

The Mediating Role of Institutional Factor on the Relationship between Entrepreneurship and Economic Growth

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ABSTRACT:

Entrepreneurship has long been perceived as a crucial determinant for economic growth. There has been a considerable upsurge in researches trying to determine the main elements driving entrepreneurship and the channel through which entrepreneurship generates economic growth; however, a global consensus has not been reached yet on theoretical, methodological and empirical levels. The basic problem arises from the choice of appropriate variables reflecting the measures of the entrepreneurial activity and institutional environment and the outcome of such measures. This study examines the relationship between entrepreneurship and economic growth as well as the determinants of entrepreneurship in an unbalanced data set for 86 countries for the period 1996-2015 by considering different measures of entrepreneurial activity (TEA and Business Density) and different institutional arrangements (Distance to Frontier, Global Competitiveness index and composite governance index). A system of simultaneous equations is adopted in order to adjust for the fact that we are not able of controlling all possible bases of endogeneity between Entrepreneurship and institutions. Results have revealed different coefficients sign and magnitude based on the measures being assessed. Our findings suggest that institutional variables have positive and significant effect on entrepreneurship measured by Business Density and the latter has also a positive effect on economic growth though the significance level differ depending on the institutional variables employed. Similar conclusions cannot be drawn for entrepreneurship measured as TEA where certain measures of institutions appeared to have a negative effect on entrepreneurship and the latter has also a negative effect on economic growth.

Keywords: *Economic growth, Entrepreneurship, TEA, Business density, Institutions*

INTRODUCTION

One of the most central objectives of modern economics is defining the factors that lead to economic growth.

Traditional neoclassical theories concluded that the determinants of economic growth of a nation are capital and labor in addition to the level of technology available in that nation. The theory has developed over time with Robert Solow and at a later stage with Endogenous Growth theories that identified the factors of economic growth as capital, labor, the level of knowledge available in a given society, and the level of pro-market

government policies adopted by the government.

Since early 1990's, the field entrepreneurship has emerged gaining increased attention among researchers with substantial number of theoretical and empirical studies linking entrepreneurship to economic growth. However, these studies were mostly limited to two units of observations: the creation of the firms and the region, with little consensus regarding the relationship between entrepreneurship and economic growth on country level.

Several studies proved positive relationship

between entrepreneurship and economic growth (Vazquez, E., et al 2010; Salman, D.M. and Badr, K., 2011) whereas others found that such relationship remains undetermined and related to other conditions prevailing in the country such as institutions (Audretsch and Fritsch, 2002); Urbano and Aparicio, 2015).

Results from these studies varied depending on the definition of entrepreneurship and simultaneously the stages of development.

There persist difficulties in this regard related to absence of agreement on the definition of entrepreneurship, the units of analysis to be studied and the preconditions for the success of entrepreneurship.

Given the fact that further efforts should be achieved in this domain in order to understand how entrepreneurship is defined and therefore how it will lead to economic growth; this study will present recent hypothetical understandings from the intersection of the studies on entrepreneurship and economic growth, also providing an empirical model that highlights the role of institutional elements as a precondition involved in the relation between entrepreneurship and economic growth.

Literature Review

Despite the prevailing understanding that entrepreneurship has a positive effect on economic growth, however, not every practice of entrepreneurship is growth engendering. Since entrepreneurs are driven by personal profit opportunities, the institutions prevailing in a society significantly impact the magnitude to which entrepreneurial actions produce innovation and prolific outcomes. Institutions defined as the “rule of game” promote social, economic, and political interfaces and therefore, might affect the drivers and outcomes for an entrepreneur to participate in growth generating behavior. Since individuals react to incentives by assessing the costs and benefits of their actions, therefore, they are to a great extent influenced by the institutions prevailing in that society. A society where the individual is unable to benefit from his invention cannot be a technological hub; in another society where the costs of starting a business are too high, the individual is most likely to be dissuaded from establishing a new business and turning into an actual entrepreneur. In other words, institutions might produce encouragements for certain

actions or might discourage individuals from undertaking other actions; when the latter find profit opportunities resulting from engaging in activities like innovation and arbitrage, entrepreneurship thrives. Therefore, entrepreneurial activity depends on institutions to encourage or hinder economic growth.

In 1990, Baumol unveiled the impact of institutions on economic growth in his article “Entrepreneurship: productive, unproductive, and destructive”. His arguments were a restoration of the idea of Adam Smith who considered that economic agents following their own interest can engender value for the whole society if the underlying institutions create reciprocally valuable exchange. Baumol distinguished between three forms of entrepreneurs that encourages or hinders economic growth: productive, unproductive, and destructive. Productive entrepreneurs are the ones to introduce new goods, methods of production, new markets, and new managerial strategies, etc. while unproductive entrepreneurs are usually associated with rent seeking or even criminal activities, i.e. an entrepreneur who employs resources to lobby policymakers for subventions and grants is considered unproductive and therefore such actions diminishes long run economic growth. In 2010, Coyne, Dove, and Sobel explained the way unproductive entrepreneurship produces unproductive niches for profits and therefore alters the pattern of incentives in the society and creates unproductive opportunities, social capital and networks and consequently crowds out productive activities and hence economic growth.

