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The Impact of Entrepreneurship on Economic Performance in Indonesia*

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Abstract

Entrepreneurship is claimed to have a positive and significant effect on economic growth in developed countries, but less so in developing countries. Using the growth model, this study examines the impact of entrepreneurship on economic performance in Indonesia as indicated by economic growth and income per-capita from 1985 to 2017. The estimation result confirms the non-significant effect of the growth of entrepreneurial ventures on the growth of GDP per-capita. However, the accumulation of the ventures has a positive and significant effect on the level of GDP per capita. The different typology of entrepreneurial ventures in Indonesia provides some insight to explain the finding, namely: scale does matter. Indonesia already has abundant micro-scale entrepreneurs, but it has only a limited amount of small-scale entrepreneurs, and even fewer medium or large-scale entrepreneurs. This finding contributes to a better understanding of the statistically non-significant impact of entrepreneurship on economic growth in developing countries. This study also suggests that entrepreneurship policy in Indonesia should focus more on facilitating micro-scale ventures to continuously develop toward small, medium, and ultimately large-scale enterprises rather than on creating start-ups.

Keywords: entrepreneurship; self-employment; economic performance; growth model

JEL classifications: O17; O38; O40; J21

1. Introduction

Nowadays, Indonesia is facing a stagnant economic growth of approximately 5%, much lower than the target of 7% per year set by the Government of Indonesia (GOI)[1]. Even though the economy of Indonesia had experienced a growth of approximately 7% during the 1990s, the internal and global economic and political conditions have changed dramatically since the mid-2000s, posing difficulties for the GOI to realize the target of its economic growth. During the 1990s, Indonesia had relied on exogenous factors, notably foreign direct investment (FDI) and export, to boost economic growth. Those exogenous factors currently cannot be expected to play their important roles due to global uncertainties, such as trade tensions between the U.S. and China in addition to the economic slowdown in several European countries. Therefore, Indonesia will depend more on endogenous factors to boost economic growth, including domestic investment and consumption.

Investment is required not only for adding physical capital, but more importantly for improving human capital and acquiring knowledge and technology through research and development (R&D). The improvement of human capital, knowledge, and technology acquisition does not only enhance the capacity and capability of the existing firms or incumbents but also create spillovers for a new entry in entrepreneurship that benefits from the economic growth. Entrepreneurs are frequently viewed as more important than incumbents because of

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[1]The Covid-19 pandemic has forced the GOI to lower down its economic growth forecast to 5.7–6% per year for 2020–2024 (The Ministry of National Development Planning or National Development Planning Agency (*Kementerian* PPN/Bappenas 2020). Consequently, the economy of Indonesia is most likely to grow below the pre-pandemic 5% per year.

Table 1. Economic Growth Year-on-Year in Constant 2010 (%)

	2017	2018	2019		
	Q4	Q4	Q1	Q2	Q3
Consumption					
• Private consumption	4.98	5.08	5.02	5.17	5.01
• NPI serving private consumption	5.26	10.79	16.95	15.28	7.44
• Government consumption	3.80	4.56	5.20	8.25	0.98
Gross fixed capital formation	7.26	6.01	5.03	5.01	4.21
Export	8.42	4.33	-1.87	-1.98	0.02
Import	11.91	7.10	-7.39	-6.78	-8.61
GDP	5.19	5.18	5.07	5.05	5.02

Source: BPS-Statistics Indonesia (2019)

their capability to create wealth from their new ventures, employment, and social changes. Thus, entrepreneurship is encouraged in many countries, especially in developing countries, due to their multiple benefits.

Indonesia as a developing country also encourages entrepreneurship to enhance contribution to economic performance. A variety of policy and program has been established by the GOI to increase new ventures or start-ups, such as the National Entrepreneurship Movement (*Gerakan Kewirausahaan Nasional*). The Ministry of Communication and Informatics (2019) has introduced the "Ignite the Nation 1,000 Start-up Digital Indonesia" program to create 1,000 start-up digital of millennials' entrepreneurs. The National Entrepreneurship Movement is developed based on a concern that the ratio of entrepreneurs in Indonesia remains relatively low. Indonesia has the ratio of entrepreneurs around 3.1% of the total population, lower than neighbouring countries such as Singapore (7%), Malaysia (5%), Thailand (4.5%), and Vietnam (3.35%). Indonesia still requires at least 4 million new entrepreneurs in order to become a developed country (the Ministry of Industry 2018). Even though the program may create productive entrepreneurship, its relationship with economic performance, particularly economic growth, remains equivocal. Previous empirical evidence demonstrates that there is no relationship between entrepreneurship and economic growth, particularly in developing countries (Sautet 2013; Boudreaux & Caudill 2019), and supposing it even exists, it might be a negative relationship (Van Stel, Carree & Thurik 2005). This implies that the GOI's policy and program to create more entrepreneurs maybe not the right solution for Indonesian economic growth.

