ECONOMIC GROWTH, ENTREPRENEURSHIP, AND INSTITUTIONS: EVIDENCE IN EMERGING COUNTRIES

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Abstract
The research gives the first insight into the relationship between entrepreneurship and economic growth as well as the determinants of entrepreneurship in emerging countries. The variables are collected from two major sources namely Global Entrepreneurship Monitor (GEM) and World Bank (WB) for 13 emerging countries from 2002 to 2013. Due to the high correlation among World Governance' indexes, the principle component analysis (PCA) is applied to create the only Governance Index as a proxy for institutions in general. The first lags of independent variables are added to the regression model because some policies seem not to be implemented immediately in the economy. Using fixed effects together with random effects model, the research indicates that entrepreneurship is positively related to economic growth. Moreover, public expenditure is considered as an important boost of entrepreneurship, while Governance Index has a negative impact on entrepreneurial activities due to the high ratio of informal self-employment in total businesses among these emerging countries.

Key words: Entrepreneurship, Economic growth, Institutions, Governance index, Emerging countries.
JEL Classification: O43; E62

Introduction:

With the continuous development of theories for growth, economists have included labor, capital, and technology as inputs for the production function. Recently, entrepreneurship has drawn much attention from academic researchers when they consider it as a very important factor affecting all of previous factors in the production function. Therefore, entrepreneurship is the determinant for economic growth besides labor, capital, and technology. However, scientists also argue that entrepreneurship benefits growth only a country has good institutions or governance. This problem has led to some previous studies on the effect of entrepreneurship on economic performance (Hormiga, Batista-Canino, & Sánchez-Medina, 2011; Mainardes, Ferreira, & Tello, 2011; Pavlov & Bourne, 2011; Zhang, Tu, Xia, Wang, & Gu, 2011).Government policies, instruments for entrepreneurial activities, also receive interests from researchers when different countries with different characteristics follow different policies to improve their entrepreneurship (Lee, Florida, & Acs, 2004). Up to now, most of the studies just focus on the case of developed countries but not developing ones where the governments also make effort to promote entrepreneurial activities. Therefore, whether entrepreneurship is a key factor for economic growth in developing countries and what policies the governments should adopt to foster entrepreneurial environment are the research questions the paper aims to resolve.

Entrepreneurship is the driving force for economic growth when new businesses create more employment, rise production, and introduce innovations to the economy. Therefore, entrepreneurial activities have the positive relationship with economic growth (Cipolla, 2004; Coe & Helpman, 1995; Engelbrecht, 1997; Jovanovic, 1992; Lazonick, 1993; Lichtenberg, 1992). While Wong, Ho, and Autio (2005)and Wennekers, Van Wennekers, Thurik, and Reynolds (2005)suggest that whether the economy will follow forward productive or unproductive trend mainly depends on the stage a country is in and the characteristics it has.Therefore, it is necessary for policy makers to have a combination of policies to deal with problems unemployment, income inequality, and macroeconomic difficulties in the economy to pave the way for growth. To sum up, governance would have both a direct and indirect effect on economic growth(Aspara, Lamberg, Laukia, & Tikkanen, 2011; Liu & Hsu, 2011; Park, Yul Lee, & Hong, 2011; Schunkert et al., 2011; Smolarski & Kut, 2011).

The research uses panel data including 13 emerging countries from 2002 to 2013 to give solutions to the research questions. Most of the variables are taken from the World Development Indicator (World Bank's database) and entrepreneurship is collected from GEM's data sources. Based on tests for the choice among Pooled OLS, Fixed Effect, and Random Effect, model 1 applies Random Effect, while Fixed Effect is used for model 2. From the estimated results, entrepreneurship is positively related to economic growth and the higher public expenditure the governments in emerging countries have, the higher entrepreneurial activities their economies receive. However, the relation between Governance Index and entrepreneurship go against what is expected when it supposes that an ineffective government will shelter more business activities.

The remainders of the paper are constructed as followings. Section 2 presents literature review for the relations among institutions, entrepreneurship, and economic growth. Section 3 describes methodology for the study. Research results and conclusion are in Section 4 and 5, respectively.

Literature review:

Entrepreneurship and economic growth:

Besides labor and capital (physical and human) inputs to the production function for economic growth, technology also makes a great contribution through the advancement of innovation and productivity improvement, according to Solow's neo-classical model (1956) and Romer's endogenous growth model (1986). To measure the progress of technology, R&D expenditures (Mansfield, 1972)and the number of patents (Griliches, 1990)are good proxies for innovation. While Nadiri (1993)states the economic needs to base ontechnology as exogenous variable to grow in the long-term, Verspagen (1992)and Ruttan (1997)support the endogenous model that takes into account knowledge spilloversand technological substitution in the growth process.