As for destructive entrepreneurship, it is analogous to unproductive entrepreneurship but it adds to it destruction of the available resources in the attempt of the entrepreneur to grow his personal wealth.

Baumol emphasizes on the payoffs of productive, unproductive and destructive entrepreneurship. If the institutional environment recompenses productive entrepreneurs, then entrepreneurial players will be routed towards achieving the profits from innovation and trade; however, if gains from rent seeking and other criminal activities are greater, then the entrepreneurial players will react to those incentives consequently.

The essential institutional structure recognized in permitting productive entrepreneurship to thrive is the institution of property rights. Weak protection of property rights reflects the fact that the entrepreneurs won't be capable to maintain enough of their gains or they might consider that their capital investments will be detained or stolen, thus, it is less lucrative to participate in business ventures (Boettke and Coyne, 2003; 2009). In 2013, Acs, Carlsson, and Karlsson elucidate that securing property rights is crucial for entrepreneurs since they need to depend on the protection of their outstanding claims for the proceeds generated from the businesses they have established. After all, entrepreneurs provide capital, take risk, and enter new markets; these actions necessitate long term trust supported by stable property rights that are efficiently applied.

Another important structure is the tax. If it penalizes market success, entrepreneurs will be induced to shift their resources from designing new products and developing new markets towards more profitable projects and plans outside the market and therefore entrepreneurship become unproductive and destructive and thus, disturbs economic development and might even trigger economic decline.

Competition is considered as another institutional structure that might modify the equilibrium of incentives between different forms of entrepreneurship and therefore can accelerate or delay economic growth. In 1985, Kirzner explains that competition in the market occurs given that there aren't any arbitrary barriers to entry. Without the latter, competition engenders entrepreneurs seeking the establishment of new products and services and new technologies for production. In other words, barriers to entry can be considered as barriers for undertaking entrepreneurial activity (Boettke and Coyne, 2009).

It is essential to highlight the role of institutions since entrepreneurship is to a great extent abundant; it is present across societies, nations and over time, and entrepreneurs will constantly engage their vision and creativeness in order to realize personal benefits (Baumol, 2002; Koppl, 2007). Consequently, the variations of entrepreneurship in a certain nation do not only rely on the differences in the characteristics of the entrepreneurs but might be due to the variations

of institutions that outline and restrain the incentives to entrepreneurs.

The pioneering studies conducted in 1994 by Audretsch and Acs, and Audretsch and Fritsch, in order to test the relationship between economic growth and entrepreneurship did not emphasize on specific institutions; however, consequent empirical studies introducing institutions were conducted starting 2005 (Kreft and Sobel, 2005; Ovaska and Sobel, 2005; Bjørnskov and Foss, 2008).

Kreft and Sobel conducted the first study on how institutions and economic policy affect entrepreneurship in the United States, followed by a similar model applied in the same year by Ovaska and Sobel for transition countries. In 2008, Bjørnskov and Foss examined a larger sample of 27 countries, and McMullen, Bagby, and Palich conducted a study for 37 countries. For measuring the institutional aspect, the four studies relied on the concept of economic freedom mainly the protection of property rights, regulations and tax differences across countries.

Following studies examined more specific institutions and policies. In 2008, Nystrom investigated the relationship between institution and entrepreneurship and concluded that smaller government sector, better legal structure and property rights as well as less regulations of credit, labor and business increase entrepreneurship. In 2010, Djankov et al. investigated the effects of corporate tax rates on investment, FDI and Entrepreneurial activity.

In 2009, Ardagna and Lusardi accounted for regulations as a way to affect entrepreneurship; they concluded that strict regulations negatively affect the productivity of entrepreneurship. In 2010, Djankov et al. studied the impact of corporate tax rates on investment, FDI and entrepreneurship.

On the other hand, several studies have also accounted for governance as a proxy for institutions (Campos and Nugent, 1999).

Researchers applied various ways in order to measure entrepreneurship. First, there are prerequisites of entrepreneurship defined in the institutional framework. These comprise the ease and cost of doing business and the quality of the regulatory environment. Such measures regard entrepreneurial activity as the same as the conditions that are considered crucial for the entrepreneurial activity to thrive. Second,

measures related to the output indicators such as the number of new firms, the size of the firm, and the growth of the new firms. Third, measures that can be developed and computed through surveys investigating the attitude and social qualities that affect the residents' opinions concerning entrepreneurship.

However, there isn't any common agreement among scholars and researchers about which is the best measure to be adopted that best quantifies the entrepreneurial activity. An ideal measure should comprise the three mentioned modules (framework, output, and attitude).

