Entrepreneurial Activity and Institutions. The Impact of Rule of Law and Control of Corruption.

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Abstract: The work is devoted to the analysis of entrepreneurial activities. The main purpose of paper is to better understand the institutional impact on entrepreneurship and business survival. Were used data from GEM (Global Entrepreneurship Monitor) for 98 countries throughout 1999-2016 as dependent variables such as total entrepreneurial activity (TEA), established business ownership (EBO), and early-stage business survival rate (EBO/TEA). As explanatory variables characterizing institutional environment we used the rule of law and control of corruption. The results show positive relationships between rule of law and early-stage business survival, and between control of corruption and early-stage business survival rate. Also the rule of law positively influence on level EBO. However, there was no evidence that rule of law and control of corruption are important for the total entrepreneurial activity.

1. Introduction

In this paper, an analysis of the impact of rule of law and control of corruption on the total entrepreneurial activity (TEA), established business ownership (EBO), and early-stage business survival (EBO/TEA) (Levie J. and Hart M., 2011) based on data of 98 countries participating in the GEM project (The Global Entrepreneurship Monitor - Global Entrepreneurship Monitor) in the period from 1999 to 2016. Also, there have been controlled the macroeconomic conditions, business conditions, factors of human capital development, and the fixed effects of the countries by the type of economy and the region. For these aims were applied data from World Governance Indicators (World Bank), Doing Business (World Bank), and World Development Indicators (World Bank). The main purpose of this work is to better understand the impact of rule of law and control of corruption on entrepreneurial activity and business survival.

According to the World Bank (http://www.worldbank.org/en/topic/financialsector/brief/smes-finance) Small and Medium Enterprises (SMEs) play an important role in most economies, especially in developing countries. SMEs provide up to 60% of total employment and up to 40% of national income (GDP) in developing countries. SMEs create 4 out of 5 new positions in emerging economies.

There is also a broad literature devoted to the importance of entrepreneurship and SMEs. Entrepreneurship and entrepreneurial profit is a significant factor affecting economic development and growth (Baumol, 1982). The final cause of growth is the high level of productive entrepreneurial activity (North, 1990). Entrepreneurship has a positive effect on personal wealth, firm performance, competitiveness and economic growth. In modern open economies entrepreneurship

made great contribution to economic growth (Wennekers and Thurik, 1999). Furthermore small and medium-sized enterprises have a significant effect on the employment growth and innovation (Audretsch, 2001). To a similar conclusion came Audretsch and Thurik (2001) analyzed OECD countries over different time periods and found that increases in entrepreneurial activity tend to lead to higher economy growth and a reduction of unemployment. It is necessary to say that entrepreneurship has an integral and great positive influence on economic development in cities irrespective of market size (Audretsch et al., 2015).

In this way, we establish an indisputable fact about the importance of the enterprise capital and entrepreneurship in growth, in creation of new workplaces, in long-term economic development. Consequently it is important to study determinants of entrepreneurship, SMEs growth, and what can be affected growth of entrepreneurship and SMEs.

2. Data description and hypotheses

In this study were used data from GEM (Global Entrepreneurship Monitor), World Governance Indicators (World Bank), Doing Business (World Bank), and World Development Indicators (World Bank) for 98 countries throughout 1999-2016. The Global Entrepreneurship Monitor (GEM) research consortium has been measuring entrepreneurial activity of working age adults across a wide range of countries in a comparable way since 1998. As dependent variables, were used coefficients from GEM Reports characterizing entrepreneurial development such as total entrepreneurship activity index (TEA), established business ownership (EBO), and early-stage business survival rate variable (EBO \ TEA) (Levie J. and Hart M.,

2011).

TEA is the level of entrepreneurial activity in early stages. Percent of the population ages 18-64 that is nascent entrepreneurs and owners of newly established businesses. The company paid salaries and remuneration to the owner less than 3.5 years. TEA provides only information on the proportion of the population who are planning or have already engaged in business less than 3.5 years.

EBO is the percent of the population ages 18-64 who are currently owners or managers of established businesses. The company has been paying wages and monetary compensation to the proprietor for more than 3.5 years.

