The Relationship between Formal Institutions and Entrepreneurship: A Cross-Country Analysis

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Abstract:

This paper explores the relationship between formal institutions and entrepreneurship. Using the international data from the Global Entrepreneurship Monitor (GEM) and the Worldwide Governance Indicators (WGI) projects, we show that formal institutions have a different impact on early-established and mature entrepreneurial activity rates. The relationship between formal institutional dimensions (rule of law, control of corruption, regulatory quality) and two entrepreneurial activity rates (total early-stage entrepreneurial activity and established business ownership rates) are estimated. We theorize that formal institutions create necessary conditions where both early established and mature entrepreneurship operate. Since entrepreneurship depends not only on the institutional environment but also on the stage of economic development, we conduct a cross-country analysis, including two groups of countries such as efficiency-driven and innovation-driven economies. Our empirical results confirm that in efficiency-driven countries the relationship between formal institutions and the TEA rate is more intense, while in innovation-driven countries this relationship is stronger between formal institutions and the established business ownership rate. We also discover that the rule of law plays the most important role in relation to entrepreneurial activities, meanwhile in the case of mature entrepreneurship in efficiency-driven economies; regulatory quality turns out to be more important.

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Author Contributions: Ganira Ibrahimova and Natalia Tsatsenko contributed equally to this work.

1. Introduction

In recent decades, the contribution of entrepreneurship to economic growth has been widely recognized (Wong et al., 2005; Desai, 2011; Acs et al., 2014; Urbano et al., 2019). Evidence from entrepreneurial literature shows that entrepreneurship boost innovation, creates new job places and provides a more fair distribution of income (Baumol, 1990; Acs, 2006; Valliere and Peterson, 2009). However, the contribution of entrepreneurial activities to a total economy is significantly different among countries, even if the group of countries is belonged to one geographical area and has some similarities in culture. It leads to the block of questions such as: what are the determinants that influence the formation of entrepreneurship in a country; why does entrepreneurial activity flourish in some counties and fails in others; why conditions for entrepreneurial activities are less sustainable in developing countries than in developed even if the former has a higher rate of the total early entrepreneurial activities. All these questions are related to the institutions that play a central role in explaining economic performance and differences in the entrepreneurial landscape among countries.

Furthermore, institutions are of importance for economic growth, economic development, and entrepreneurship. As stated in the paper by Acemoglu and Robinson (2008), institutions are considered as the fundamental causes of economic growth and also, specific institutional characteristics are reasons why economic outcomes are different across countries. Institutions condition the incentives of and the constraints on economic actors, and as a result, institutions form economic outcomes (North, 1990). The connection between institutions and entrepreneurship is that institutions make a contribution to building the macroeconomic foundations of microeconomic behavior (Minniti and Levesque, 2008). For example, institutional arrangements influence not only the level of entrepreneurship in a country or a region but also the type of entrepreneurship initiatives, by making them less or more productive and sustainable (Bruton et al., 2010). It is important to underline that entrepreneurship is associated with human nature, and then, the realization of the entrepreneurial propensity of individuals is highly dependent on the quality of institutions in a country, in the context of the microeconomic side (Baumol, 1990). Having made new comprehensive syntheses of the literature over the last 25 years (from 1992 to 2016) about the interaction among entrepreneurship, institutions and economic growth, Urbano et al. (2019) summarize that entrepreneurship has different impacts on the economy due to institutions among countries and regions.