This study aims to examine the impact of entrepreneurship on economic performance in Indonesia. The study investigates whether entrepreneurial ventures significantly affect economic growth and income level and scrutinises the result. The paper is organized as follows. The next section discusses the theoretical framework used for analysis and empirical evidence from previous empirical studies. It explores the endogenous growth model, in particular the relationship between economic growth and the growth of entrepreneurial ventures. It also discusses the methodology of how the model of relationship is developed and how the data are defined and collected. The third section discusses the results of this study and the explanation, while conclusions shall be presented in the last section.

2. Literature Review

In economics, growth models are often applied to analyse the factors influencing the economic growth. Factors of production such as physical capital, labour, natural resources, and technological change are used to explain the economic growth rate. Various growth models have been developed to capture different explanatory variables (see Harrod 1939,1959; Solow 1956; Romer 1986,1990). These various growth models can generally be classified into exogenous and endogenous growth models,

referring to the context of explanatory variables used. The exogenous models state that economic growth is driven by factors of production outside the model (i.e. exogenous variables), while endogenous models highlight factors within the models to explain economic growth (i.e. endogenous variables). For instance, the explanatory variable of economic growth such as technological change may be exogenous supposing it is in terms of new inventions by inventors (Solow 1956) or endogenous in terms of research and development (R&D) activities (Schumpeter 1942). Furthermore, Schumpeter (1942) highlights role played by entrepreneurs who make rational decisions on activities in order to maximize economic rents including R&D:

> "To act with confidence beyond the range of familiar beacons and to overcome that resistance required aptitudes that are present in only a small fraction of the population and define the entrepreneurial type as well as the entrepreneurial function. This function does not essentially consist of either inventing anything or otherwise creating the conditions which the enterprise exploits. It consists in getting things done" (Schumpeter 1942, p.132)

Therefore, the endogenous growth models are conceptually more aligned with Schumpeterian development that focuses on technological change and knowledge spillover generated by entrepreneurs, affecting economic growth (see Romer 1986,1990; Grossman & Helpmann 1991; Aghion & Howitt 1990). Entrepreneurship is consequently stimulated in many economies to induce economic growth (see Boudreaux & Caudill 2019; Acs et al. 2018; Bosma et al. 2018; Braunerhjelm et al. 2010; Audretsch & Kelibach 2007; Baumol & Strom 2007; Carree et al. 2002; Schumpeter 1983). Several scientists (see Schmitz 1989) even develop an endogenous growth model by explicitly considering entrepreneurship into the theoretical framework. Entrepreneurship is indicated by the establishment of new ventures (i.e. start-ups) by individuals, reflecting their rational decision in a trade-off between the roles of wage employment or entrepreneurship.

Numerous empirical researches have examined entrepreneurship as an explanatory variable of economic growth. Wennekers & Thurik (1999) as well as Carree & Thurik (2003) suggest that entrepreneurship contributes to economic growth by introducing innovation, creating competition, and enhancing rivalry. Entrepreneurs play roles not only in bringing a novelty in terms of goods and services to the market (innovators) but also in entering into new markets (new entrants). In the context of rational decision making regarding a trade-off between wage employment or entrepreneurship, Audretsch & Fritsch (1994), Carree (2002), as well as Audretsch & Thurik (2000) show a unidirectional causality in which new entry of entrepreneurial ventures enhances employment level by stimulating economic activity (known as 'Schumpeter' effect), while other scientists (Evans & Leighton 1989,1990; Reynolds, Storey & Westhead 1994; Van Stel & Storey 2004) demonstrate a 'refugee' effect where unemployment leads to economic agents choosing entrepreneurship. Nevertheless, more recent empirical studies suggest a bidirectional rather than unidirectional causality, in which both the 'Schumpeter' effect and the 'refugee' effect is taken place depending on the conditions of the national economy. The 'Schumpeter' effect is most likely observed in developed countries while the 'refugee' effect is likely to be found in developing and transition economies (see Sautet 2013; Ivanović-Djukić et al. 2018; Acs et al. 2017,2018; Bosma et al. 2018; Boudreaux & Caudill 2019). In addition, Van Stel, Carree & Thurik (2005) and Carree et al. (2002) demonstrate that entrepreneurship even has a negative relationship with economic growth in developing economies.

Even though scientists agree that entrepreneurship only positively affects economic growth in developed countries but not (or negatively) in developing economies, they propose various arguments to explain the relationship. Acs et al. (2017,2018) and Bosma et al. (2018) highlight the role of the institutional framework in which entrepreneurship occurs. Pro-market institutions encourage produc-