To understand the reasons impeding the successful development and operation of the business, we use the ratio Established business ownership (EBO) to the Total Entrepreneurial Activity index (TEA). Early-stage business survival rate variable (EBO \ TEA) is the ratio between the established and beginning entrepreneurs (Levie J. and Hart M., 2011).

Table 1 shows the comparison of indices of entrepreneurial activity by the type of economy based on GEM data.

Table 1. Comparison of indices of entrepreneurial activity by the type of economy

Type of economy	№ of observations	Average of total entrepreneurial activity (TEA)	Average of established business ownerships (EBO)	Average of early-stage business survival rate (EBO/TEA)
Factor-driven	97	0.203	0.110	0.594
Efficiency-driven	284	0.130	0.078	0.634
Innovation-driven	335	0.073	0.063	0.977

We can see a substantial differences between indexes of entrepreneurial activity and business survival in factor-driven, efficiency-driven and innovation-

driven countries.

Below is another comparison of parameters, but by type of region. Descriptive statistics in the Table 2 illustrates that indexes vary by regions. According to descriptive statistics, it can be noted that the index of total entrepreneurial activity in developing countries is higher than in developed countries. The level of established business ownerships is bigger in developing countries too. It can be related with higher statistics of young entrepreneurs. But the index of business survival at an early stage in developed innovation countries is higher than in developing ones. It can be noted that with the growth of the economy, the business survival rate is increasing: in resource-oriented countries, the average is at the level of 0.594, in effective-oriented at 0.634, and in innovative countries at 0.977.

Table 2. Comparison of indices of entrepreneurial activity by region

Type of region	№ of observations	Average of total entrepreneurial activity (TEA)	Average of established business ownerships (EBO)	Average of early-stage business survival rate (EBO/TEA)
Africa	62	0.201	0.104	0.512
Asia & Oceania	152	0.112	0.094	0.945
Europe	342	0.067	0.061	0.964
Latin America & Caribbean	159	0.168	0.081	0.515
North America	27	0.133	0.068	0.640

Table 3 shows the comparison by the type of economy and region.

Table 3. Comparison of indices of entrepreneurial activity by the type of economy and region

Type of region	Type of economy											
	Factor-driven				***Efficiency-driven***				***Innovation-driven***			
	№ of obs.	Average of TEA	Average of EBO	Average of EBO/ TEA	№ of obs.	Average of TEA	Average of EBO	Average of EBO/ TEA	№ of obs.	Average of TEA	Average of EBO	Average of EBO/ TEA
Africa	42	0.260	0.135	0.554	20	0.078	0.034	0.419	-	-	-	-
Asia & Oceania	37	0.142	0.091	0.676	46	0.135	0.127	0.984	44	0.094	0.063	0.702
Europe	-	-	-	-	91	0.077	0.052	0.690	251	0.063	0.065	1.075
Latin America & Caribbean	18	0.195	0.085	0.534	127	0.175	0.086	0.497	13	0.071	0.036	0.576
North America	-	-	-	-	-	-	-	-	27	0.133	0.068	0.640

According to the data we can see that the average values of total entrepreneurial activity, established business ownerships and the early-stage business survival rate differ for countries with the same types of economies, but from different regions. For example, the number of nascent and young entrepreneurs (TEA) in factor-driven African countries is much higher than in countries with this type of economy in Asia and Oceania and in Latin America and the Caribbean. Perhaps, there is the influence of the social and cultural norms inherent in the population of the region, also the propensity to accept risk, and other unobservable factors affects. The early-stage business survival rate in developed countries in Europe is higher than in North America and in the innovative countries of Asia and Oceania. For instance, this may be due to measures taken to protect the SMEs from the government, and the features of the local market. It is obvious that for each type of economy and for each

type of region there are unobservable factors that effect the level of entrepreneurial activity - the decision to be an entrepreneur, and to exit the market.

Choosing variables that describe the institutional environment we focused on the rule of law and control of corruption. There are an extensive literature explaining the impact of protecting property rights and controlling corruption on economic development. Property rights are powerful way for stimulating efficiency and overcoming market failures (Barzel, 1997). It should be said that the effective institutions give rise to higher productivity growth and improved technology. These institutions include effectively enforced property rights, guarantees for contracts, trademarks, bankruptcy laws (Bardhan, 2005). Especially, the rule of law has a positive impact on the development of transitional economies (Li, 2005).