In 2014, Gwartney, Lawson, and Hall, relied on an index that was published in *Economic Freedom of the World* in order to measure institutions. This measure is composed of five elements being a part of economic freedom: size of the government, legal system and property rights, sound money, freedom to trade internationally and regulation. These elements are considered crucial for entrepreneurial activity since they have great influence on the incentives in a society.

The World Bank has also developed the *Doing Business Index* in 2014 as another challenge to measure entrepreneurial activity by studying indicators of regulation.

The *Doing Business* index (World Bank Group, 2014) is another attempt to measure the entrepreneurial environment by analyzing indicators of regulation. The two central indicators are the complexity and cost of regulatory process and the strength of the legal institutions. The first comprises the costs of starting a business, paying taxes, finalizing construction permits, while the second comprises the execution of contract, labor market regulation and protection of minority investors.

Klapper, Love, and Randall has adopted this index in their study and concluded that improved regulatory environment is positively correlated with economic growth. In 2014, Jovanovic and Jovanovic studied the impact of business regulation (measured by the Doing business indicators) on foreign direct investment in 28 European and Asian countries. He found that reducing the cost of starting a business will positively affect FDI flows while more strict regulations will have negative impact on FDI and therefore on economic growth.

In 2002, Scarpetta, Hemmings, Tressel, and Woo studied the relationship between regulations and entrepreneurship. They found that the business entry rates will decrease with more rigid administrative regulations and sector specific market regulations.

Similarly, in 2003, Desai, Gompers, and Lerner concluded that greater protection of property rights and reduced government corruption will cause the growth of firm entry rate, and decrease firm exit rates.

However, Ovaska and Sobel (2005) investigated the relationship between regulations and entrepreneurship. They have relied on the EFW index for the regulation component, but they did not find a strong relationship. Nevertheless, Freytag and Thurik (2007) conducted the same study using the same data with minor adjustments and found that regulations do have an important impact on entrepreneurial activity.

Van Stel, Carree, and Thurik (2005) used the measures of entrepreneurship from the *Global Entrepreneurship Monitor* to investigate the relationship between entrepreneurship and economic growth. They found a positive relationship for rich countries only while in poor countries, entrepreneurship negatively affect economic growth.

In conclusion, the empirical literature demonstrate that there is a relationship between entrepreneurship and economic growth, however, that relationship may be driven by institutions and there are several variables used to measure both entrepreneurship and institutions since there isn't yet a sole universally established indicator measuring institutions nor entrepreneurship.

RESEARCH METHOD

Entrepreneurship is a variable that is not completely endogenous; it can be affected by Institutions. A system of simultaneous equations is adopted in order to adjust for the fact that we are not able of controlling all possible bases of endogeneity between Entrepreneurship and institutions.

The following simultaneous equation model will be considered:

$$Y = B_i I + B_m M + B_2 Z + \mu$$

$$M = B_3 X + \varepsilon_1$$

The first equation was based on the general equation of growth resulting from the contributions of Levine and Renalt (1992) and Levine and Zervos (1993). It will be divided into four parts, the dependent variable (Y), the control variables (I), the variable of interest (m), and the independent variables (Z).

The control variables (the rate of savings and investment to GDP, population growth, the initial level of per capita income, and investment in human capital measured by the secondary school enrollment rate) are chosen based on the preceding studies; variable of interest is entrepreneurship measured by TEA and New Business Density, and the independent variables were also based on previous empirical studies (Labor force participation rate; Research and Development expenditure, Exports of goods and services, and Gross national expenditure).

In this model, a lagged GDP per capita growth rate will be considered in order to capture the effect of business cycle on entrepreneurship.

Thus, the equation will be as follows:

$$Y = B_0 + B_1 GDP_{it} + B_2 POP_{it} + B_3 CAP_{it} + B_4 EDU_{it} + B_5 ENT_{it} + B_6 LAB_{it} + B_7 RD_{it} + B_8 EXP_{it} + B_9 EXPEND_{it} + B_{10} Y(-1)_{it} + \mu$$

- B₀** represents the intercept
- B** represents the coefficient value
- Y** represents GDP growth rate in year t in country i.
- GDP** represents GDP per capita in year t in country i.
- POP** represents population growth in year t in country i.
- CAP** represents Gross capital formation (%GDP) in year t in country i.
- EDU** represents the Investment in Human Capital measured as Secondary School enrollment in year t in country i.
- ENT** represents measure of entrepreneurship in year t in country i.
- LAB** represents labor force participation rate (% of total population aged 15-64) in year t in country i.
- RD** represents research and development expenditure as % of GDP in year t in country i.
- EXP** represents Exports of goods and services (%GDP) in year t in country i.

EXPEND represents Gross national expenditure in year t in country i.