tive entrepreneurship and discourage unproductive entrepreneurship through competition and rivalry, resulting in higher economic growth. Sautet (2013) suggests that the typology of entrepreneurship determines whether it contributes to economic growth or not. Sautet distinguishes entrepreneurship into 'local entrepreneurship' and 'systemic entrepreneurship'. Local entrepreneurship merely exploits local opportunities that do not lead to economies of scale and scope needed to grow. On the other hand, systemic entrepreneurship refers to productive entrepreneurial activities exceeding the local opportunities to benefit from economies of scale and scope. Local entrepreneurship is the type of entrepreneurial activity that mostly can be found in many developing countries that leads to a slowly growing economy. Sautet further underlines that it is not a matter of lacking opportunity, but rather about the scale and scope of opportunities exploited by entrepreneurs. This counter the argument suggested by the Global Entrepreneurship Monitor (GEM) (see Boudreaux & Caudill 2019) that proposes a different variety of motivation as an explanation to the different outcomes between developed and developing nations. The 'opportunity-motivated entrepreneurship' in developed countries encourages economic growth, while the 'necessity-motivated entrepreneurship' in developing nations discourages economic growth. Meanwhile, Acs & Varga (2005) suggest different stages of essential competitive advantages of entrepreneurship, namely 'factor-driven', 'efficiency-driven', or 'innovation-driven' entrepreneurship. The innovation-driven entrepreneurship is mostly found in developed countries, implying positive contribution to economic growth, while in developing countries, entrepreneurship is driven by efficiency or factors that are less significant to affect economic growth. The last but not least, Carree et al. (2002) argue that the negative or positive relationship depends on the number of entrepreneurs in the economies, whether the entrepreneurship rate is above or below the long-run equilibrium level.

3. Methodology

3.1. Theoretical Model

The main objective of this study is to analyse the impact of entrepreneurship on economic performance in terms of economic growth and income level in Indonesia by adopting the endogenous growth theory. The endogenous growth model states that economic growth is dependent not only on the investment in physical capital but also on investment in research and development (R&D) as well as innovation and human capital leading to technological change. The growth model is derived from the Cobb-Douglas production function as follows:

$$\mathrm{Y_t} = \mathrm{A_t K_t^{\alpha} L_t^{1-\alpha}} \tag{1}$$

Where Y is production, K is physical capital, L is labour, and t is time. A is technological change and α measures output elasticity of capital. To achieve the objective of the study, this growth model can be extended by assuming that technological change can be explained by the accumulation of entrepreneurial ventures (ENTR) and the number of patents (PATE) to represent innovation and R&D respectively and other factors (Z). This enables A to be specified as follows:

$$\mathrm{A_t} = \beta \mathrm{ENTR_t^{\delta} PATE_t^{\mu} Z_t^{\gamma}} \tag{2}$$

Substituting equation (2) into equation (1), producing the following:

$$\mathrm{Y_t} = \beta \mathrm{ENTR_t^{\delta} PATE_t^{\mu} K_t^{\alpha} L_t^{1-\alpha} Z_t^{\gamma}} \tag{3}$$

Simply assuming the production function is characterized as a constant return to scale in which $\alpha = 1$ and dividing both sides by L to have output per unit of labour and taking the natural logarithm (ln), the estimation model is as follows:

$$\ln \mathrm{y_t} = \mathrm{a_0} + \mathrm{a_1} \ln \mathrm{ENTR_t} + \mathrm{a_2} \ln \mathrm{PATE_t} + \mathrm{a_3} \ln \mathrm{k_t} + \mathrm{e_1} \tag{4}$$

Where $\mathrm{y} = \mathrm{Y/L}$, $\mathrm{k} = \mathrm{K/L}$

Taking first differences (Δ) in order to obtain growth in y as the dependent variable:

$$\Delta \ln \mathrm{y_t} = \mathrm{b_0} + \mathrm{b_1}\Delta \ln \mathrm{ENTR_t} + \mathrm{b_3} \ln \mathrm{PATE_t} + \mathrm{b_4}\Delta \ln \mathrm{k_t} + \mathrm{e_2} \quad (5)$$

3.2. Data and Source

Economic growth is represented by the first differences of GDP per adult population (YCAP) while the growth of physical capital or investment in physical capital is measured by the gross fixed capital formation (KCAP) per adult population. This study used the adult population over 15 years old rather than labour force as the denominator of GDP and investment in physical capital since the role of entrepreneurship can also be played by homemakers or students who are excluded from labour force. Self-employment is used as a proxy for the accumulation of entrepreneurial ventures. In Indonesia, the data of self-employed are distinguished into 3 types: (1) Self-employed with no help (ENTR1), (2) Self-employed assisted by a temporary family member (ENTR2), and (3) Self-employed with permanent wage employee (ENTR3). All of the different typologies of self-employed as well as their sum (TENTR) are used to explain the relationship between entrepreneurship and economic performance. The number of patent applications (PATE) in Indonesia (both by resident and non-resident) is used as a proxy for the output of R&D. The data on the number of self-employed was obtained from the National Labour Force Survey (SAKERNAS) and Annual Statistics of Indonesia published by the BPS-Statistics Indonesia. The data on GDP per adult population and gross fixed capital formation per adult population were calculated from the National Income Statistics of BPS. Meanwhile, the data on the number of patent application were obtained from the World Intellectual Property Organization (WIPO 2019). The variables were collected for all available years covering 1985 to 2017.