Djankov et al. (2002) analyzed the interdependence of corruption control and entry control for startup companies in the 85 countries. Countries with difficult entry regulation have a high level of corruption. Among the institutional barriers to business development the level of corruption (Corruption Perceptions Index) was considered. The negative impact of the weak institutional environment on entrepreneurial activity in Russia was demonstrated (Aidis et al., 2008). The impact of corruption on the nascent international business have been analyzed in the work of Chowdury et al. (2015). It is interesting to note that, the authors came to contradictory results. On the one hand, when the export costs and corporate taxes are high the low level of corruption helps to reduce the burden on business. But at high indirect taxes there is a positive correlation between corruption and entrepreneurship. Entrepreneurs prefer to avoid high taxes in a corrupt environment.

Table 5 presents the descriptive statistics of the rule of law and control of

corruption in the context of region and the type of economy.

Table 4. Descriptive statistics of the rule of law and control of corruption by the type of economy and region

Type of region	Type of economy								
	Factor-driven			***Efficiency-driven***			***Innovation-driven***		
	№ of observations	Rule of Law* (average estimate)	Control of Corruption * (average estimate)	№ of observations	Rule of Law* (average estimate)	Control of Corruption * (average estimate)	№ of observations	Rule of Law* (average estimate)	Control of Corruption * (average estimate)
Africa	240	-0.437	-0.502	45	-0.078	-0.206	-	-	-
Asia & Oceania	165	-0.570	-0.718	135	-0.104	-0.243	90	1.331	1.526
Europe	-	-	-	178	0.075	-0.074	315	1.473	1.520
Latin America & Caribbean	18	-0.759	-0.658	124	-0.184	0.037	13	0.921	1.165
North America	-	-	-	-	-	-	30	1.662	1.725

(* where -2.5 is a low and 2.5 is a high value)

In this case the research questions can be determined as:

(1) How the rule of law impacts on total entrepreneurial activity (TEA)?

(2) How the rule of law impacts on established business ownership (EBO)?

(3) How the rule of law impacts on early-stage business survival (EBO/TEA)?

(4) How the control of corruption impacts on total entrepreneurial activity (TEA)?

(5) How the control of corruption impacts on established business ownership (EBO)?

(6) How the control of corruption impacts on early-stage business survival (EBO/TEA)?

3. Methodology

Entrepreneurship studies involve the presence of endogeneity**.** This can be due to omitted variables, the simultaneity between entrepreneurial activity and economic growth, measurement errors of regressors, and sample selection. Estimates by the OLS method will be biased and inconsistent. Using a panel data, it is possible to solve problems with some kinds of endogeneity, using models with fixed ones, and to improve the efficiency of OLS estimates by introducing random effects (Caliendo 2013).

The model includes an unobservable effect c_i, which affect the dependent variable y_{it} (Wooldridge, 2010). The basic unobserved effects model can be written as:

$$y_{it} = X_{it}\beta + c_i + \acute{\varepsilon}_{it}$$

where X_{it} matrix of explanatory variables that vary depending on i and t (Wooldridge, 2010). The $\acute{\varepsilon}_{it}$ has a normal distribution, and an unobserved effect is invariant across time. If c_i not correlated with explanatory variables X_{it}, $t = 1, 2, \ldots, T$, т.е. Cov (X_{it},c_i) = 0 для X_{it}, $t = 1, 2, \ldots, T$, then c_i is considered to be an individual random effect. On the other hand, if c_i are arbitrarily distributed and correlated with explanatory variables, then c_i is considered to be an individual fixed effect. Both models assume strict exogeneity E ($\acute{\varepsilon}_{it}|X_{it}, c_i$) = 0, $t = 1, 2, \ldots, T$ (Caliendo 2013).