The second equation was established based on classic studies on entrepreneurship that consider entrepreneurial activity as an outcome for multidimensional interaction between human capital, level of development, and institutions.

$$ENT = B_{11} + B_{12} POP_{it} + B_{13} EDU_{it} + B_{14} LAB_{it} + B_{15} GDP_{it} + B_{16} RD_{it} + B_{17} INT_{it} + B_{18} INST + B_{15} Y(-1)_{it} + \varepsilon_1$$

Where:

INT: represents Lending interest rate (Per Cent per annum) in year t in country i.

INST: represents a proxy of Institutions in year t in country i.

Interest rate was introduced to account for the ease of accessing financing for entrepreneurs which is an important determinant of entrepreneurial activity. If interest rates decreased, there would be accessible resources to the entrepreneurs and thus, more possibility to invest and innovate.

As for the institutional variable, the empirical model will be investigated through three main proxies for Institutions/governance:

1. *Distance to frontier:* The distance to frontier score measures the distance or gap between the economic performance in a nation and the best practice through the whole sample of 41 indicators covering 10 Doing Business areas: starting a business, dealing with construction permits, getting electricity, registering property, getting credit, protecting investors, paying taxes, trading across borders, enforcing contracts, and resolving insolvency.
2. *GCI: Global Competitiveness index:*

The global Competitiveness framework is adopted by the World Economic Forum's Global Competitiveness Report (GCR) whose main objective is to evaluate the ability of the world's economies to accomplish sustained economic growth. In the GCR report, this is accomplished by investigating the structures, institutions, and policies of a nation and the extent to which these infrastructures can promote economic growth over the medium term. It integrates micro and macroeconomic aspects of competitiveness made of 110 variables arranged into 12 pillars (Institutions, appropriate infrastructure, a stable

macroeconomic framework, good health and primary education, higher education and training, efficient goods markets, efficient labor markets, developed financial markets, the ability to harness the benefits of existing technologies, market size (both domestic and international), production of new and different goods using the most sophisticated production processes, and innovation)

According to Drzeniek-Hanouz, Head of Global Competitiveness and Risks, (2015), institutions has the pivotal influence on all other pillars since the beginning of measuring competitiveness in 1979.

3. *Composite governance index*: The World Bank recognized the subsequent six dimensions of governance (Kaufmann et al., 2008): Voice and Accountability, Political Stability, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption.

Since these dimensions are highly correlated with each other which will generate a weak estimation, each category of the GCI will be tested separately in order to capture the main variable affecting entrepreneurship and indirectly economic growth.

First, we elucidate the country variation in entrepreneurship by regressing the two indicators of entrepreneurship (TEA and Business Density) on the institutional variables. Second, we relate these institutional variables to economic growth equation by estimating an entrepreneurship and a growth equation.

The system of equations was estimated using SUR (seemingly unrelated regressions) in order to avoid the risk of heteroscedasticity and correlation between the error terms and the variables adopted in the model. The choice of the model was validated through the Breusch-Pagan test. For all regressions, p-value is greater than 5%, thus, we fail to reject the null hypothesis that there is no correlation among the estimated equations.

In order to achieve the goals of this research, a sample data of 86 developed and developing countries was adopted over the period 1996-2015; thus, a total number of 1097 observations. Nevertheless, due to the fact that there are several missing observations especially in the proxies of

entrepreneurship and institutions, the initial dataset was reduced to an unbalanced dataset having less observations, however, remaining sufficient to build a robust model. Countries involved in this research represent an illustrative sample because of the wide variety of countries included in this data set and it was chosen based on data availability.

The source of the data is mainly from the World Bank (World Bank's online World Development Indicators database, World Bank Doing Business project, World Economic Forum), while the data for entrepreneurship measured as TEA was extracted from the Global Entrepreneurial monitor (GEM) and data for composite governance index is obtained from the Worldwide Governance Indicators project.

RESULTS AND DISCUSSION

The following results are presented in order to exploit the relationship between institutions and entrepreneurship that determines the effect of institutionally well embedded entrepreneurship on economic growth.

There are two measures of entrepreneurship tested separately while several definitions and proxies of institutions were tested. Thus, the results will be divided into two main sections: section with business density as measure of entrepreneurship and a section with Total Early Stage Entrepreneurial Activity (TEA) as measure of entrepreneurship.

Business Density

Table 1 presents the results of a linear model explaining entrepreneurial activity as measured by Business density and the effect of business density on economic growth.