The endogenous growth model to be estimated is as follow:

$$\begin{aligned}\Delta \ln \mathrm{YCAP_t} = {} & \mathrm{d_0} + \mathrm{d_1}(\Delta \ln \mathrm{ENTR1_t}) \\ & + \mathrm{d_2}(\Delta \ln \mathrm{ENTR2_t}) \\ & + \mathrm{d_3}(\Delta \ln \mathrm{ENTR2_t}) \\ & + \mathrm{d_4}(\Delta \ln \mathrm{ENTR3_t}) \\ & + \mathrm{d_5}(\Delta \ln \mathrm{TENTR}) + \mathrm{d_6} \ln \mathrm{TECH_t} \\ & + \mathrm{d_7} \ln \mathrm{KCAP_t} + \mathrm{e_3}\end{aligned} \quad (6)$$

Where $\mathrm{d_0}$ is intercept, $\mathrm{d_1}$, $\mathrm{d_2}$, $\mathrm{d_3}$, $\mathrm{d_4}$, $\mathrm{d_5}$, $\mathrm{d_6}$, and $\mathrm{d_7}$ are elasticities and $\mathrm{e_3}$ is residuals. Based on the review of literature, the a priori expected signs of the elasticities are a positive relationship with economic growth. In particular, the growth of entrepreneurial ventures (ENTR) should lead to economic growth in Indonesia ($\mathrm{d_1} \neq \mathrm{d_2} \neq \mathrm{d_3} \neq \mathrm{d_4} \neq 0$), ceteris paribus. This study applied the least square (OLS) to generate estimates of equation (6), thus the estimation is also checked for its classical assumptions (i.e. no heteroscedasticity, no multicollinearity, and no autocorrelation).

4. Result and Discussion

The objective of the study is to examine the impact of entrepreneurship on economic growth. The summary statistics of the data show that on average, GDP per capita (YCAP) within the period 1985–2017 is Rp20.3 million, with its minimum at Rp1.06 million and its maximum at Rp70.7 million, while total self-employed (TENTR) is 39.4 million business units consisting of 46.1% of self-employed with no help (ENTR1), 48.3% of self-employed assisted by a temporary family member (ENTR2), and 5.6% of self-employed with permanent wage employee (ENTR3). On average, Indonesia applies for 3,803.6 patents, while gross fixed capital formation is Rp6.1 million per capita (see Table 1).

The correlation analysis is also conducted, the results of which are presented in Table 3. This test is performed to check for the association that exists between the explanatory variables, in particular

Table 2. Descriptive Statistics

	YCAP	ENTR1	ENTR2	ENTR3	TENTR	PATE	KCAP
Mean	20,258,368	18,187,844	19,035,518	2,215,639	39,439,001	3,803.636	6,060,425
Median	11,430,103	18,746,535	19,275,556	2,672,644	41,789,873	3,890.000	2,248,478
Maximum	70,737,474	23,147,482	22,323,671	4,380,002	46,012,773	9,639.000	22,753,999
Minimum	1,064,288	1,378,1025	13,252,604	430,861	28,824,377	0.000	249,036.4
Std. Dev.	21,945,078	2,517,502	2,210,487	1,340,164	5,194,409	2,709.627	7282,848
Skewness	1.013588	-0.191192	-0.542608	-0.000376	-0.668849	0.545823	1.126311
Kurtosis	2.661128	1.993758	2.839327	1.553016	2.096854	2.668411	2.766600
Jarque-Bera	5.808384	1.593267	1.654823	2.878923	3.582024	1.789757	7.052069
Probability	0.054793	0.450844	0.437180	0.237055	0.166791	0.408657	0.029421
Sum	6.69E+08	6.00E+08	6.28E+08	73116078	1.30E+09	125520.0	2.00E+08
Sum Sq. Dev.	1.54E+16	2.03E+14	1.56E+14	5.75E+13	8.63E+14	2.35E+08	1.70E+15
Observations	33	33	33	33	33	33	33

the growth of self-employed, and the dependent variable, namely the growth of GDP per capita in Indonesia. The test reveals a weak correlation between the growth of self-employed and economic growth. Nevertheless, there is a strong positive correlation between investment in physical capital and economic growth.

The estimation result using the least square indicates that there is no heteroscedasticity (using Breusch-Pagan-Godfrey), meaning that the variance of the errors should be consistent for all observations. However, there is a correlation between explanatory variables or multicollinearity (using Variance *Inflation Factor*-VIF test) and autocorrelation, in which the errors are not independent of each other (using Durbin-Watson test).

Multicollinearity is expected in the estimation due to the inclusion of TENTR in explanatory variables, namely the sum total of ENTR1, ENTR2, and ENTR3. The author removed TENTR from the estimation model and employed Cochrane-Orcutt procedure by adding autoregressive (AR) into explanatory variables to solve autocorrelation.

The final estimation result of the study is presented in Table 5. The result reveals that the impact of the growth of entrepreneurial ventures represented by self-employed, both new entry of start-ups (ENTR1) and incumbents (ENTR3), on the growth of GDP per capita is statistically non-significant. Nevertheless, there is still any correlation between the growth of entrepreneurial ventures and the growth of GDP per capita.