Hence, the study of the relationship between institutions and entrepreneurship remains a focus of the growing interest of researchers and policymakers. Our paper is in the line of other works which

continue to uncover the relationship between institutions and entrepreneurship. Before we describe our intended contribution to this field, we highlight the existing direction in this research area. So, the effects of institutions on entrepreneurship could be divided into the following fourth ways. Firstly, plenty of literature studies the impact of institutional dimension on two types of entrepreneurship such as the necessity and opportunity (Wong et al., 2005; Van Stel et al., 2007; Fuentelsaz et al., 2015; Amorós et al., 2019) and these analyses are mostly based on the cross-country sample. Besides, the researchers attempt to connect this relationship to different economic development stages. For example, Fuentelsaz et al. (2015) conclude that the development of formal institutions primarily benefits opportunity entrepreneurship which is linked to economic growth. Additionally, formal institutions favor the relative presence of necessity entrepreneurship. Secondly, several papers examine the different effects of formal and informal institutions on opportunity entrepreneurship (Fuentelsaz et al., 2015; Aparicio et al., 2016). Thirdly, a huge research area on the topic of the relationship between entrepreneurship and institution is associated with the effect of different formal institutions on new business formation either inside one country (Agostino et al., 2020) or in a cross-country sample (Klapper et al., 2007; Levie and Autio, 2011; Aidis et al., 2012; Stenholm et al., 2013). Fourthly, only a few papers analyze how various institutional dimensions may differently affect either the entrepreneurial stage (Hartog et al., 2010) or entrepreneurial aspiration (Troilo, 2011). As we can see from entrepreneurship and institutional literature, formal institutions shape either "good" or "bad" conditions for entrepreneurs, and then it influences the sustainability of entrepreneurship in economics. In this way, in the previous literature, there are a lot of different studies on the topic of how the quality of institutions affects the total early entrepreneurial activity rate. However, there is still a gap in this research field what is the impact of institution on the established business ownership rate, and there is a lack of knowledge of comparison between the role of institutions on those two different entrepreneurial rates.

The goal of this paper sheds light on the effect of whether different institutional dimensions could enable or hinder entrepreneurial activities on two different stage such as early and mature. In this sense, we explore the relationship between three formal institutional dimensions and two entrepreneurial rates for the sample of countries, by using the statistical method of correlation and simple linear regression. We focus on six single relationships independently from each other and analyze the correlation between them for each group of countries. Afterwards, we compare the results and examine how they could be associated with the economic development stage of these countries.

Note that the sample of countries is presented by two groups of countries: efficiency- and innovation-driven. Entrepreneurial data is derived from the Global Entrepreneurial Monitor project which provides internationally consistent, comparable data to assess entrepreneurial activities in different countries. Innovation-driven countries are characterized by a healthy set of basic requirements and factors for creating an enabling environment for entrepreneurship and innovation. Efficiency-driven countries tend to grow faster than wealthier countries and strive for a robust economy as in countries with innovation economies. Nevertheless, they are still in the process of further development and establishment of sustainable conditions for entrepreneurial activities. A comparison between two groups of countries allows us to see the role of the institution in creating stable entrepreneurship at different stages of development. To point out that in this work, we deal only with those indicators that might have a direct effect on entrepreneurial activity such as the rule of law, control of corruption or regulatory quality which comes from well-known institutional database as the Worldwide Governance Indicators project.

To achieve the research aim, the following research questions are examined in this paper:

- Which institutional dimension (rule of law, control of corruption, or regulatory quality) has a stronger relation to the early (TEA) and the mature (EBO) rates?

- Are there any differences in these effects between two groups of economies, namely in efficiency-driven and innovation-driven economies?

This work may help policymakers design policy to shape a sustainable entrepreneurship landscape and support entrepreneurial activities, particularly in fast-growing developing countries. Furthermore, the paper will be interesting for future researchers who are interested to investigate deeply the impact of different formal institutions on early and mature entrepreneurial rates and the results of the paper will be helpful for further country studies.

After the introduction, this paper is structured as follows. In Section 2, the theoretical framework of institutions and entrepreneurship is reviewed. Then, the key data sources concerning entrepreneurship and institution under our cross-country analysis are highlighted; and the selected indicators used in this empirical part are defined. In Section 3, the methodology employed is outlined. The samples of countries, variables, and sources of data are described, and the results of the descriptive statistics are explained. In Section 4 the empirical results of the analysis are presented for each group of countries. In Section 5 the comparison between the counties' results is discussed. Section 6 concludes.