Table 1: Estimation results with DTF and GCI as institutional variables

	a- DTF			b- GCI		
	Coefficient	Std. Error	p-value	Coefficient	Std. Error	p-value
Equation 1						
Constant	1.741	5.752	0.763	-3.816	3.654	0.297
GDP	-0.000	0.000	0.360	-0.000	0.000	0.226
POP	0.263	0.511	0.610	0.165	0.288	0.568
CAP	0.173	0.068	0.014	0.195	0.042	0.000
EDU	0.030	0.039	0.452	-0.018	0.019	0.332
LAB	-0.060	0.041	0.146	-0.032	0.030	0.287
RD	0.146	0.413	0.726	-0.205	0.378	0.589
EXP	0.013	0.012	0.259	0.004	0.009	0.641
EXPEND	-0.025	0.031	0.426	0.020	0.025	0.422
ENT	0.149	0.089	0.099	0.072	0.059	0.223
GDPG(-1)	-0.006	0.121	0.958	-0.239	0.060	0.000
Equation 2						
Constant	-24.399	6.842	0.001	2.706	4.165	0.517
POP	-1.266	0.620	0.046	-0.948	0.355	0.008
EDU	-0.016	0.048	0.739	-0.076	0.023	0.001
LAB	-0.184	0.055	0.002	-0.018	0.034	0.601
GDP	0.000	0.000	0.000	0.000	0.000	0.000
RD	-3.785	0.501	0.000	-3.710	0.406	0.000
I	0.528	0.137	0.000	0.142	0.045	0.002
INST	0.450	0.078	0.000	1.961	1.030	0.058
GDPG(-1)	0.025	0.180	0.889	0.051	0.074	0.489

The presence of institutions has a positive and significant effect on entrepreneurship when considering both DTF and GCI.

In table 1. a; Population growth, Labor force participation rate and R&D have a negative and significant effect on entrepreneurship which is consistent with several prior studies while GDP, Interest rate and Institutions (DTF) has a positive and significant effect. The R-square value registered 80% which implies that 80% of the

variation in dependent variable is explained by the independent variables existing in the model.

On the other hand, entrepreneurship was found to have a significant and positive effect on economic growth.

As for table 1. b, despite that institutions measured by GCI positively affect entrepreneurship, however, entrepreneurship do not significantly affect economic growth though the sign is in the expected direction.

Table 2: Estimation results with dimensions of composite governance index as institutional variables

	a- Voice Accountability			b- Political Stability		
	Coefficient	Std. Error	p-value	Coefficient	Std. Error	p-value
Equation 1						
Constant	1.453	3.303	0.660	1.444	3.303	0.662
GDP	-0.000	0.000	0.086	-0.000	0.000	0.079
POP	0.132	0.270	0.625	0.133	0.270	0.622
CAP	0.235	0.039	0.000	0.234	0.039	0.000
EDU	-0.016	0.017	0.334	-0.016	0.017	0.339
LAB	-0.007	0.027	0.798	-0.007	0.027	0.799
RD	-0.213	0.364	0.559	-0.202	0.364	0.579
EXP	0.004	0.008	0.665	0.004	0.008	0.665
EXPEND	-0.013	0.022	0.552	-0.013	0.022	0.552
ENT	0.102	0.053	0.053	0.085	0.053	0.109
GDPG(-1)	-0.225	0.055	0.000	-0.225	0.055	0.000
Equation 2						
Constant	4.346	2.267	0.056	5.425	2.317	0.020
POP	-0.569	0.333	0.089	-0.379	0.337	0.262
EDU	-0.074	0.021	0.001	-0.081	0.022	0.000
LAB	-0.014	0.030	0.635	-0.008	0.029	0.785
GDP	0.000	0.000	0.000	0.000	0.000	0.000
RD	-3.358	0.378	0.000	-3.351	0.374	0.000
I	0.124	0.041	0.003	0.111	0.041	0.008
INST	0.325	0.071	0.001	0.913	0.439	0.038
GDPG(-1)	0.021	0.068	0.761	0.010	0.067	0.879
Equation 1						
Constant	1.366	3.303	0.680	1.436	3.303	0.664
GDP	-0.000	0.000	0.062	-0.000	0.000	0.079
POP	0.137	0.270	0.613	0.133	0.270	0.622
CAP	0.235	0.039	0.000	0.234	0.039	0.000
EDU	-0.016	0.017	0.355	-0.016	0.017	0.339
LAB	-0.007	0.027	0.803	-0.007	0.027	0.799
RD	-0.169	0.364	0.643	-0.202	0.364	0.580
EXP	0.004	0.008	0.665	0.004	0.008	0.664
EXPEND	-0.013	0.022	0.558	-0.013	0.022	0.553
ENT	0.095	0.053	0.073	0.093	0.053	0.077
GDPG(-1)	-0.225	0.055	0.000	-0.225	0.055	0.000
Equation 2						
Constant	6.708	2.230	0.003	3.844	2.183	0.079
POP	-0.903	0.326	0.006	-0.638	0.319	0.046