In addition, the study provides the evidence of a positive and statistically significant effect of the investment in physical capital on growth of GDP per capita. That is, 1% increase in the gross fixed capital formation per capita increases growth of GDP per capita by approximately 0.65%. The result suggests that the growth of entrepreneurial ventures still lacks a significant impact on economic growth in Indonesia. Nevertheless, the estimation result using levels (as the equation 4) reveals that the accumulation of entrepreneurial ventures (ENTR2 and ENTR3) has a positive and significant effect on the level of GDP per capita. On the contrary, ENTR1 hurts on the level of GDP per capita (see Table 6).

This statistically divergent results of the effect of entrepreneurship on economic growth and income level can be explained using the endogenous growth model employed. Extra unit of entrepreneurial ventures increases productivity and level of GDP per capita significantly, but not to the growth of GDP per capita, particularly when the accumulation of entrepreneurial ventures has been a relatively large quantity already for technological knowledge and physical capital used to produce GDP. Factors of production, especially labour, is relatively in abundance in Indonesia, hence its facing

Table 3. The Correlation Matrix

	GLNYCAP	GLNENTR1	GLNENTR2	GLNENTR3	GLNTENTR	LNPATE	GLNKCAP
GLNYCAP	1.000000	-0.069671	0.101158	0.108377	0.042423	0.010621	0.587851
GLNENTR1	-0.069671	1.000000	-0.485596	0.325219	0.412633	-0.032338	-0.042708
GLNENTR2	0.101158	-0.485596	1.000000	-0.531478	0.577903	-0.123199	0.123131
GLNENTR3	0.108377	0.325219	-0.531478	1.000000	-0.106229	-0.079506	-0.046915
GLNTENTR	0.042423	0.412633	0.577903	-0.106229	1.000000	-0.167703	0.067695
LNPATE	0.010621	-0.032338	-0.123199	-0.079506	-0.167703	1.000000	-0.110854
GLNKCAP	0.587851	-0.042708	0.123131	-0.046915	0.067695	-0.110854	1.000000

Table 4. The Least Square Estimation Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.035597	0.043907	0.810737	0.4255
GLNENTR1	1.530.936	1.280.106	1.195.945	0.2434
GLNENTR2	1.734.345	1.325.200	1.308.742	0.2030
GLNENTR3	0.221649	0.129673	1.709.300	0.1003
GLNTENTR	-3.462.193	2.797.790	-1.237.474	0.2279
LNPATE	0.004032	0.004716	0.854993	0.4010
GLNKCAP	0.459736	0.134297	3.423.285	0.0022
R-squared	0.429056	Mean dependent var	0.132583	
Adjusted R-squared	0.286320	S.D. dependent var	0.063382	
S.E. of regression	0.053545	Akaike info criterion	-2.820.921	
Sum squared residual	0.068809	Schwarz criterion	-2.497.118	
Log likelihood	5.072.428	Hannan-Quinn criteria	-2.715.369	
F-statistic	3.005.939	Durbin-Watson stat	1.317.577	
Prob(F-statistic)	0.024606			

Table 5. The Least Square Estimation Result After Solving for Multicollinearity and Autocorrelation

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.026853	0.082630	0.324976	0.7481
GLNENTR1	-0.021315	0.167842	-0.126996	0.9000
GLNENTR2	-0.024302	0.147242	-0.165049	0.8703
GLNENTR3	-0.022241	0.058684	-0.378992	0.7082
LNPATE	0.001820	0.010084	0.180433	0.8584
GLNKCAP	0.648619	0.121198	5.351.735	0.0000
AR(1)	0.568184	0.196956	2.884.832	0.0084
SIGMASQ	0.001820	0.000536	3.395.444	0.0025
R-squared	0.531738	Mean dependent var	0.132583	
Adjusted R-squared	0.389223	S.D. dependent var	0.063382	
S.E. of regression	0.049534	Akaike info criterion	-2.933.067	
Sum squared residual	0.056434	Schwarz criterion	-2.563.006	
Log likelihood	5.346.254	Hannan-Quinn criteria.	-2.812.436	
F-statistic	3.731.107	Durbin-Watson stat	1.872.888	
Prob(F-statistic)	0.007664			
Inverted AR Roots	.57			

diminishing returns. In this case, the accumulation of self-employed in Indonesia has been relatively too large in quantity, leading to a higher level of GDP per capita but not to higher growth in GDP per capita. Furthermore, by examining the different typologies of self-employment in Indonesia, it is revealed that the largest quantity of entrepreneurship in Indonesia is micro-scale ventures (ENTR1 and ENTR2). For instance, the micro-scale ventures in 2017 account for 91% of total self-employed. This micro-scale entrepreneurship mostly is conducting business for livelihood as a rational decision of economic agents facing a trade-off between unemployed and employed, rather than between wage employment and entrepreneurship. The estimation result of the negative relationship between ENTR1