2. Institutions and entrepreneurship: theoretical framework, measurement issues and indicators

2.1. Institutions: definitions and theoretical background

Economists who have highly emphasized the role of institutions and establish the mainstream of new institutional economics are Douglass North, Ronald Coase, Oliver Williamson and Elinor Ostrom. They were even awarded by Noble Prize for the work in this field. On the basis of their researches, the new institutional economy appeared. The new institutional economy concentrates on several explanations of the institutions' impact on economic behavior and economic development: those that reduce transaction costs, encourage trade and contribute to development, and those that direct the state to protect property rights rather than expropriate them. Further, the diverse group of well-known institutionalists and economists (North (1990, 1991; Acemoglu and Robinson, 2008; Greif, 2006; Gneezy and Rustichini, 2000; etc.) state, that institutions matter a big deal for the economic behavior and development.

The first scientist, who defined the institution, was Douglass North. According to his definition, institutions are the humanly devised constraints that structure political, economic and social interaction. Throughout history, people have created institutions to secure order and reduce uncertainty in interaction processes. Along with the standard economic constraints, they also define choice sets and thus determine transaction and production costs, profitability and feasibility of engaging in different economic activities (North, 1991).

When we look at the definitions of institutions in the modern literature, we will find out that a large body of it has been built on the works of Coase, Williamson, and North. We will also find out that the importance of institutions since that time has increasingly grown, and now they are widely explained and well discussed in more modern development papers (Grindle, 2004; Ackerman, 2004; North et al., 2009; 2013; Leftwich and Sen, 2010). However, the interpretation of institutions as a tool providing the framework for social interactions could differ. According to Chang and Evans (2005) institutions does not exist separately from the individuals, but embedded in normative values and cultures that are internalised and impact either social behavior or self-identity. Barley and Tolbert (1997) see the complex of institutions as a "web of values, norms, rules, beliefs and taken for granted assumptions". Leftwich (2010) states that the establishment of institutions stands on the interaction process between social structure and individual agency; being dependent on actors to create and adopt norms that are key to stable social conditions.

Thinking in terms of the relation between institutions and entrepreneurship, the importance of the following terminology, such as "Game rules", "Bad" and "Good" institutions is reflected. In more detail,

the activity of any entrepreneur or economic agent in society is also governed by a certain set of rules (North, 1991). These rules both structure the interaction and create restrictions. As soon as a rule emerges, there might be incentives to break it, so the rules are often accompanied by enforcement mechanisms for their execution. Therefore, institutions are kind of "Game rules" that are working in society, as well as organizations and businesses operating in this environment are "Game players", acting accordingly to these rules (North, 1991). When these rules are clear and well defined, then as a result, the opportunistic behavior decreases, the trust increases. This leads in its turn to the increase of the long-term contracts enforcement, reduction of transaction costs and as a result, to an efficient institutional structure (North et al., 2013). On the contrary, "bad" quality institutions might reduce the incentives to invest and prevent the process when resources have been allocated in the most productive way (Knowles and Weatherson, 2006, p.10). Quality of institutions can shape or destroy the conditions for entrepreneurship (Baumol, 1990; Johnson et al., 1997).

2.2 Classification of Institutions: Formal and Informal

If we refer to the classification of institutions, North (1990), describes the function of institutions as a framework, where formal institutions are found in rules, laws, regulations and policies are embedded in and overlap with established social attitudes, customs and values, distinguished as informal institutions (Casson et al., 2010). Following the North definition, institutions could be both formal and informal. Formal institutions are rules that are provided in written form, while informal institutions are codes of behavior, conventions and customs in contrast to formal ones. Therefore, what he means by distinguishing between formal and informal institutions is that in the case of formal institutions, people are not only dealing with codified rules, but also with well-organized sanctions. Informal institutions, on the contrary, are referring to those institutions where the rules are not codified, nor the sanctions. In most cases, the informal institutions have been inherited within the social group, the society, the culture and people learn about them through the interactions they make (North 1990). Formal and informal, institutions undoubtedly have very big impact on the entrepreneurial climate in a given country. In our research, we will focus on selected formal institutions and their impact on entrepreneurial activity levels in different countries.