EDU	-0.085	0.020	0.000	-0.075	0.020	0.000
LAB	-0.016	0.028	0.560	0.002	0.028	0.934
GDP	0.000	0.000	0.000	0.000	0.000	0.000
RD	-3.594	0.366	0.000	-3.141	0.365	0.000
I	0.190	0.042	0.000	0.174	0.041	0.000
INST	2.905	0.584	0.000	2.443	0.508	0.000
GDPG(-1)	-0.005	0.065	0.936	-0.003	0.065	0.965

	e- Rule of Law			f- Control of Corruption		
	Coefficient	Std. Error	p-value	Coefficient	Std. Error	p-value
Equation 1						
Constant	1.365	3.303	0.680	1.341	3.302	0.685
GDP	-0.000	0.000	0.055	-0.000	0.000	0.040
POP	0.139	0.270	0.608	0.144	0.270	0.593
CAP	0.235	0.039	0.000	0.235	0.039	0.000
EDU	-0.015	0.017	0.364	-0.015	0.017	0.385
LAB	-0.007	0.027	0.801	-0.007	0.027	0.796
RD	-0.153	0.364	0.674	-0.115	0.364	0.752
EXP	0.004	0.008	0.660	0.004	0.008	0.652
EXPEND	-0.013	0.022	0.554	-0.013	0.022	0.544
ENT	0.099	0.053	0.061	0.110	0.053	0.037
GDPG(-1)	-0.225	0.055	0.000	-0.226	0.055	0.000
Equation 2						
Constant	6.367	2.237	0.005	7.333	2.335	0.002
POP	-0.712	0.322	0.028	-0.716	0.325	0.029
EDU	-0.085	0.021	0.000	-0.086	0.021	0.000
LAB	-0.003	0.028	0.909	-0.020	0.028	0.480
GDP	0.000	0.000	0.000	0.000	0.000	0.000
RD	-3.539	0.367	0.000	-3.281	0.368	0.000
I	0.157	0.041	0.000	0.135	0.040	0.001
INST	2.272	0.496	0.000	1.700	0.421	0.000
GDPG(-1)	-0.005	0.066	0.944	-0.001	0.066	0.987

The key result in table 2 is the consistency in coefficients magnitude and significance level of several dimensions of governance on their effect on entrepreneurship. Institutional factors have a positive and significant effect on new business registration on 1% level except for voice accountability that is significant at the 5% level which is consistent with the expectations that entrepreneurship flourishes when favorable governance conditions prevail. It also reflects the fact that good governance supports the reduction of barriers to entry. Thus, Governance is of positive effect only when starting business would reduce the amount of time and money.

The effect of the control variables on entrepreneurship is in line with the previous results when DTF and GCI were considered.

Entrepreneurial variable registered a significant and positive effect on economic growth at the exception of political stability.

TEA

Exploring the model with TEA as proxy for entrepreneurship yields results summarized in the following tables 3 and 4.

Table 3 suggests that the factors influencing the DTF contribute positively to economic growth knowing that this positive and significant effect of entrepreneurship at the 10% level was not present when the regression is estimated without the institutional variable. In addition, DTF has also a positive and significant effect of entrepreneurship. This suggests that the relationship between entrepreneurship and institutions is governed by the presence of institutional factors.

Turning to the effect of GCI, the presence of institutional variable has no effect on entrepreneurship and in its turn, entrepreneurship was not found to have any effect on economic growth.

Table 3: Estimation results with DTF and GCI as institutional variables

	a- DTF			b- GCI		
	Coefficient	Std. Error	p-value	Coefficient	Std. Error	p-value
Equation 1						
Constant	-2.301	5.746	0.690	-9.851	5.267	0.063
GDP	-0.000	0.000	0.241	-0.000	0.000	0.264
POP	0.102	0.360	0.777	-0.023	0.359	0.950
CAP	0.172	0.044	0.000	0.282	0.040	0.000
EDU	-0.013	0.022	0.557	-0.003	0.018	0.851
LAB	0.054	0.037	0.154	0.092	0.038	0.017
RD	-0.112	0.336	0.741	-0.469	0.365	0.200
EXP	0.001	0.013	0.914	0.005	0.010	0.633
EXPEND	-0.011	0.043	0.799	-0.015	0.037	0.680
ENT	0.028	0.017	0.094	0.021	0.049	0.673
GDPG(-1)	-0.003	0.097	0.976	-0.173	0.065	0.008
Equation 2						
Constant	-8.802	7.796	0.262	-15.391	5.301	0.004
POP	2.052	0.744	0.007	2.440	0.516	0.000
EDU	0.033	0.046	0.472	0.034	0.028	0.225
LAB	0.378	0.089	0.000	0.339	0.058	0.000
GDP	-0.000	0.000	0.584	-0.000	0.000	0.002
RD	-2.389	0.757	0.002	-2.207	0.531	0.000
I	-0.118	0.138	0.397	-0.016	0.050	0.747
INST	0.046	0.025	0.069	1.744	1.418	0.220
GDPG(-1)	0.524	0.227	0.024	-15.391	5.301	0.004

