to IDR 11,081,743, 00 billion Rupiah.

The role of SMEs and economic growth is an important research to be carried out and researched considering that most empirical studies generally focus on correlation studies which assume that the only direction of causality is from the role of SMEs to economic growth, as revealed by [5] that increasing European government regulations for SMEs can drive economic growth in Europe. [6] Small and medium enterprises are some of the main drivers of annual GDP per capita growth

Based on the results of research [7] that the number of SMEs and economic growth do not have a causal relationship, but there is a one-way causality relationship between the number of SMEs and economic growth. [8] states that the number of SMEs business units and the number of workers do not have a significant effect on economic growth, because SMEs owners and workers do not pay taxes to the government so that they do not contribute much to Indonesia's economic growth. For this reason, this research is expected to contribute knowledge about problems in SMEs so that they can have a positive impact on economic growth, especially in Indonesia. By used the

cointegration method, it is hoped that this research will discuss how the causality and cointegration relationship between the number of SMEs and the workforce of SMEs with economic growth in Indonesia?. Is there a short and long term relationship between the number of SMEs, and the workforce of SMEs with economic growth in Indonesia? The purpose of this study was to determine and analyze the causal relationship and cointegration of the number of SMEs, the workforce of SMEs, economic growth in Indonesia both in the short and long term. The contribution of this research is as input for policy makers / government in making policies in development of SMEs and economic growth.

2. LITERATURE REVIEW

Economic growth from year to year can be seen from the amount of GDP either based on current prices or based on constant prices. Gross Regional Domestic Product at constant prices shown the real value added of goods and services which is calculated using prices in a particular year as the basis, and takes into account the inflation factor. As the largest contributor to national economic growth, the number of productive SMEs contributes and positively influences economic growth.

The more people who enter the working age, the labor supply will also be higher. The productivity of a worker in producing a product is related to output and working hours. Productive workers will get high wages and less productive workers will get less wages. [9] revealed that there is a positive relationship between the workforce of SMEs and economic growth, but this relationship is stronger in the case of medium-sized enterprises than for micro and small enterprises. [10] the number of SMEs has a significant effect on economic growth. [11] the number of SMEs has an effect on regional GDP growth in Makassar City. [12] [13] that there is a unidirectional causality between the workforce of SMEs variable and economic growth, the greater the Number of SMEs will have an impact on the greater output produced by MSMEs and will increase the contribution of economic growth.

3. METHODOLOGY

The type of research used in this research is associative research using secondary data, namely the annual time series data for a period of 21 years, namely the period 1999-2019 in Indonesia. Data was obtained from several sources, such as the Indonesian Economic and Financial Statistics, the Ministry of Cooperatives and SMEs of the Republic of Indonesia, the Central Bureau of Statistics of the Republic of Indonesia, and Bank Indonesia. Economic growth data is measured by real Gross Domestic Product (GDP) at constant 2000 prices, SMEs business data is measured by the number

of SMEs Units in units, labor data, namely the working age population (aged 15 years and more) or the number of residents in a country having the ability to spend every unit of time in order to produce goods or services, both for himself and for others. In this case, it is the labor absorbed by SMEs which is measured in units of people.

The research method used is the Granger Causality Test and Vector Error Correction Model, to make it easier to separate the long-run and short-run components in the data formation process.

4. RESULTS AND DISCUSSIONS

The first step in testing cointegration is to test the presence or absence of stationarity in the data. The method used in this stationarity test is the Unit Root Test (Unit Root Test) or the Augmented Dickey-Fuller Test (ADF). The following table 1 below results Stationary testing.

Table 1. Stationary Test Results

Variables	ADF test At level	1st Difference	Information
GDP	0.9993	0.0452	Stasioner 1st Difference
NuSMEs	0.7914	0.0005	Stasioner 1st Difference
LoSMEs	0.7285	0.0012	Stasioner 1st Difference
AIC	105.815 1* (p=1)	106.4116* (p=2)	
SC	106.4592	107.5030	

Note:

a) * indicates lag order selected by the criterion;
b) GDP= economic growth, NuSMEs= the number of SMEs, LoSMEs= workforce of SMEs, AIC=Akaike information criterion, SC=Schwarz information criterion.
Source: Secondary Data (processed)

Table 1 ensured selection of the optimum lag using Akaike Information Criteria (AIC) and Schwarz Criteria (SC) which showed that the order p = 1 gives the minimum AIC and SC values and is an optimal order so that the next test stage uses lag 1.