Table 6. The Least Square Estimation Result for Levels

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.600158	3.562.662	-0.168458	0.8675
LNENTR1	-0.372984	0.173757	-2.146.587	0.0413
LNENTR2	0.344287	0.149124	2.308.731	0.0292
LNENTR3	0.434371	0.056377	7.704.765	0.0000
LNPATE	0.002158	0.008347	0.258484	0.7981
LNNKCAP	0.737966	0.025943	2.844.549	0.0000
R-squared	0.997535	Mean dependent var	1.601.513	
Adjusted R-squared	0.997062	S.D. dependent var	1.372.905	
S.E. of regression	0.074422	Akaike info criterion	-2.190.779	
Sum squared residual	0.144003	Schwarz criterion	-1.915.954	
Log likelihood	4.105.247	Hannan-Quinn criteria.	-2.099.682	
F-statistic	2.104.759	Durbin-Watson stat	1.254.569	
Prob(F-statistic)	0.000000			

and GDP per capita (Table 6) supports the evidence of the trade-off. It indicates that ENTR1 has a countercyclical nature with business and economic fluctuations. On the contrary, small-, medium- and large-scale enterprises utilizing permanent wage employee (ENTR3) in Indonesia are considerably low, as 9% of self-employed in 2017. This indicates that the scale of entrepreneurial ventures may explain the statistically non-significant impact of entrepreneurship on economic growth in Indonesia.

The finding confirms the evidence identified by Isenberg (2012) as well as Isenberg & Onyemah (2016). They discover that many countries, despite their success in dramatically increasing the number of start-up ventures, are unable to grow, indicated by only a small number of people employed over time. Consequently, the ventures fail to provide extraordinary value for the economy in terms of jobs and economic growth. They even suggest that start-up activity is often negatively correlated with the survival and regional competitiveness of the ventures. The focus on creating start-ups increases the number of entrepreneurial ventures, while it will implicitly undermine the quality of scale-ups. They argue that start-ups may create value, but the extraordinary value is unlikely to occur without growth. Growth requires ventures to develop an organization by recruiting and managing diverse groups of employees and by accessing essential inputs. In addition, the scientists acknowledge the need to focus the policy on entrepreneurship towards scale-ups instead of start-ups. In order to efficiently and effectively boost economic growth, the policy should focus on rapidly scaling up ventures of all sizes. Businesses grow at 10–20% and are most likely to contribute to economic growth. Using a fine difference between self-employed data and statistical inference, the result of this study provides more precise estimates than the prior studies.

5. Conclusion

This study employed historical data covering the period of 1985 to 2017 and the least square estimation method to examine the impact of entrepreneurship on economic growth and income level in Indonesia. The estimation result of the study shows that the impact of the growth of entrepreneurial ventures on the growth of GDP per capita is not significant. Instead, the accumulation of entrepreneurial ventures has a positive and significant effect on the level of GDP per capita. This study argues that the scale of entrepreneurial ventures may explain the results. Indonesia, in fact, has already abundant micro-scale entrepreneurship, yet only a limited amount of small, medium, and large-scale entrepreneurs. Micro-scale entrepreneurship is most likely to improve productivity and income level of the entrepreneurs, but it is unlikely to contribute to the productivity of other people (e.g. labour, suppliers) at the macro-level.

This finding contributes to a better understanding of the statistically non-significant impact of entrepreneurship on economic growth in developing countries. However, the findings of this study have to be further observed considering several limitations. First, this study utilized statistical inference, thus the statistically non-significant finding should not be interpreted as no correlation between the growth of entrepreneurial ventures and the growth of GDP per capita. Second, the size of entrepreneurial ventures is distinguished based on the indicator of the number of employees, rather than the value of ventures (e.g. sales, assets). Applying the value of ventures as an indicator may provide better results and understanding. Third, previous empirical studies on the size of entrepreneurial ventures are scarce, thus it is unlikely to compare the finding of this study. Nevertheless, the finding may give rise to an important opportunity to identify new gaps in the literature.

Based on the finding, this study suggests that the scale of entrepreneurial ventures should be increased (scale-up) to improve the impact of entrepreneurship on economic growth. The entrepreneurship policy and program in Indonesia should focus more on facilitating micro-scale ventures to continuously develop toward small-scale, medium-scale, and ultimately large-scale enterprises, rather than creating new micro-scale startups. By scaling-up, it will increase not only productivity and income per capita, for instance by exploiting the division of labour within (i.e. owner-manager-labour) and between business units (e.g. specializing in particular value chain activities and outsourcing the rest) and capturing greater business opportunities, but also to significantly contribute to economic growth through investment in physical capital and technological knowledge acquisition. The role of entrepreneur and entrepreneurship is becoming crucial to ensure that the economic growth of Indonesia returns to normal period post-COVID-19 pandemic. The entrepreneurs are expected to assist Indonesia in moving past the slowing economic growth through innovations that shape the post-pandemic new growth model. The GOI should facilitate entrepreneurial ventures to re-start and immediately scale up to innovate and to significantly contribute to economic growth.