Table 4: Estimation results with dimensions of composite governance index as institutional variables

	a- Voice Accountability			b- Political Stability		
	Coefficient	Std. Error	p-value	Coefficient	Std. Error	p-value
Equation 1						
Constant	-5.693	3.877	0.143	-5.815	3.876	0.135
GDP	-0.000	0.000	0.003	-0.000	0.000	0.003
POP	-0.171	0.285	0.548	-0.143	0.285	0.615
CAP	0.216	0.030	0.000	0.217	0.030	0.000
EDU	-0.002	0.012	0.874	-0.002	0.012	0.885
LAB	0.103	0.028	0.000	0.108	0.028	0.000
RD	-0.332	0.299	0.268	-0.366	0.299	0.222
EXP	0.004	0.008	0.646	0.003	0.008	0.661
EXPEND	-0.007	0.029	0.808	-0.007	0.029	0.804
ENT	-0.021	0.037	0.571	-0.034	0.037	0.354
GDPG(-1)	-0.086	0.052	0.096	-0.086	0.052	0.096
Equation 2						
Constant	-10.654	3.003	0.001	-12.038	2.953	0.000
POP	2.218	0.454	0.000	1.843	0.456	0.000
EDU	0.017	0.022	0.429	0.032	0.020	0.125
LAB	0.377	0.042	0.000	0.360	0.041	0.000
GDP	-0.000	0.000	0.061	-0.000	0.000	0.419
RD	-2.386	0.418	0.000	-2.172	0.414	0.000
I	-0.020	0.033	0.542	-0.007	0.033	0.826
INST	-0.160	0.501	0.749	-1.653	0.476	0.001
GDPG(-1)	-0.017	0.086	0.845	0.005	0.085	0.950

	c- Government Effectiveness			d- Regulatory Quality		
	Coefficient	Std. Error	p-value	Coefficient	Std. Error	p-value
Equation 1						
Constant	-5.711	3.877	0.142	-5.696	3.877	0.143
GDP	-0.000	0.000	0.003	-0.000	0.000	0.003
POP	-0.167	0.285	0.558	-0.170	0.285	0.550
CAP	0.216	0.030	0.000	0.216	0.030	0.000
EDU	-0.002	0.012	0.875	-0.002	0.012	0.874
LAB	0.104	0.028	0.000	0.103	0.028	0.000
RD	-0.337	0.299	0.261	-0.333	0.299	0.267
EXP	0.003	0.008	0.647	0.004	0.008	0.646
EXPEND	-0.007	0.029	0.808	-0.007	0.029	0.808
ENT	-0.023	0.037	0.536	-0.021	0.037	0.565

GDPG(-1)	-0.086	0.052	0.096	-0.086	0.052	0.096
Equation 2						
Constant	-12.178	3.171	0.000	-11.103	3.039	0.000
POP	2.282	0.454	0.000	2.183	0.454	0.000
EDU	0.026	0.022	0.235	0.019	0.021	0.369
LAB	0.387	0.041	0.000	0.383	0.041	0.000
GDP	-0.000	0.000	0.186	-0.000	0.000	0.134
RD	-2.235	0.428	0.000	-2.406	0.418	0.000
I	-0.033	0.034	0.329	-0.026	0.033	0.437
INST	-0.907	0.614	0.141	-0.501	0.537	0.352
GDPG(-1)	-0.013	0.086	0.879	-0.016	0.086	0.848

	e- Rule of Law			f- Control of Corruption		
	Coefficient	Std. Error	p-value	Coefficient	Std. Error	p-value
Equation 1						
Constant	-5.693	3.877	0.143	-5.710	3.877	0.142
GDP	-0.000	0.000	0.003	-0.000	0.000	0.003
POP	-0.171	0.285	0.548	-0.167	0.285	0.557
CAP	0.216	0.030	0.000	0.216	0.030	0.000
EDU	-0.002	0.012	0.874	-0.002	0.012	0.875
LAB	0.103	0.028	0.000	0.104	0.028	0.000
RD	-0.332	0.299	0.268	-0.336	0.299	0.262
EXP	0.004	0.008	0.646	0.004	0.008	0.646
EXPEND	-0.007	0.029	0.808	-0.007	0.029	0.808
ENT	-0.021	0.037	0.572	-0.023	0.037	0.539
GDPG(-1)	-0.086	0.052	0.096	-0.0862	0.052	0.096
Equation 2						
Constant	-11.126	3.134	0.001	-11.2793	3.205	0.001
POP	2.206	0.453	0.000	2.214	0.453	0.000
EDU	0.018	0.021	0.395	0.018	0.021	0.384
LAB	0.382	0.041	0.000	0.384	0.041	0.000
GDP	-0.000	0.000	0.123	-0.000	0.000	0.092
RD	-2.357	0.420	0.000	-2.370	0.418	0.000
I	-0.024	0.033	0.470	-0.022	0.033	0.502
INST	-0.318	0.530	0.549	-0.275	0.440	0.533
GDPG(-1)	-0.015	0.086	0.866	-0.014	0.086	0.869

Table 4 shows that institutions measured by the dimensions of governance have a negative effect on entrepreneurship and the latter has also a negative effect on economic growth; however, the significance of the variables varies among the several dimensions.