Furthermore, using granger causality in table 2, it is known that there is a one-way causality relationship from the number of SMEs to economic growth, because Fcount (4.28489)> Ftable (2.77254) and Prob. (0.0405) <α (5%). Similar to the research conducted [12] there is a one-way causality relationship between the number of SMEs and economic growth. This condition is in accordance with the theory that the large number of SMEs plays a role in encouraging business development

in Indonesia and spurring economic growth. When the number of SMEs increases, the products / services provided by SMEs that are distributed also increase. In other words, there is an increase in income for business groups, this encourages economic activity and has implications for increasing economic growth.

The results of the Granger Causality test also shown that there is a one-way causality relationship from the number of SMEs to the workforce, namely from the value of Fcount (7.49957)> Ftable (2.77254) and Prob. (0.0014) <α (5%).

Table 2. Granger causality on the relationship between Economic Growth, Number of SMEs, Workforce of SMEs

Null Hypothesis	F-Statistic	Prob.
NuSMEs does not Granger Cause GDP	4.28489	0.0405
GDP does not Granger Cause NuSMEs	0.09086	0.7667
LoSMEs does not Granger Cause GDP	1.83037	0.1938
GDP does not Granger Cause LoSMEs	0.16126	0.6930
LoSMEs does not Granger Cause NuSMEs	0.02725	0.8708
NuSMEs does not Granger CauseLoSMEs	7.49957	0.0140

Source: Secondary Data (processed)

The results of the stationarity test (ADF) showed that all the data are stationary at the first difference and the cointegration test values (table 3) shown that only 1 equation is cointegrated, namely that which has a trace statistic value (38.9381) greater than the critical value 0.05 (29.79707)), this indicates that there is a long-term relationship or cointegration between variables. o changes in economic growth, the number of SMEs and the workforce of SMEs have stable or balanced relationships and long-term similarities in movement. The data which are stationary in the first difference and are mutually co-integrated indicates that VECM is the right method for processing data.

Table 3. Cointegration Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.763683	38.93831	29.79707	0.0034
At most 1	0.513424	12.97182	15.49471	0.1159
At most 2	0.000295	0.005313	3.841465	0.9412

Noted: Trace test indicates 1 cointegrating eqn(s) at the 0.05 level
Source: Secondary Data (processed)

Short-term VECM Estimation Analysis as shown in table 4, the coefficient of the CointEq1 cointegration equation is significant 0.026492, this indicates that there is an adjustment mechanism from the short term to the long term of 0.026492% towards the optimal GDP target. In the short term, the coefficient of speed of adjustment to equilibrium is -2.62E-06 but it is not significant. This indicates that there is an adjustment mechanism from the short term to the long term of -2.62E-06% towards the optimal GDP target. The coefficient of the CointEq1 cointegration equation of -3.51E-05 is insignificant, indicating that the adjustment mechanism from the short to long term is -3.51E-05% towards the optimal GDP target.
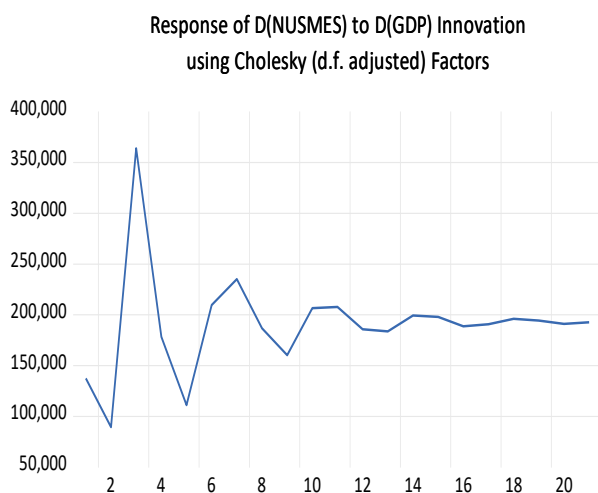
Tabel 4. VECM estimation in the short-run