Although the two models have made huge progress in identifying factors for growth, both failed to mention entrepreneurship, the one determining technological innovation.Some previous studies have proved the relationships between economic growth and entrepreneurship, but their causality has not been studied yet. Schumpeter (1942)stresses the role of entrepreneurship as well as innovation in the economic growth and considers putting it into the growth model due to the fact that the introduction of innovation aids the development of products and gives opportunities for entrepreneurs to gain more profits, which benefits growth. Based on Kirzner (2009), it is the competition of entrepreneurs that drive the market process. The increase in newly established businesses and their introduction of innovative technologies in the market is the foundation for the improvement of entrepreneurship. Therefore, technological innovation and the creation of new entrepreneurs are considered to be the driving force of economic growth. Romer (1986)researches the endogenous growth model in which new entry of firms is the endogenous determinant of economic growth and is related to individuals' decisions on whether to be an employee or entrepreneur. Consequently, entrepreneurship is an additional input into the production function for economic growth because of its fostering innovation and promoting growth in the economy (Coe & Helpman, 1995; Engelbrecht, 1997; Lichtenberg, 1992). Moreover, Cipolla (2004)and Lazonick (1993)suggests that entrepreneurs' adopting new production techniques, reallocating resources, and diversifying products to compete with their rivals may shape the long-term economic growth. Jovanovic (1992)and Audretsch (1995)suppose that entrepreneurship plays the role of a factor for change, creates new ideas in the economy, and stimulates economic growth through competition. Wennekers and Thurik (1999)hold that entrepreneurship including the addition of new technologies and start-up businesses into the markets will help grow the economy. Wennekers et al. (2005)discovers that entrepreneurship activities and economic growth have the positive relationship with each other.

With a new approach, Audretsch, Carree, Van Stel, and Thurik (2002)examines entrepreneurship through the demand and supply side. The demand side is related opportunities an entrepreneur needs to state up, and the supply side focuses on skills and resources of individuals in the population. He also bases the study on the choice between self-employment and wage-employment to identify the equilibrium rate for entrepreneurship activities and comes to a conclusion that entrepreneurship will have positive relationship with economic growth if this rate is below the equilibrium and vice versa. Carree, Van Stel, Thurik, and Wennekers (2002)affirm that whether this relation is positive or negative relies on the level of entrepreneurship compared to its equilibrium.

After all, higher entrepreneurship rates mean higher growth rates in the economy. Fritsch and Mueller (2004) state that new start-up firms not only create job opportunities within their own firms but also increase employment in other companies. Wong et al. (2005) suggest that entrepreneurs propel growth through innovation, combined resources, and competitive pressures. However, characteristics of entrepreneurial activities in each country will drive the economy to productive or unproductive gains and the U-shaped relationship between entrepreneurial activities and economic performance exists as a result (Wennekers et al., 2005).

Institutions, entrepreneurship, and economic growth:

Institutions are the determinants of entrepreneurship because entrepreneurs cannot increase their activities without the aid of institutions. History, culture, society, or politics are different angles relevant to governance or institutions. A country may have good governance as long as it improves its institution through enhancing business environment, avoiding market failure, and limiting information asymmetry, which help attract investment and power development. When identifying the impact of changes in institution on growth, North (1990) argues that economic performance depends on whether a country's institution is suitable or not and holds that the variation in institution will influence all entities in various fields of the economy. It is affirmed that physical and human capital, technology, investment play an important part in economic progress. However, governance and institution are the main variables affecting these determinants. Therefore, in his research, Acemoglu (2003) makes efforts to discover characteristics of institution that brings positive effects to economic growth. These characteristics include the enforcement of the property rights to encourage investors to invest in the country, the limitation to the power of a group of elites or politicians on damaging the property rights, and the introduction of good opportunities to all aspects in the economy so that each individual can get access to resources and perform productive economic activities. The improvement in market management, physical and human capital, and financial approach will facilitate transparent institutions.

Rodrik (2005) supposes that different strategies for economic performance of a country are comprised of measures to stimulate economic performance and measures to make it sustainable. According to Williamson (1990), while the short-term performance to ignite the economy relies on reforms and resolutions, the long-term performance to enhance growth is based on a variety of institutional policies linked to trade and financial liberalization, fiscal discipline, competitive currencies, and privatization as well as deregulation. To stimulate the economy, Stern and Stern (2002) suggests that the government needs to create a good investment environment, improve physical, human, as well as social capital, strengthen property rights, and reduce corruption, tax burden, inflation, and economic instability. To sustain the economy, institutions are the principle factors determining activities in the economy. Acemoglu, Aghion, and Zilibotti (2006) indicates three determinants of a country's institutions: (1) political environment related to governmental institution, public management, and laws, together with regulations and policies from the government, (2) economic environment including the relationships among financial intermediations, fiscal institutions, as well as financial and capital market, and (3) entrepreneurial environment dealing with property rights, market failure, and social capital.