In our case, the models are as follows:

(1) $TEA_{it} = \beta_o + \beta 1^{(a)}(Rule\ of\ Law)_{it} + \gamma X_{it} + c_i + \acute{\varepsilon}_{it}^{(a)}$

(2) $EBO_{it} = \beta_o + \beta 1^{(b)}(Rule\ of\ Law)_{it} + \gamma X_{it} + c_i + \acute{\varepsilon}_{it}^{(b)}$

(3) $EBO/TEA_{it} = \beta_o + \beta 1^{(c)}(Rule\ of\ Law)_{it} + \gamma X_{it} + c_i + \acute{\varepsilon}_{it}^{(c)}$

(4) $TEA_{it} = \beta_o + \beta 1^{(d)}(Control\ of\ Corruption)_{it} + \gamma X_{it} + c_i + \acute{\varepsilon}_{it}^{(d)}$

(5) $EBO_{it} = \beta_o + \beta 1^{(f)}(Control\ of\ Corruption)_{it} + \gamma X_{it} + c_i + \acute{\varepsilon}_{it}^{(f)}$

(6) $EBO/TEA_{it} = \beta_o + \beta 1^{(g)}(Control\ of\ Corruption)_{it} + \gamma X_{it} + c_i + \acute{\varepsilon}_{it}^{(g)}$

where c_i is an individual random effect and X_{it} contains control variables which are indicated in the Table 4:

Table 4. Variables description

Variables	Source
Dependent variables	
Total entrepreneurial activity (TEA)	Global Entrepreneurship Monitor (GEM)
Established business ownership (EBO)	Global Entrepreneurship Monitor (GEM)
Early-stage business survival (EBO/TEA)	Global Entrepreneurship Monitor (GEM)
Explanatory variables	
Rule of Law	World Governance Indicators (World Bank)
Control of Corruption	World Governance Indicators (World Bank)
Control variables	
Business conditions	
Cost to start a business (% of income per capita)	Doing Business (World Bank)
Cost to register property (% of property value)	Doing Business (World Bank)
Cost to enforce a contract (% of claim)	Doing Business (World Bank)
Cost to build a warehouse (% of income per capita)	Doing Business (World Bank)
Total tax rate (% of commercial profits)	Doing Business (World Bank)
Macro-economic conditions	
GDP per capita, PPP (constant 2011 international $)	World Development Indicators (World Bank)
Employment to population ratio, 15+, total (%) (modeled ILO estimate)	World Development Indicators (World Bank)
Demography and Human Capital	
Population, total	World Development Indicators (World Bank)
Labor force with secondary education (% of total)	World Development Indicators (World Bank)
Labor force with tertiary education (% of total)	World Development Indicators (World Bank)

Estimates within the model with random effects are performed by the generalized least-squares method (GLS).

4. Estimation results and conclusion

Estimation results presented in Table 5-7. There are no evidences that rule of law impacts on total entrepreneurial activity. Control of corruption negatively correlated with TEA. In the case with established business ownership the rule of law positively influence on level EBO. Also were found strong positive impacts between rule of law and early-stage business survival, and between control of corruption and early-stage business survival rate. The results proved that a favorable institutional environment plays an important role in the development of small business. Influence of other control variables requires an explanation in the further discussions.

Table 5. Estimation results for dependent variable total entrepreneurial activity

	(RE) TEA	(RE) TEA	(RE) TEA	(RE) TEA
Rule of law	-0.00739		-0.00131	
	(0.00778)		(0.00882)	
Control of corruption		-0.0134*		-0.00904
		(0.00689)		(0.00762)
Log of cost to start a business	-0.00229	-0.00219	-0.00135	-0.00135
	(0.00140)	(0.00139)	(0.00117)	(0.00116)
Log of cost to register property	0.00109	0.00141	-0.000681	-0.000176
	(0.00292)	(0.00291)	(0.00286)	(0.00285)
Log of cost to enforce a contract	0.0413***	0.0392***	0.0460***	0.0447***
	(0.00906)	(0.00911)	(0.00967)	(0.00969)
Log of cost to build a warehouse	0.00161	0.00218	-0.000262	-0.00000666
	(0.00308)	(0.00307)	(0.00318)	(0.00312)
Log of total tax rate	-0.0129	-0.0124	-0.00748	-0.00788
	(0.00989)	(0.00986)	(0.00983)	(0.00979)
Log of GDP per capita	-0.0380***	-0.0334***	-0.0503***	-0.0429***
	(0.00832)	(0.00814)	(0.0117)	(0.0116)
Log of employment to population ratio	0.144***	0.154***	0.148***	0.156***
	(0.0253)	(0.0260)	(0.0274)	(0.0283)
Log of population	-0.00115	-0.00226	-0.000301	-0.00140
	(0.00351)	(0.00356)	(0.00426)	(0.00428)
Log of labor force with secondary educ.			-0.00300	-0.00281
			(0.00864)	(0.00862)
Log of labor with tertiary educ.			0.0170**	0.0163**
			(0.00712)	(0.00708)
Constant	-0.144	-0.204	-0.128	-0.206
	(0.147)	(0.149)	(0.159)	(0.165)
Observations	518	518	354	354
Number of groups	98	98	72	72
R-sq within	0.0207	0.0255	0.0518	0.0552
R-sq between	0.550	0.554	0.536	0.539
R-sq overall	0.542	0.547	0.495	0.507
Wald chi-sq	123.4	126.7	87.62	89.63