References

[1] Acs, ZJ & Varga, A 2005, 'Entrepreneurship, agglomeration and technological change', *Small Business Economics*, vol. 24, no. 3, pp. 323-334. doi: 10.1007/s11187-005-1998-4.

[2] Acs, ZJ, Stam, E, Audretsch, DB & O'Connor, A 2017, 'The lineages of the entrepreneurial ecosystem approach', *Small Business Economics*, vol. 49, no. 1, pp. 1-10. doi: 10.1007/s11187-017-9864-8.

[3] Acs, ZJ, Estrin, S, Mickiewicz, T & Szerb, L 2018, 'Entrepreneurship, institutional economics, and economic growth: an ecosystem perspective', *Small Business Economics*, vol. 51, no. 2, pp. 501-514. doi: 10.1007/s11187-018-0013-9.

[4] Aghion, P & Howitt, P 1990, 'A model of growth through creative destruction', NBER Working Paper No. 3223, National Bureau of Economic Research, viewed 8 November 2019, <https://www.nber.org/papers/w3223>.

[5] Audretsch, DB, & Fritsch, M 1994, 'The geography of firm births in Germany', *Regional Studies*, vol. 28, no. 4, pp. 359-365. doi: 10.1080/00343409412331348326.

[6] Audretsch, DB & Thurik, AR 2000, 'Capitalism and democracy in the 21st century: from the managed to the entrepreneurial economy', *Journal of Evolutionary Economics*, vol. 10, no. 1-2, pp. 17-34. doi: https://doi.org/10.1007/s001910050003.

[7] Audretsch, DB & Keilbach, M 2007, 'The theory of knowledge spillover entrepreneurship', *Journal of Management Studies*, vol. 44, no. 7, pp.1242-1254. doi: 10.1111/j.1467-6486.2007.00722.x.

[8] Baumol, WJ & Strom, RJ 2007, 'Entrepreneurship and economic growth', *Strategic Entrepreneurship Journal*, vol. 1, no. 3-4, pp. 233-237. doi:10.1002/sej.26.

[9] Bosma, N, Content, J, Sanders, M & Stam, E 2018, 'Institutions, entrepreneurship, and economic growth in Europe', *Small Business Economics*, vol. 51, no. 2, pp. 483-499. doi: 10.1007/s11187-018-0012-x.

[10] Boudreaux, C & Caudill, S 2019, 'Entrepreneurship, institutions, and economic growth: Does the level of development matter?', *MPRA Paper No. 94244*, Munich Personal RePEc Archive, viewed 5 July 2019, <https://mpra.ub.uni-muenchen.de/94244/>.

[11] BPS-Statistics Indonesia 2019, *National Income ([Seri 2010] Laju pertumbuhan PDB menurut pengeluaran (persen), 2017 - 2020)*, Badan Pusat Statistik, viewed 8 November 2019, <https://www.bps.go.id/dynamictable/2017/05/08/1258/-seri-2010-laju-pertumbuhan-pdb-menurut-pengeluaran-persen-2017---2019.html>.

[12] Braunerhjelm, P, Acs, ZJ, Audretsch, DB & Carlsson, B 2010, 'The missing link: knowledge diffusion and entrepreneurship in endogenous growth', *Small Business Economics*, vol. 34, no. 2, pp. 105-125. doi: 10.1007/s11187-009-9235-1.

[13] Carree, MA 2002, 'Does unemployment affect the number of establishments? A regional analysis for US states', *Regional Studies*, vol. 36, no. 4, pp. 389-398. doi: 10.1080/00343400220131151.

[14] Carree, MA & Thurik, AR 2003, 'The impact of entrepreneurship on economic growth', in ZJ Acs & DB Audretsch (eds.), *Handbook of Entrepreneurship Research* pp. 437-471, Kluwer Academic Publishers.

[15] Carree, M, van Stel, A, Thurik, R & Wennekers, S 2002, 'Economic development and business ownership: an analysis using data of 23 OECD countries in the period 1976–1996', *Small Business Economics*, vol. 19, no. 3, pp. 271-290. doi: 10.1023/A:1019604426387.

[16] Evans, DS & Leighton, LS 1989, 'Some empirical aspects of entrepreneurship', *American Economic Review*, vol. 79, no. 3, pp. 519-535.

[17] Evans, DS & Leighton, LS 1990, 'Small business formation by unemployed and employed workers', *Small Business Economics*, vol. 2, no. 4, pp. 319-330. doi: 10.1007/BF00401628.

[18] Grossman, GM & Helpman, E 1991, 'Trade, knowledge spillovers, and growth', *European Economic Review*, vol. 35, no. 2-3, pp. 517-526. doi: 10.1016/0014-2921(91)90153-A.

[19] Harrod, RF 1939, 'An essay in dynamic theory', *The Economic Journal*, vol. 49, no. 193, pp. 14-33. doi: 10.2307/2225181.