In order to propel growth in the economy, policy makers frequently combine various policies to resolve the problems of unemployment, income inequality, macroeconomic difficulties, environmental pollution, and people's welfare as well as happiness. Growth results in higher income per capita, consumption, and employment in the economy. However, growth also leads to technological advancement that makes labor lose jobs to machinery. In addition, the increase in income will reduce income inequality thanks to the government's shifting incomes from the rich to the poor. It is the introduction of new technology as well as the slow process of skill labor improvement that raises unskilled workers' unemployment and lowers their wages (Juhn, Murphy, & Pierce, 1993). However, inequality will be harmful for growth because the role of the lobbies will reduce the effectiveness of the measures designed by policy makers (Banerjee & Newman, 1993; Galor & Zeira, 1993; Saint-Paul & Verdier, 1992; Tsiddon, 1992). Méndez-Picazo, Galindo-Martín, and Ribeiro-Soriano (2012)and Persson and Tabellini (1994)find a negative relationship between income inequality and economic growth. Perotti (1996)and Alesina and Perotti (1996)also come to the same conclusion when considering the negative effects of sociopolitical instability caused by income inequality. On the other hand, Barro (1999)states that the relationship between the two is negative in poor countries but positive in rich ones. According to Deininger and Squire (1996), income inequality is not a good determinant for economic growth as some previous research still discovers the positive relationship between them (Li & Zou, 1998). Furthermore, Sylwester (2000)indicates that the higher income inequality is the higher public consumption in education gets, which has a short-term negative effect in short term and a long-term positive effect on economic growth. Thus, the relationship between governance and economic growth is direct and indirect, mainly through its effects on entrepreneurship.

In terms of macroeconomic difficulties, higher income would lead to a higher demand, which leads to inflation and balance of payment problems due to an increase in imported goods. In this situation, an increase in production would solve this problem and meet individuals' needs. When people become richer and get higher education, they tend to protect the environment more. The growth in the economy requires more resources. This leads to the damage of the environment. Therefore, the relationship between economic growth and environment is not clear (Andreoni & Levinson, 2001; Eriksson & Persson, 2003; Heerink, Mulatu, & Bulte, 2001; Magnani, 2000; Selden & Song, 1994). Their suggestion to avoid this problem is to improve scientific knowledge among people.

Higher consumption, as a result of economic growth, also generates higher levels of pollution and waste. If the government can limit the costs of income distribution and environmental problems, economic growth would help increase the level of social welfare and then happiness. However, the more people have, the more they want. Therefore, people may not be satisfied with the increase in consumption and their happiness and welfare do not meet. In the research on the relationship between moral consequences and economic growth, Friedman (2006)states that economic growth would make people become more materialistic, selfish, and less caring the society and then social evils would become a big problem. To promote economic growth, policy makers should have appropriate instruments to make the economy more efficient. The government and market are interdependent to each other in the economic performance (Dreze, Sen, & Hussain, 1995). Government affects the economy through its policies to encourage education quality and provide skill trainings for labor. Government can also

create economics of scale and technological externalities. The government plays an important role in modifying income distribution and introducing taxation policies. Markets need the government to perform appropriately through legal enforcement. Gylfason (1999)saysthat economic growth depends on efficiency or technology, the saving rates, and the depreciation of capital. However, these elements are all affected by governance and institutions. Governance has effects on investment and entrepreneurship activities through the social and business environment. In short, governance would have a direct and indirect effect on economic growth (Liu & Hsu, 2011; Park et al., 2011; Smolarski & Kut, 2011).

Conceptual framework:

Following the literature review, the relationship between economic growth and entrepreneurship and economic growth and the relationship between institutions and entrepreneurship are shown in the below conceptual framework. The paper uses income distribution (social climate), governance indicators, and government expenditure (fiscal policy) as determinants for institutions fostering entrepreneurship. In addition to elements for human capital, physical capital, and technology, the research adds entrepreneurship activity to the function for growth in order to identify whether entrepreneurship plays an important role in growing the economy or not.
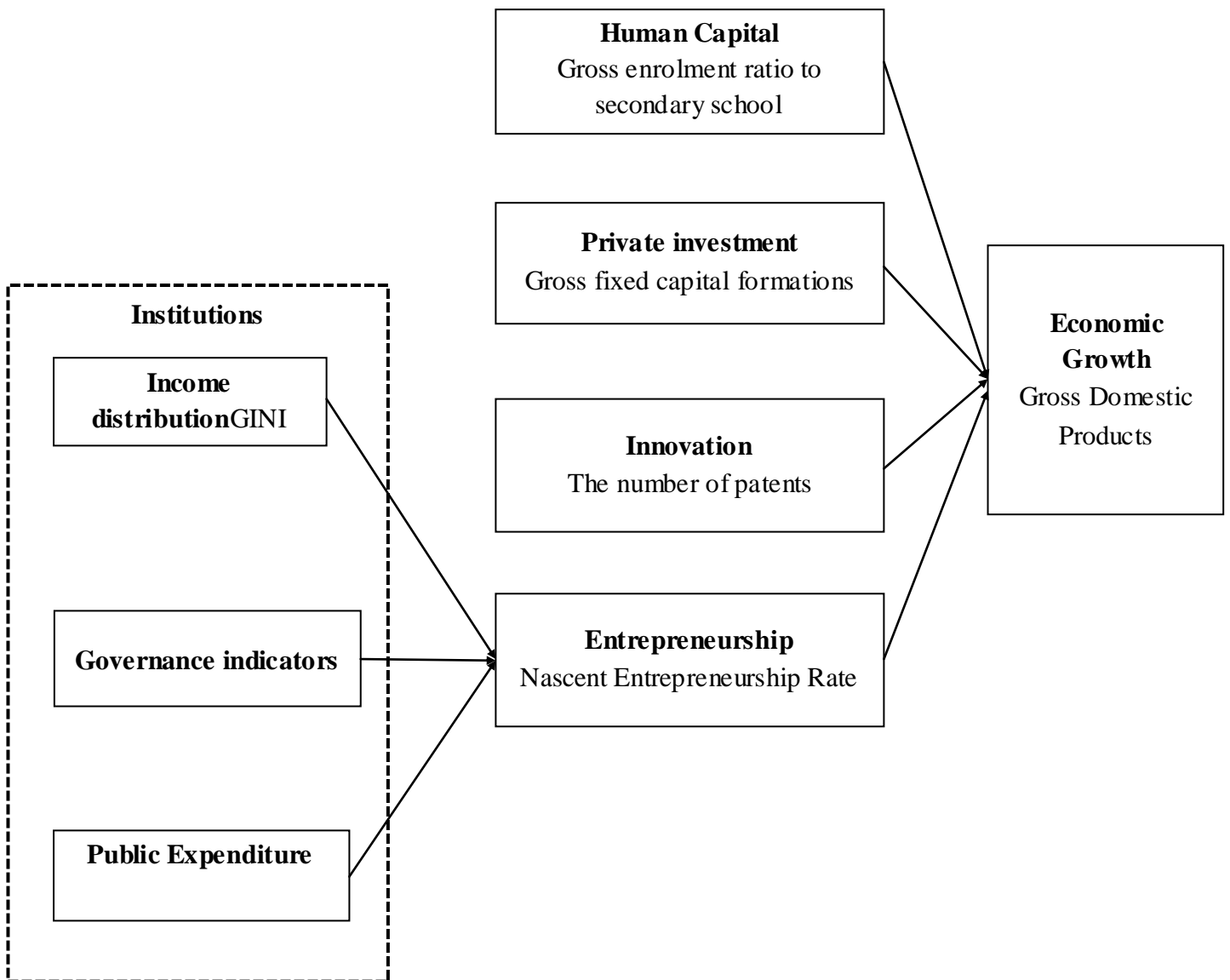
Figure 1: The relationships among institutions, entrepreneurship, and economic growth
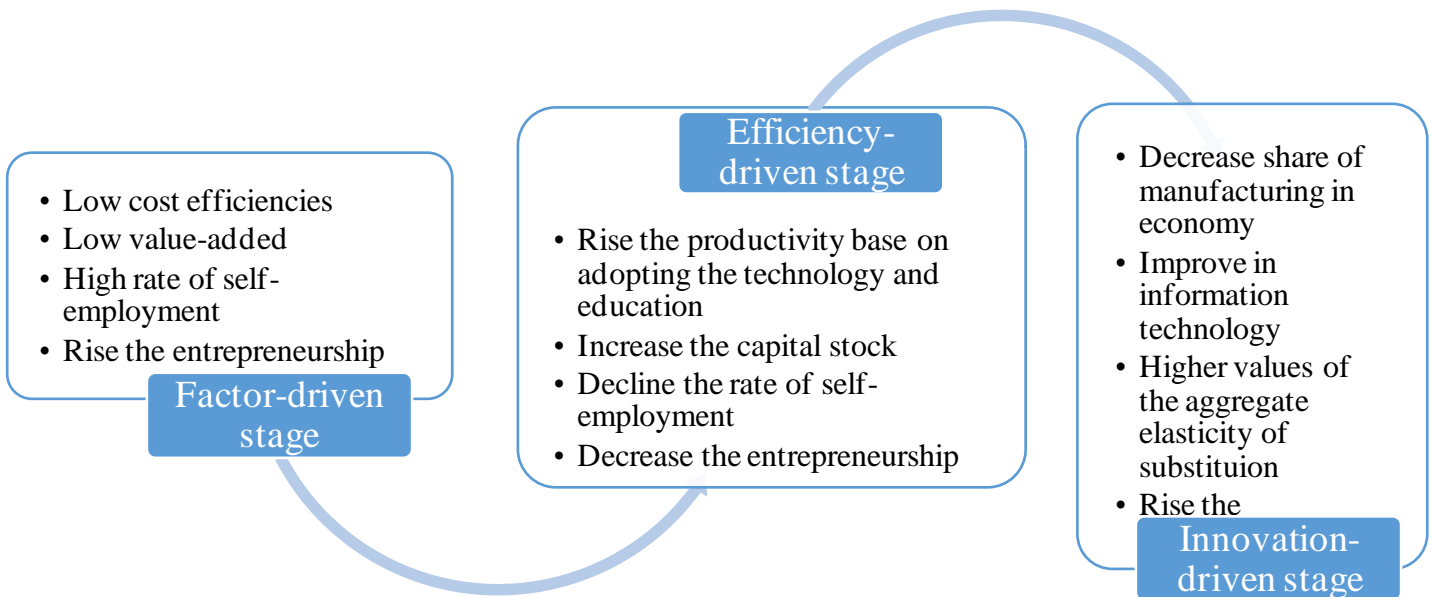
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Figure 2: The relationship between entrepreneurship and economic development
Source: synthesized by the author