Standard errors in parentheses
* $p < .1$, ** $p < .05$, *** $p < .01$

Table 6. Estimation results for dependent variable established business ownership

	(RE) EBO	(RE) EBO	(RE) EBO	(RE) EBO
Rule of law	0.00722		0.0187**	
	(0.00602)		(0.00802)	
Control of corruption		-0.00379		0.00271
		(0.00536)		(0.00675)
Log of cost to start a business	-0.00123	-0.00142	-0.000960	-0.00115
	(0.00109)	(0.00108)	(0.000902)	(0.000906)
Log of cost to register property	-0.000226	0.000218	-0.00216	-0.00142
	(0.00226)	(0.00226)	(0.00262)	(0.00264)
Log of cost to enforce a contract	0.0118*	0.0101	0.0152*	0.0149*
	(0.00701)	(0.00708)	(0.00811)	(0.00823)
Log of cost to build a warehouse	0.000720	0.000554	0.00360	0.00243
	(0.00239)	(0.00238)	(0.00260)	(0.00258)
Log of total tax rate	-0.000357	-0.000740	-0.00201	-0.00288
	(0.00766)	(0.00766)	(0.00820)	(0.00826)
Log of GDP per capita	-0.0244***	-0.0170***	-0.0497***	-0.0373***
	(0.00644)	(0.00633)	(0.0108)	(0.0107)
Log of employment to population ratio	0.0499**	0.0552***	0.0747***	0.0728***
	(0.0196)	(0.0202)	(0.0245)	(0.0253)
Log of population	0.00466*	0.00393	0.00753*	0.00596
	(0.00271)	(0.00277)	(0.00423)	(0.00429)
Log of labor force with secondary educ.			0.00985	0.0106
			(0.00701)	(0.00706)
Log of labor with tertiary educ.			0.00621	0.00822
			(0.00637)	(0.00640)
Constant	0.00294	-0.0684	0.0457	-0.0405
	(0.114)	(0.116)	(0.142)	(0.148)
Observations	518	518	354	354
Number of groups	98	98	72	72
R-sq within	0.0155	0.0124	0.0516	0.0417
R-sq between	0.268	0.269	0.260	0.232
R-sq overall	0.151	0.158	0.0851	0.0806
Wald chi-sq	38.57	37.45	36.56	30.76