2.3 Measurement of institutions and institutional indicators

Based on the related literature, we can find the different sets of institutional indicators, used for better understanding of institutional impact upon economic performance and entrepreneurship situation in different countries. Quantitate measurement of institutions itself could be a complicated task because institutions themselves have a more qualitative nature (Svensson, 2005). Still, there are different data sources known worldwide that are providing institutional indices. These sources are those such as UN CSD indices, GCR report, Transparency International's Corruption Perceptions Index, World Governance Indicators, World Bank Investment Climate Survey Database, World Bank "Doing Business" report and many more.

The World Governance Indicators

In our paper, the World Governance Indicators (WGI) is used as the main source of institutional indicators for research. The WGI is a research dataset initiated and developed by Daniel Kaufmann (Natural Resource Governance Institute and Brookings Institution) and Aart Kraay (World Bank Development Research Group) in 1999. Pablo Zooid and Massimo Mastruzzi also made big contributions to the development and updating of the WGI (Kaufmann et al. 1999). The WGI are representing the views on the governance quality provided by a large number of survey respondents, such as citizen, enterprise, and expert survey respondents in industrial and developing countries. These data have been collected from several survey institutes, non-governmental organizations, international organizations, and private sector companies in more than 200 countries since 1996 (Kaufmann et al. 2008).

As we have mentioned above, the WGI database is the most popular dataset referred to by many researchers in this field. Moreover, six composite WGI measures are useful as a tool for broad cross-country comparisons and for evaluating broad trends over time when making cross-country analysis. Besides, World Governance Indicators covers a wide range of institutions and concerned as well-known and very reliable database, collected for more than 20 years. Most of these indicators provide very specific and disaggregated information about certain governance dimensions that are of great interest itself.

By the information provided, these six indicators have been divided into 3 groups: A, B and C groups. The group A includes indicators, reflecting the process of how governments are selected, monitored, and replaced. Those indicators are *Voice and Accountability* indicator (the extent to which a country's citizens are able to participate in selecting the government, as well as freedom of expression, association, and free media), and *Political Stability and Absence of Violence/Terrorism* indicator (the probability that the government will be destabilized or replaced by non- constitutional and violent means, including

politically-motivated violence and terrorism). The group B indicators reflect the government capacity of formulating and implementing effective and sound policies. Indicators included in this group are *Government Effectiveness* (quality of public and civil service, the degree of its independence from political pressures, quality of formulated and implemented policy and the government's commitment on such policies) and *Regulatory Quality* (the ability of the government to formulate and implement sound policies and regulations providing private sector development). The group C the indicators show the respect that state and citizens have towards the institutions that govern social and economic interactions among them. Those indicators are *Rule of Law* (the extent to which agents have confidence in and abide by the society rules), and *Control of Corruption* (the extent to which public power is interested in private gain, corruption, and "capture" of the state by elites and private interests) (Kaufmann et al. 2010).

As can be seen from the definitions of institutional indicators, "institutional quality" is a broad concept that captures law, individual rights and high-quality government services and regulations. Quality of institutions affect different entrepreneurial activities (Sobel, 2008). In our research we focus on the last three indicators since they have the direct impact on entrepreneurial activity in a country. Further, we consider the individual variables which are included in three institutional indicators we select for our work.

Regulatory quality

Regulatory quality is an institutional indicator of WGI dataset, which belongs to the group B. This indicator measures the perception of the government ability to formulate and implement sound policies and regulations that permit and promote private sector development. The individual variables used to construct this variable are HER (investment and financial freedom), PIA (business regulatory environment), EIU (unfair competitive practices, price controls, discriminatory tariffs and taxes), IPD (ease of starting a business by local law), WMO (regulatory burden), according to WGI (2020). This indicator has direct impact on entrepreneurial activity; because it forms entrepreneurial ecosystem and conditions, the business emerges and functions in.