The relationship between entrepreneurship and economic growth varies through three stages of the development, including the factor-driven stage, effieciency-driven stage, and innovation-driven stage(Acs, Desai, & Hessels, 2008). Each stage captures different characteristices related to productivity, innovation, and employment, creating different trends of entrepreneurial activity. In the first stage, the economy experiences the stage of small cost efficiency, low added values, small-scaled businesses, and high rate of self employment. Therefore, entrepreneurship activities are expected to increase in the factor-driven stage. The decrease in entrepreneurship is seen in the second stage when the economy can capture economics of scale and improve produtivity through adopting the technology and education. Therefore, employers can receive more benefit than in the previous stage, dropping the rate of sefl-employment. In the third stage, entreprenership is expected to increase because of the decreased share of the manufacturing sector in the economy, the improvement in information technology, and higher values of the aggregate elasticity of substituion. These reasons create more opportunities to get access toentrepreneurial activities as well as decrease transaction costs.

Methodology:

Based on the empirical models from the studies of(Galindo & Méndez, 2014), this paper uses panel data to estimate two models. The first model estimates the relationship between the entrepreneurship and economic growth. The second model determines factors affecting entrepreneurship at the national level, highlighting the effects of governance on entrepreneurship. Accordingly, the indirect impact of governance on income growth is also found. From the results of Hausman test, Random Effect is chosen for model 1 and Fixed Effect Estimate for model 2[1]. The outcomes of Hausman test are presented in Appendix.

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[1] The results for these tests are shown in Appendix B

Lags for one period are used for several variables including patent and entrepreneurship in model 1 and patent, governance, and government expenditure in model 2 to reduce simultaneous effects of variables causing endogenous problems. Following are the models

$$\ln(GDP)_{it} = \beta_0 + \beta_1 \ln(Patent)_{it-1} + \beta_2(Entrep)_{it-1} + \beta_3 \ln(PI)_{it} + \beta_4 Secondary_{it} + \mathcal{E}_{it} (1)$$

$$Entrep_{it} = \beta_5 + \beta_6(Gini)_{it} + \beta_7 \ln(Patent)_{it-1} + \beta_8 Gov_{it-1} + \beta_9 Govexp_{it-1} + \mathcal{E}_{it}(2)$$

Where the subscript t representing year ranging from 2002 to 2013, and the subscript i (i=1,…,12) is for nations. The definitions for independent and dependent variables as well as their expected signs are shown in Table 1.