Standard errors in parentheses
* $p < .1$, ** $p < .05$, *** $p < .01$

Table 7. Estimation results for dependent variable early-stage business survival

	(RE) EBO/TEA	(RE) EBO/TEA	(RE) EBO/TEA	(RE) EBO/TEA
Rule of law	0.145***		0.171**	
	(0.0496)		(0.0671)	
Control of corruption		0.0840*		0.121**
		(0.0460)		(0.0612)
Log of cost to start a business	0.00153	-0.00199	-0.00301	-0.00540
	(0.0109)	(0.0108)	(0.0114)	(0.0114)
Log of cost to register property	0.0121	0.0142	0.000178	0.00266
	(0.0187)	(0.0191)	(0.0218)	(0.0221)
Log of cost to enforce a contract	-0.0953	-0.0967	-0.169**	-0.165**
	(0.0626)	(0.0639)	(0.0811)	(0.0822)
Log of cost to build a warehouse	-0.0155	-0.0229	0.0161	0.00153
	(0.0216)	(0.0218)	(0.0275)	(0.0274)
Log of total tax rate	0.0521	0.0451	0.0555	0.0507
	(0.0680)	(0.0689)	(0.0830)	(0.0839)
Log of GDP per capita	-0.0144	0.0224	-0.0306	-0.000292
	(0.0540)	(0.0545)	(0.0911)	(0.0926)
Log of employment to population ratio	-0.333**	-0.366**	-0.308	-0.402*
	(0.165)	(0.173)	(0.214)	(0.226)
Log of population	0.0458**	0.0480**	0.0534*	0.0532*
	(0.0213)	(0.0221)	(0.0299)	(0.0308)
Log of labor force with secondary educ.			0.0512	0.0580
			(0.0777)	(0.0783)
Log of labor with tertiary educ.			-0.0969*	-0.0803
			(0.0569)	(0.0576)
Constant	1.523	1.320	1.769	1.811
	(0.966)	(1.004)	(1.248)	(1.331)
Observations	518	518	354	354
Number of groups	98	98	72	72
R-sq within	0.00113	0.000350	0.0265	0.0252
R-sq between	0.219	0.184	0.176	0.144
R-sq overall	0.215	0.186	0.148	0.124
Wald chi-sq	28.34	22.05	20.96	17.96