Rule of law

Rule of law is an institutional indicator of WGI dataset, which belongs to the group C. This indicator captures perceptions of the extent to which agents have confidence in and abide by the rules of society, in particular, the contract enforcement quality, property rights protection, the police, and the court system, as well as the probability of crime and violence. The individual variables used to construct this variable are EIU (violent and organized crime, private property protection), HER (property rights), GCS (reliability on police service, judicial independence, business cost of crime), according to WGI (2020). This

institutional indicator also has a direct impact to entrepreneurial activity in a country, because it illustrates how entrepreneurship has been protected in a given country, by a law (property rights, contract enforcement), by police service and by fair courts.

Control of corruption

Control of corruption is another institutional indicator of WGI dataset, which belongs to the group C. measures the extent to which public power is exercised for private gain, including petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.   The individual variables used to construct this variable are EIU (corruption among public officials), PRS (corruption), GCS (public trust in politicians, irregular payments and bribes in different spheres), according to the WGI (2020). This institutional indicator also has a direct impact to entrepreneurial activity, because it provides the transparency of doing business in a given country and absence of illegal transaction costs related to entrepreneurial activity.

2.4 Measurement of entrepreneurship at the cross-country level: sources and indicators

According to the GEM project, entrepreneurship is determined such as "any attempt to create a new business or a new venture, such as self-employment, a new business organization or the expansion of an existing business by an individual, a team of individuals, or an established business" (GEM 2020). Thinking in terms of entrepreneurial activities, we usually mean that entrepreneurial activity is "the enterprising human action in pursuit of the generation of value, through the creation or expansion of economic activity, by identifying and exploiting new products, processes or markets" (Ahmad and Seymour 2008, 9).

There are two well-known and good established international entrepreneurship data like the World Bank Group Entrepreneurship Survey (WBGES) and the Global Entrepreneurial Monitor (GEM). Both databases measure entrepreneurship by several indicators.

The GEM considers entrepreneurial intentions. The World Bank's Entrepreneurship Survey reflects only the actual level of entrepreneurial activity. For example, the key indicator of entrepreneurship in WBGES is *the entry rate* that is defined as new firms (those that were registered in the current year) as a percentage of total registered firms. Another important indicator is *the business density* which is determined by the number of registered firms as a percentage of the active population (Klapper 2006). Based on the paper by Acs et al. (2008) with the title "What does "entrepreneurship" data really show?",

we can get to know what differences between two popular sources for internationally comparable data. Having summarized their findings, the main discrepancy between two datasets is shown in Figure 1.
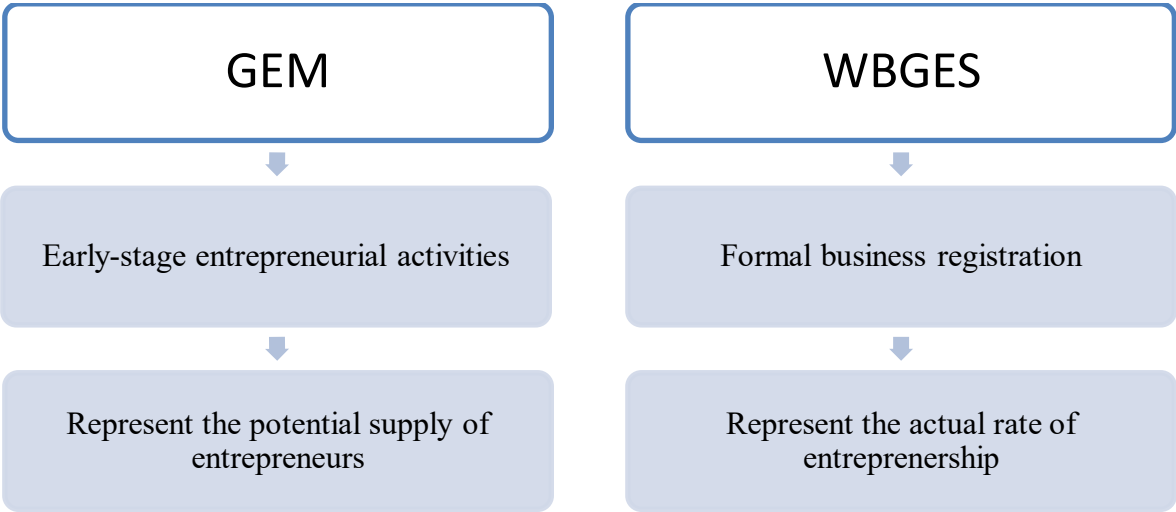