It takes into account that the Governance Index, the proxy for the institution, is not collected directly. From the database of World Governance, six key indices are chosen, including *Voice and Accountability, Governance effectiveness, Regulatory quality, Political stability and absence of violence/terrorism, Rule of law, and Control of corruption.* Each component is measured by the country's score on the aggregate indicator, ranging from approximately -2.5 to 2.5. Because these factors are highly correlated with each other and will create a weak estimation, the research uses the principle component analysis method to resolve this problem[2]. This technique is to drop the large number of variables and to estimate a new variable (Governance Index) which can strongly represent for the initial variables (Fewtrell et al., 2005).

Table 1: The measurement and expected sign of the variables

VARIABLES	MESUREMENT	EXPECTED SIGN (1) Model 1 (2) Model 2
GDP	Gross domestic product (millions of USD)	
Patent	The number of patents issued of the residents, the proxy of innovation	(1) positive (2) positive
Entrep	Entrepreneurship Activity, measured by Nascent Entrepreneurship Rate, is percentage of population which are nascent entrepreneur, have age from 18 to 64.	(1) positive
PI	Gross fixed capital formation, the proxy for private investment (millions of USD)	(1) positive
Gini	GINI index, the proxy for income distribution, GINI Index equals to 0, perfect equality and equals to 100, perfect inequality.	(2) ambiguous

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[2] The results for principal component analysis are presented in Appendix A

Gov	Governance, the proxy for institution, calculated by using principal components method of six factors related national governance which are included from World Governance Database.	(2) ambiguous
Govexp	Public expenditure (millions of USD)	(2) positive
Secondary	Human capital, measure by gross enrolment ratio to secondary school (%)	(2) positive

Data Collection:

The secondary data at the nation level are collected by different international organizations. The data come from two main sources, database of Global Entrepreneurship Monitor (GEM) for the Entrepreneurship and database of World Bank for other variables.

Due to the limit of data availability, the data solely comprises of 13 emerging countries in the period 2002-2013, including seven countries in Latin America (Argentina, Brazil, Chile, Colombia, Mexico, Peru, Uruguay), four countries in Europe (Croatia, Hungary, Latvia, Russian Federation), one country in Asian (China), and one country in Africa (South Africa).

Summary statistics:

Table 2 shows the statistics summary for these mentioned variables. The mean of income growth is around 12.34% and varies from 9.16% to 16.07%. Besides, the Gini Index also shows the substantial inequality with its mean of about 45.38%. These above characteristics may coincide with features of developing countries that have fast growth and high inequality. However, innovation may largely vary among 13 countries. Absolute values of the number of patents issued range from 20 to 707,858. Entrepreneurship, Governance Index, Private Investment, and Public Expenditure are also observed to highly vary in the sample. This can be explained by the differences in development stages, geography, and culture of each nation.

Table 2: Summary of the variables

Variable	Obs	Mean	Std. Dev.	Min	Max
ln(GDP)	156	12.34	1.58	9.16	16.07
ln(PI)	156	10.82	1.67	7.32	15.28
ln(Govexp)	156	15.70	3.77	9.71	23.01
Gov	156	-1.56	1.52	-5.01	1.44
ln(Patent)	155	6.60	2.37	3.00	13.47
Secondary	130	91.47	9.11	60.80	110.48
entrep	121	7.83	5.06	1.06	31.30
Gini	116	45.38	9.16	26.84	64.79

Table 3 and Table 4 describe the correlation matrix of independent variables in the two models. According to the result, most of the correlation coefficients are less than 0.84, implying that multicollinearity is not a severe problem.

Table 3: The correlation of the variables in model 1

	Entrep	ln(Patent)	ln(PI)	Secondary
Entrep	1			
ln(Patent)	-0.399***	1		
ln(PI)	-0.078	0.839***	1	
Secondary	-0.032	-0.390***	-0.534***	1

Table 4: The correlation of the variables in model 2

	Gini	ln(Patent)	Gov	Govexp
Gini	1			
ln(Patent)	-0.096	1		
Gov	-0.508***	-0.317***	1	
Govexp	-0.436***	0.193**	0.233***	1

Results and Discussion:

The relationship between economic growth and entrepreneurship:

Table 5 presents the estimated results for the first equation using random effect model for the regression. Overall, the first two variables are statistically significant, while the last two are insignificant.