Standard errors in parentheses
* $p < .1$, ** $p < .05$, *** $p < .01$

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Appendix

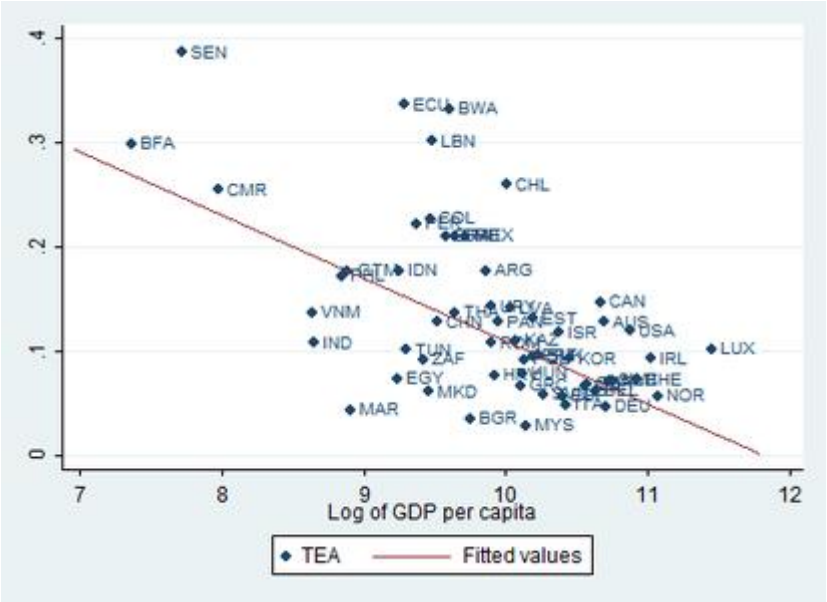

Figure 1. Graph for 2015

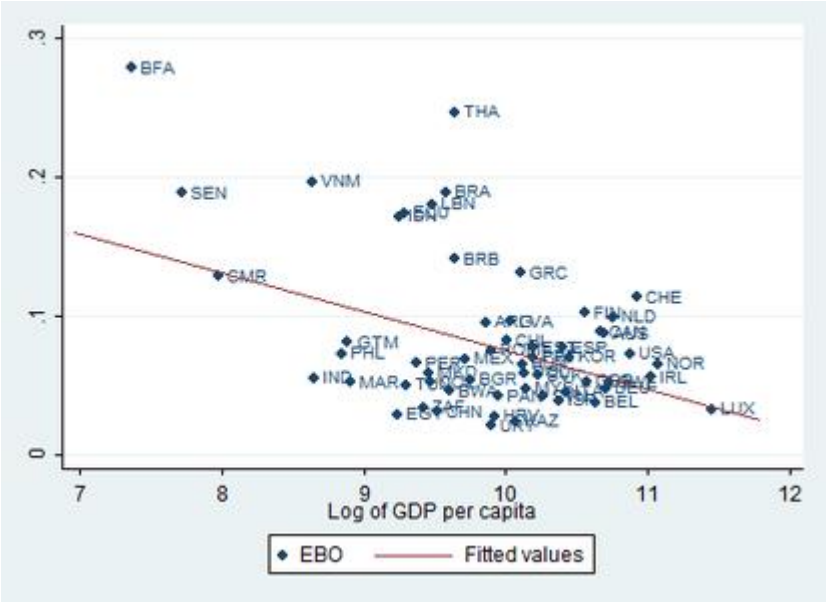

Figure 2. Graph for 2015

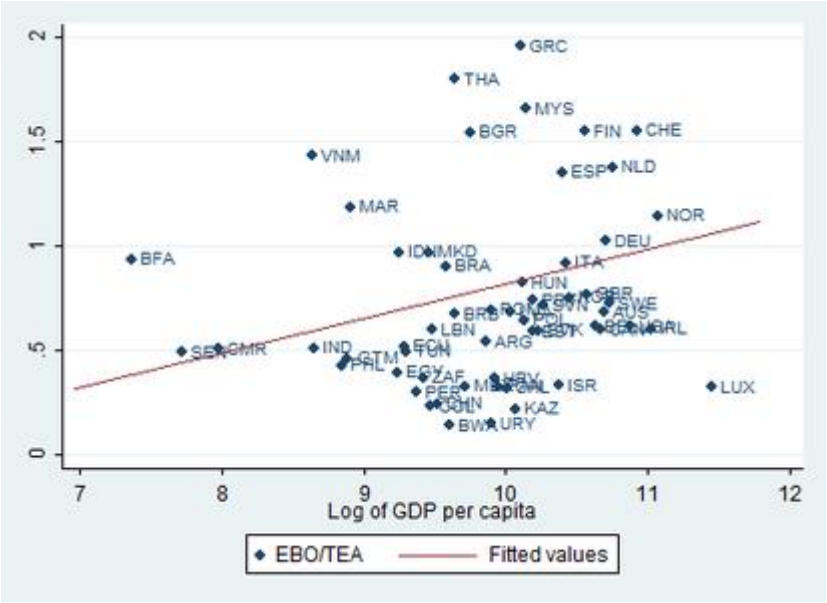

Figure 3. Graph for 2015

Table 8. Descriptive statistics by the type of economy

Type of economy	№ of obs.	Total entrepreneurial activity (mean)	Established business ownership (mean)	Early-stage business survival (mean)	Rule of law (mean)	Control of corruption (mean)	Cost to start a business (% of income per capita) (mean)	Cost to register property (% of property value) (mean)	Cost to enforce a contract (% of claim) (mean)	Cost to build a warehouse (% of income per capita) (mean)	Total tax rate (% of commercial profits) (mean)	Employment to population ratio, 15+, total (%) * (mean)	Labor force with secondary education (% of total) (mean)	Labor force with tertiary education (% of total) (mean)
Factor-driven	14	0.179	0.100	0.584	-0.648	-0.549	37.921	4.850	29.621	5.571	49.378	53.385	28.057	18.578
Efficiency-driven	154	0.114	0.072	0.663	0.009	-0.031	12.648	3.644	25.985	4.657	43.277	53.274	46.183	22.048
Innovation-driven	186	0.067	0.065	1.023	1.496	1.543	4.628	4.751	20.403	2.278	43.183	56.192	45.686	31.232

*Employment to population ratio, 15+, total (%) (modeled ILO estimate)

Table 9. Correlation matrix

	Total entrepreneurial activity (TEA)	Established business ownership (EBO)	Early-stage business survival rate (EBO/TEA)	Rule of law	Control of corruption	Log of GDP per capita	Log of cost to start a business	Log of cost to register property	Log of cost to enforce a contract	Log of cost to build a warehouse	Log of population (total)	Log of total tax rate	Log of employment to population ratio	Log of labor force with secondary education (% of total)	Log of labor force with tertiary education (% of total)
Total entrepreneurial activity (TEA)	1.0000														
Established business ownership (EBO)	0.5931	1.0000													
Early-stage business survival rate (EBO/TEA)	-0.3777	0.3942	1.0000												
Rule of law	-0.4805	-0.1644	0.3568	1.0000											
Control of corruption	-0.3997	-0.1572	0.2949	0.9528	1.0000										
Log of GDP per capita	-0.5689	-0.2798	0.3318	0.8377	0.7942	1.0000									
Log of cost to start a business	0.2963	0.1799	-0.1131	-0.4593	-0.4495	-0.4211	1.0000								