[20] Harrod, RF 1959, 'Domar and dynamic economics', *The Economic Journal*, vol. 69, no. 275, pp. 451-464. doi: 10.2307/2228074.

[21] Isenberg, D 2012, November 30, 'Focus entrepreneurship policy on scale-up, not start-up', *Harvard Business Review*, viewed 5 July 2019, <https://hbr.org/2012/11/focus-entrepreneurship-policy>.

[22] Isenberg, D & Onyemah, V 2016, 'Fostering scaleup ecosystems for regional economic growth (innovations case narrative: Manizales-Mas and Scale Up Milwaukee)', *Innovations: Technology, Governance, Globalization*, vol. 11, no. 1-2, pp.60-79. doi: 10.1162/inov_a_00248.

[23] Ivanović-Djukić, M, Lepojević, V, Stefanović, S, van Stel, A & Petrović, J 2018, 'Contribution of entrepreneurship to economic growth: A comparative analysis of South-East transition and developed European countries', *International Review of Entrepreneurship*, vol. 16, no. 2, pp. 257-276.

[24] Reynolds, P, Storey, DJ & Westhead, P 1994, 'Cross-national comparisons of the variation in new firm formation rates', *Regional Studies*, vol. 28, no. 4, pp. 443-456. doi: https://doi.org/10.1080/00343409412331348386.

[25] Romer, PM 1986, 'Increasing returns and long-run growth', *Journal of Political Economy*, vol. 94, no. 5, pp. 1002-1037. doi: 10.1086/261420.

[26] Romer, PM 1990, 'Endogenous technological change', *Journal of Political Economy*, vol. 98, no. 5, Part 2, pp. S71-S102. doi: 10.1086/261725.

[27] Sautet, F 2013, 'Local and systemic entrepreneurship: Solving the puzzle of entrepreneurship and economic development', *Entrepreneurship Theory and Practice*, vol. 37, no. 2, pp. 387-402. doi: 10.1111/j.1540-6520.2011.00469.x.

[28] Schmitz Jr, JA 1989, 'Imitation, entrepreneurship, and long-run growth', *Journal of Political Economy*, vol. 97, no. 3, pp. 721-739. doi: https://doi.org/10.1086/261624.

[29] Schumpeter, J 1942, *Capitalism, socialism and democracy*, Harper & Row, New York.

[30] Schumpeter, JA 1983, *The theory of economic development: an inquiry into profits, capital, credit, interest, and the business cycle*, Transaction Publishers.

[31] Solow, RM 1956, 'A contribution to the theory of economic growth', *The Quarterly Journal of Economics*, vol. 70, no. 1, pp. 65-94. doi: 10.2307/1884513.

[32] The Ministry of Communication and Informatics [Kementrian Komunikasi dan Informatika] 2019, 'Bangkitkan semangat patriotik generasi digital millennials Indonesia di momen kemerdekaan, Gerakan Nasional 1000 Startup Digital hadirkan "Ignite the Nation!"', *Siaran Pers No. 147/HM/KOMINFO/08/2019*, viewed 25 August 2019, <https://kominfo.go.id/content/detail/20612/siaran-pers-no-147hmkominfo082019-tentang-ignite-the-nation-kobarkan-semangat-digital-millennials-indonesia-di-bulan-kemerdekaan/0/siaran_pers>.

[33] The Ministry of Industry [Kementrian Perindustrian] 2019, November 23, *Indonesia butuh 4 juta wirausaha baru untuk menjadi negara maju* [Indonesia needs 4 million new entrepreneurs to become a developed country], viewed 1 September 2019, <https://kemenperin.go.id/artikel/19926/Indonesia-Butuh-4-Juta-Wirausaha-Baru-untuk-Menjadi-Negara-Maju>.

[34] The Ministry of National Development Planning or National Development Planning Agency [Kementrian Perencanaan Pembangunan Nasional/Bappenas] 2020, *Rancangan awal Rencana Pembangunan Jangka Menengah Nasional (RPJMN) 2020-2024*, viewed 14 May 2019, <https://www.bappenas.go.id/files/Narasi%20Rancangan%20Awal%20RPJMN%202020-2024.pdf>.

[35] Van Stel, A & Storey, D 2004, 'The link between firm births and job creation: Is there a Upas tree effect?', *Regional Studies*, vol. 38, no. 8, pp.893-909. doi: 10.1080/0034340042000280929.

[36] Van Stel, A, Carree, M & Thurik, R 2005, 'The effect of entrepreneurial activity on national economic growth', *Small Business Economics*, vol. 24, no. 3, pp. 311-321. doi: 10.1007/s11187-005-1996-6.

[37] Wennekers, S & Thurik, R 1999, 'Linking entrepreneurship and economic growth', *Small Business Economics*, vol. 13, no. 1, pp. 27-56. doi:10.1023/A:1008063200484.

[38] WIPO 2019, *WIPO IP Statistics Data Center (Paten Application of Indonesia)*, World Intellectual Property Organization, viewed 25 July 2019, <https://www3.wipo.int/ipstats/index.htm?tab=patent>.