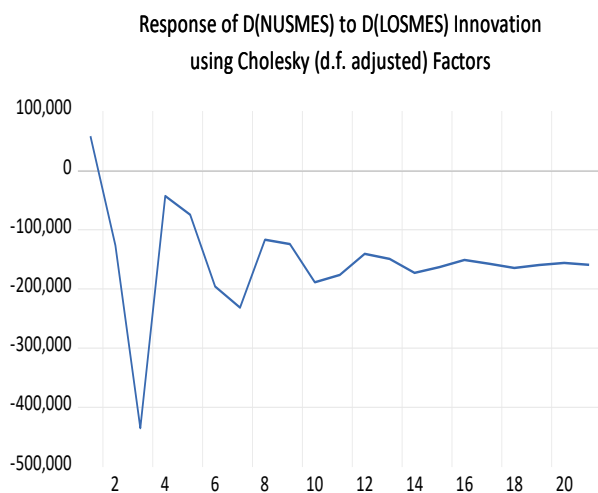| Error Correction:	D(GDP)	D(NuSMEs)	D(LoSMEs)
CointEq1	0.026492	2.62E-06	3.51E-05
	(0.01364)	(1.0E-05)	(3.8E-05)
	[1.94278]	[0.25561]	[0.92314]
D(GDP(-1))	0.139216	0.000119	0.000300
	(0.45743)	(0.00034)	(0.00128)
	[0.30435]	[0.34657]	[0.23554]
D(NuSMEs(-1))	0.285250	0.226446	0.950862
	(0.035458)	(0.47708)	(1.77180)
	[1.94964]	[0.47464]	[0.53666]
D(LoSMEs(-1))	22.45780	0.067365	0.008964
	(149.187)	(0.11201)	(0.41597)
	[0.15053]	[0.60144]	[0.02155]
R-squared	0.521947	0.144807	0.287973
Adj. R-squared	0.385361	-0.099534	0.084536

Source: Secondary Data (processed)

Table 4 shown the number of SMEs at lag-1 has a positive and significant effect on economic growth with a statistical t value of 1.94964 greater than t table at the real level of 5% (1.67203) and 10% (-1.29658). The value of the variable coefficient of the number of SMEs is 0.285250. This indicates that if there is an increase of 1 percent in the number of SMEs in the previous 1 year, it will increase economic growth by 0.285250 percent in the current year. The coefficient of determination (R-squared) is 0.385361, meaning that the effect of the number of SMEs and workforce of SMEs on economic growth is 38.5361%, while the remaining 61.4639% is determined by other factors. As revealed [14] proved that SMEs are able to provide a large contribution of more than 50% to economic growth in Indonesia. SMEs are appropriate as drivers of economic development, for that the Government must focus on motivating the creation of SMEs to continue to achieve their best performance [15].

Impulse response function (IRF) is used to analyze the response between variables based on the direction and time of adjustment. Figure 1 shown the response of the number of SMEs to economic growth in Indonesia. From 1999 to 2010 the response tended to fluctuate and be stable after 2011. In addition, the response had a positive direction. This indicates that the response between the number of SMEs and economic growth in Indonesia takes a relatively long time, namely 12 years and if you pay close attention, economic growth is stable but slowing down from 2010 to 2019.

Figure 1. The response of DNUSMEs to DGDP

Figure 2 illustrates the response of the number of SMEs to the workforce of SMEs in Indonesia. From 1999 to 2001 response, the direction was negative while the response was positive and fluctuated from 2002 to 2012, and since 2012, the response started to slope but has not yet headed to line 0 (stable), this condition showed that the number of SMEs and workforce of SMEs in Indonesia tend to support each other.

Figure 2. The response of DNuSMEs to DLoSMEs

In the end, SMEs clearly provide a one-way causality relationship as the largest dominant business in Indonesia and are proven to represent more than 99% of the total number of companies in Indonesia. a series of policies and strategic targets to increase economic growth, namely increasing productivity and product competitiveness, facilitating access to credit financing for SMEs; as well as fostering a new entrepreneurial spirit for aspiring entrepreneurs in Indonesia.

5. CONCLUSION

This study concludes that the variable number of SMEs and economic growth has a one-way causal relationship. however, the workforce of SMEs and economic growth in Indonesia has no one-way or two-way causal relationship. The results of the VECM analysis showed that in the short term there is a significant positive effect on the number of SMEs at lag-1 on economic growth, meaning that a 1 percent change in the number of SMEs in the previous 1 year will affect economic growth of 0.285250 percent in the current year, and there is cointegration of economic growth the number of SMEs and the workforce of SMEs in the long term. The IRF results showed that the response to the variable number of SMEs and economic growth in Indonesia takes 12 years to produce a stable response.

AUTHORS' CONTRIBUTIONS

Recommendations from the results of this study are that the Indonesian government continues to work together and collaborate with SMEs to accelerate SMEs productivity considering the contribution of SMEs to economic growth in Indonesia. The government should continue to provide guidance such as business incubators, business clusters, low interest micro business credit assistance.

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