Log of cost to register property	-0.0304	0.0388	0.1054	0.0716	0.0945	-0.0321	0.1990	1.0000							
Log of cost to enforce a contract	0.3336	0.0679	-0.1859	-0.2756	-0.2404	-0.3585	0.1283	-0.0173	1.0000						
Log of cost to build a warehouse	-0.0196	-0.1488	-0.0968	-0.2651	-0.1681	-0.2280	0.0669	0.2660	0.2645	1.0000					
Log of population (total)	0.0970	0.0981	-0.0267	-0.2733	-0.2913	-0.1412	0.2136	0.0186	0.1706	0.0437	1.0000				
Log of total tax rate	0.0813	0.0534	0.0476	-0.0993	-0.1178	-0.0135	0.2394	0.1367	0.0122	-0.1196	0.3579	1.0000			
Log of employment to population ratio	0.3268	0.2368	-0.0713	0.2139	0.3302	0.2187	-0.1424	-0.1459	-0.0862	-0.2870	0.0026	0.0574	1.0000		
Log of labor force with secondary education (% of total)	-0.3134	-0.3060	0.0281	0.2969	0.1998	0.3310	-0.2282	-0.2064	-0.0124	-0.1654	-0.2490	-0.0984	-0.1623	1.0000	
Log of labor force with tertiary education (% of total)	-0.3003	-0.2219	0.1245	0.4768	0.4223	0.5934	-0.3307	-0.0629	-0.2305	-0.1341	-0.0643	0.0178	0.1366	0.2591	1.0000

Table 10. Sample

Factor-driven economy		
Country code	***Country***	***Freq.***
BOL	Bolivia	1
DOM	Dominican Republic	1
DZA	Algeria	1
ETH	Ethiopia	1
GHA	Ghana	1
IRN	Iran, Islamic Rep.	1
NAM	Namibia	1
PHL	Philippines	1
TUN	Tunisia	2
VEN	Venezuela, RB	3
WBG	West Bank and Gaza	1
Efficiency-driven economy		
Country code	***Country***	***Freq.***
ARG	Argentina	7
BIH	Bosnia and Herzegovina	5
BRA	Brazil	5
CHL	Chile	4
COL	Colombia	7

CRI	Costa Rica	3
ECU	Ecuador	5
EGY	Egypt, Arab Rep.	3
GTM	Guatemala	3
HRV	Croatia	10
HUN	Hungary	10
IDN	Indonesia	2
JOR	Jordan	1
LTU	Lithuania	4
LVA	Latvia	9
MAR	Morocco	1
MEX	Mexico	4
MKD	Macedonia, FYR	5
MNE	Montenegro	1
MYS	Malaysia	6
PAN	Panama	3
PER	Peru	6
POL	Poland	4
ROM	Romania	8
RUS	Russian Federation	8

SAU	Saudi Arabia	1
SLV	El Salvador	1
SRB	Serbia	2
SVK	Slovak Republic	4
THA	Thailand	3
TUR	Turkey	6
URY	Uruguay	7
ZAF	South Africa	6
Innovation-driven economy		
Country code	***Country***	***Freq.***
AUS	Australia	2
AUT	Austria	4
BEL	Belgium	10
CAN	Canada	4
CHE	Switzerland	8
CZE	Czech Republic	3
DEU	Germany	9
DNK	Denmark	9
ESP	Spain	10
EST	Estonia	3

FIN	Finland	10
FRA	France	10
GBR	United Kingdom	10
GRC	Greece	10
HKG	Hong Kong, China	2
IRL	Ireland	9
ISL	Iceland	6
ISR	Israel	2
ITA	Italy	9
LUX	Luxembourg	2
NLD	Netherlands	10
NOR	Norway	10
NZL	New Zealand	1
PRT	Portugal	6
SGP	Singapore	4
SVN	Slovenia	9
SWE	Sweden	8
USA	United States	6