The control and independent variables considered shows the following results in the entrepreneurship equation:

1. Population has a positive and significant effect on entrepreneurship at 1% level for all regressions
2. Labor force participation rate has also positive coefficients and significant at the 1% level for all models
3. GDP per capita has a negative coefficient and significant for only the models of Voice accountability
4. R&D has a negative and significant effect on entrepreneurship at the 1% level.
5. Governance dimensions has a negative effect on entrepreneurship for all equations, however, it is significant at the 10% level for Voice Accountability, Regulatory Quality, Rule of Law, and control of corruption while it is significant at the 5% level for Government Effectiveness and 1% level for political stability.

The negative direction of the coefficient is also in line with previous findings stated earlier, considering that governance reflects more rigid rules and presents more barriers to entry, thus, it is most probably to have a negative effect on entrepreneurship.

As for the economic growth Equation:

1. The GDP per capita variable has negative and significant effect at the 1% level
2. Gross capital formation variable values are positive and significant with p values of <0.00001 for all models.
3. Labor force participation rate has positive coefficients and significant at the 1% level for all models
4. TEA has a negative effect on economic growth for all governance equations, however, it is significant at the 1% level for

5. Voice Accountability, Government effectiveness, and Rule of Law

6. 1-year Lagged GDO growth has also a negative and significant effect.

This section investigated and discussed the relationship between entrepreneurship and economic growth using different measures for entrepreneurship and different approaches. These measurement and approaches generated different results that are inline or opposing with the literature presented previously. Thus, in the subsequent section, conclusions and recommendations will be presented for future researches.

CONCLUSION AND RECOMMENDATIONS

Entrepreneurship has proven to be greatly relevant to society. Thus, economists and policymakers have emphasized on the analysis of the effect of entrepreneurial activity on the economy. The number of research about entrepreneurship has shown rapid upsurge in several areas which suggest a propagation of the field towards diverse frontiers. In this context, several disciplines have been inspired to investigate such a phenomenon from their personal perspectives. Nevertheless, the diverse approaches and methodologies have led to contrasting findings and could not reach a common understanding that embraces the whole convolution related to entrepreneurial activity.

Researchers have faced important challenges in an attempt to understand the factors that affect entrepreneurship and its effects on economic growth. They have concluded that it is essential to create an adequate environment favoring the entrepreneurial activity, and namely institutions were identified as being particularly relevant in understanding why entrepreneurship is shaped within each nation or region and how it can contribute to economic growth. These studies considered how institutions are related on macro level to economic growth directly and through the entrepreneurial context; however, we still need to investigate if the same relationship can be also established on micro level, therefore, providing a link to entrepreneurship. Such indirect relationship is still relatively unexplored in empirical models. Exceptions are limited studies made by researchers on country level or cross

country studies for one single year, or in best cases limited homogeneous sample for countries that are similar in culture, economic situation and level of development. Consequently, the results should be validated in a panel data study.

Thus, the main objective of this research has been to explore the mediating role of institutional factors on the relationship between entrepreneurship and economic growth. In particular, this research has underlined specific objectives such as determining the institutional factors affecting the entrepreneurial activity and how the latter affects economic growth. Several measures of entrepreneurship and proxies for institutions were considered and the relationship was investigated using unbalanced panel data for 86 developed and developing countries for the period 1996-2015. A system of simultaneous equations was adopted in order to clarify how entrepreneurship functions as a channel that transfers the impact of several institutional aspects on economic growth knowing that the direction and magnitude of this relationship differ based on the measurement used for both institutions and entrepreneurship type.

The main results attained suggest strong evidence for the positive and significant effect of all proxies of institutions on entrepreneurship measured by Business density while the latter positively affects economic growth at the exception of political stability and GCI where the relationship does not appear to be significant.

When TEA is considered, similar results were found for institutions measured by DTF or GCI knowing that in case of GCI these variables were not significant. As for the dimensions of governance; there is an inverse relationship between entrepreneurship and institutions while entrepreneurship negatively affects economic growth; therefore, rigid governance designates firmer rules and regulations when TEA is considered and presents barriers to entry discouraging business formation and consequently hindering economic growth. The main drawback of applying TEA is that it is unable to account for quality differences across entrepreneurial activity; consequently, the measurement should be utilized in order to give policymakers indications about the quantity of entrepreneurship instead of its quality.

The entrepreneurial field and its relationship with institutions is considered recent, therefore, further studies in this regard will be needed.

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