Table 5: Economic growth and entrepreneurship

Random Effect	(1)	(2)	(3)	(4)	(5)[a]
$\ln(PI)_{it}$	0.846***	0.867***	0.843***	0.830***	0.783***
	(66.097)	(48.436)	(34.141)	(29.979)	(23.048)
$Entrep_{it-1}$		0.010***	0.009***	0.009***	0.008**
		(3.007)	(2.578)	(2.601)	(2.171)
$Secondary_{it}$			0.003	0.003	0.007**
			(1.514)	(1.401)	(2.592)
$\ln(Patent)_{it-1}$				0.036	0.041
				(1.457)	(0.756)
Constant	3.187***	2.858***	2.790***	2.734***	2.822***
	(21.015)	(13.701)	(11.132)	(11.059)	(5.812)
N	156	109	88	88	80

[a]In (5), China is eliminated from the data due to the big differences from other countries in the sample. In this model, Fixed Effect is applied following Hausman test.
t statistics are in the parentheses
* $p<0.1$, ** $p<0.05$, *** $p<0.01$

The positive and significant coefficient of private investment clarifies that it helps push up the economy. The result is consistent with the previous study proposed by Stern and Stern (2002). Secondary, the proxy for human capital, is positive but insignificant. In the case of this research, the effect of human capital on economic growth is not discernible, which is in line with the previous study from Judson (2002), who has no evidence to support for the relationship between the secondary enrolment rate and economic growth in middle-income countries. So does the Patent variable, the proxy for innovation, for a reason that the number of patents issued in emerging countries is too small to have any considerable effect on economic growth. The main explanatory variable, entrepreneurship, is positive and significant, following Acemoglu (2003). As observed from the table, when entrepreneurship index last year increases by 1%, the value of GDP will rise 0.9%. It means when more people take part in productive economic activities, the economy will grow fast.

The determinants for entrepreneurship:

The coefficients of the determinants for entrepreneurship using fixed effect estimation are shown in Table 6. In general, only governance and government expenditure are significant, while the others are insignificant.

Table 6: The determinants of entrepreneurship

Fixed Effect	(1)	(2)	(3)	(4)	(5)[b]
Gov_{it-1}	-2.903**	-2.918***	-3.557**	-3.512**	-3.494**
	(-2.49)	(-2.646)	(-2.54)	(-2.488)	(-2.455)
$Govexp_{it-1}$		0.981***	1.098***	1.063***	1.059***
		(3.574)	(3.122)	(2.937)	(2.906)
$Gini_{it}$			-0.006	-0.014	-0.015
			(-0.04)	(-0.093)	(-0.098)
$ln(Patent)_{it-1}$				-0.656	-0.851
				(-0.461)	(-0.525)
Constant	3.630**	-11.737**	-13.557	-8.703	-7.352
	(-2.077)	(-2.548)	(-1.417)	(-0.61)	(-0.489)
N	113	113	83	83	81

[b]In (5), China is eliminated from the data due to the big differences from other countries in the sample. In this model, Fixed Effect is applied following Hausman test.
t statistics are in the parentheses
* p<0.1, ** p<0.05, *** p<0.01

Governance is found to negatively affect the entrepreneurial activities. This result is quite weird when previous empirical findings state that if the quality of the government improves, the entrepreneurship will become better. This estimated result is so interesting when it supposes that the ineffectiveness in the government's policies will help strengthen entrepreneurial activities. This may happen due to the lack of transparency of the government in some aspects of the economy. In this model, public expenditure, one of the government's fiscal policies, carries a significant positive sign. This implies that fiscal policies in emerging countries would have a positive impact on entrepreneurial activities. In terms of the gap between the rich and poor, the coefficient of Gini Index is negative but insignificant. This result indicates that entrepreneurship is negatively affected by Gini Index. However, its impact on entrepreneurial activities seems to be ambiguous.

Moreover, the estimation for the relationship between income inequality and economic growth are consistent with the previous findings from Deininger and Squire (1996). They found that Gini Index would not be a robust determinant for entrepreneurship when doing a research with data in recent years. Patent variable is insignificant but negative. This shows no evidence in support of the impact of innovation on entrepreneurship. As mentioned, the number of patents issued in emerging countries is usually smaller than developed countries. Therefore, its effect on entrepreneurship may not be considerable.

Conclusion:

Entrepreneurship has long been believed to be a source of economic growth, but the contribution of entrepreneurship has been observed differently between emerging and developed countries. This empirical study provides evidence on the relationship between entrepreneurship and economic growth in 13 emerging countries from 2002 to 2013. The results show that entrepreneurship really helps to boost the economy. The magnitude is relatively small with 0.9% increase in GDP caused by 1% increase in entrepreneurship. However, it is worth noticing that in order to have a good business environment, it needs a suitable institution. Hence, governance comes to the picture as a key factor that ensures the success of every entrepreneur. It can be understood that governance plays an indirect role but an important one to economic performance. Understanding that fact, this study makes an effort to examine factors that affect entrepreneurship. As expected, entrepreneurship and governance are positively related to each other, but for the case of emerging countries, the relationship is inverted. Surprisingly, the study provides evidence that better governance reduces entrepreneurship. A reasonable explanation is that for emerging countries, informal self-employment type of business accounts for the majority of the total businesses; therefore, a more organized and standardized governance means stricter rules and regulations and would discourage new businesses' formation. On the other hand, the study shows that government expenditure has positive effect on entrepreneurship as expected. These findings suggest three policy implications for emerging countries. First, policies should focus on strengthening General National Framework Conditions and promote enterprise development in the long term. These policies should aim at firms with assistance in managing and financing. Reducing regulatory burdens is also a good way to encourage entrepreneurship; however, the policies that reduce entry barriers may not be a solution for long-term development. The negative effect of governance on entrepreneurial activities shows that regulations can create differences in distribution between formal and informal activities; therefore, the goal should be to reduce necessity entrepreneurship and enhance existing small and medium-sized entrepreneurs. Particular attention should be paid to Intellectual Property Right. One of the motivations for people to start a proper business is giving their ideas legal protection. Intellectual property laws such as patents and copyrights are relatively weak in emerging countries, and this problem should be improved. Tax policy also plays an important role. Reducing tax on income of firms is a way of rewarding their entrepreneurial activities. A low level of tax makes the business more attractive and profitable. However, tax revenue collected from firms are the main source of government income and expenditure, so this is a real challenge for policy makers to balance the costs and benefits. This links straight to the second policy implication through government expenditure as following. As a result, government IBSM expenditure gives a huge boost to entrepreneurial activities. Nevertheless, budget deficit can create potential uncertainties, making the attraction of capital from investors more difficult and some individual feel too

risky to pursue an entrepreneurial path. It is believed that the possible solution should consider measures to balance future revenues and expenditure by cutting costly programs to make room for vital spending. Under the circumstance, a reasonable proposal is to focus on education system since spending on human capital is considered a wise investment for the future. Thirdly, policies should promote global integration. Therefore, any policy that aims to support local businesses must take into account the international effects. The two most important relevant policies are trade and immigration policy. Firms cannot respond to a globalized environment if the government maintains regulation barriers, so policies that promote the mobility of goods, services, and capital should be implemented. Integrating can also provide an access to foreign technology as well as high quality labor, two components of the production function, and this is often in form of FDI (Foreign direct investment). Therefore, Vietnam can also follow the policy like other emerging countries when it is integrating extensively into the world economy. Overall, the policy implications suggested by this study offer specific and realistic directions for policy making considering characteristics of emerging countries.

This is the first study attempting to provide evidence for entrepreneurship, governance, and economic growth from emerging countries. Since the study on entrepreneurship is still at its early stage, shortcomings of measurements and methodology are inevitable. One of the limitations of this paper is the availability of data. Measuring entrepreneurship is complicated which causes the problem of missing data for many important indicators. Secondly, when it comes to investigating the determinants of economic growth, based on the literature review, the endogenous problem may occur; however, until now no study tries to deal with this problem. This paper proposes a solution by including lag values of independent variables into the main regression to mitigate the simultaneous effect of independent and dependent variables; however, the robustness of the model is still questionable and needs to be fully addressed in further research.

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Appendix A: Tables of principal component analysis
Principal components/correlation

		Number of observations	=	312
		Number of components	=	6
		Trace	=	6
Rotation: (unrotated = principal)		Rho	=	1.0000

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp 1	5.316	5.036	0.886	0.886
Comp 2	0.279	0.090	0.047	0.933
Comp 3	0.190	0.075	0.032	0.964
Comp 4	0.115	0.040	0.019	0.983
Comp 5	0.074	0.048	0.012	0.996
Comp 6	0.027	-	0.004	1.000

Principal components (eigenvectors)

Variables	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6	Unexplained
Voice and Accountability	0.400	0.192	0.831	-0.212	0.246	-0.091	0
Political stability and Absence of violence/ terrorism	0.386	0.816	-0.243	0.298	-0.134	0.138	0
Governance effectiveness	0.413	-0.115	-0.456	-0.283	0.726	0.034	0
Regulatory quality	0.406	-0.464	0.117	0.724	0.038	0.285	0
Rule of Law	0.426	-0.169	-0.155	0.016	-0.323	-0.814	0
Control of corruption	0.418	-0.201	-0.074	-0.511	-0.538	0.478	0

Appendix B: Tests for choice among Pool OLS, Fixed Effects, and Random Effects

		Model 1	Model 2
FEM & Pooled OLS	**F-test**		
	F-statistic	38.83	9.66
	p- value	0.000	0.000
REM & Pooled OLS	**Breusch-Pagan test**		
	Chibar-square	168.27	40.63
	p-value	0.000	0.000
FEM & REM	**Hausman test**		
	Chi-square	6.1	17.46
	p-value	0.1921	0.0016