Figure 1 – Differences between the GEM and WBGES
Source: Adapted from Acs et al. (2008).

The key goal of GEM attempts to explain why rates of entrepreneurship "differ among economies at the similar stages of economic development" (GEM, 2014). Note that the GEM project is unique of nature, because it explores the dynamics of the level of entrepreneurial activity in the various countries, and how it connects to the level of economic development and therefore identifies factors that stimulate or impede entrepreneurial activity. Moreover, the GEM determines the extent to which entrepreneurial activities influences economic growth in terms of specific economies such as factor-driven, efficiency-driven, and innovation-driven economies (GEM, 2016).

Evidence from the entrepreneurship literature shows that entrepreneurship is ***the process***. This keyword "process" is "the first stone" to build and establish the GEM methodology. Hence, based on the GEM methodology there are several phases which entrepreneurs go around during his or her entrepreneurial life. Further, we consider step by step all phases (such as potential entrepreneurs, nascent entrepreneurs, new business owners, established business owners) and highlight the main terminologies concerning the entrepreneurship process under the GEM. Firstly, *potential entrepreneurs* are who still only expecting to start in the near future. Secondly, *the nascent entrepreneurs* are people actively involved in starting a new venture but do not pay salaries or wages for the period more than three months (Acs et al., 2008, p.279, the GEM 2016, 21). Thirdly, *new business owners* are people who have moved beyond the nascent stage and have paid salaries and wages for more than three months but less than 42 months.

Fourthly, *established business owners* are individuals who run ventures for more than three and a half years.

Under the GEM conceptual framework entrepreneurial activities are presented by three groups as the following:

1. *Total early-stage Entrepreneurial Activity (TEA)* consists of nascent entrepreneurs and new business owners. The TEA rate is the key indicator of the Global Entrepreneurship Monitor.

2. *Established business ownership rate* is the percentage of the adult population who are accounted as established business owners.

3. *Business discontinuation rate* is the percentage of the adult population aged between 18 and 64 years (who are either a nascent entrepreneur or an owner-manager of a new business) who have, in the past 12 months, discontinued a business, either by selling, shutting down, or otherwise discontinuing an owner/management relationship with the business (GEM, 2016).

To conclude, within our analysis we plan to explore the effect of formal institution on the early and mature entrepreneurial stages so that entrepreneurial data is derived from the GEM. Two entrepreneurial indicators such as total-early stage entrepreneurial activity rate and established business ownership rate is taken for consideration and studied.

3. Data analysis and methodology

3.1 Method

In this paper we employ descriptive statistics, statistical method of correlation and regression. We are interested to understand which the particular institutional dimension has stronger impact to the entrepreneurial rate either early or mature. To study the relationship between two variables, the simple linear regression model is employed.

3.2 Sample

The sample of countries includes two groups of countries such as efficiency-driven and innovation-driven. Each group consists of 11 countries from different geographic regions. The list of countries is depicted in the Appendix (see Table A.1). Two groups of countries are expected to have two different patterns of entrepreneurial activities and their attitude to start a business and run a business under particular institutional conditions. It could be mentioned that countries with innovation-driven economies are the

most developed and they are characterized as more knowledge-intensive. Countries with an efficiency-driven economy are located between factor-driven and innovation-driven categories. That means their activities moved from subsistence agriculture and extraction businesses, they have more-efficient production processes than before recently and try to increase their competitiveness in the global market. The factor-driven economies are not included into the analysis due to the data requirement (more than 10 countries needed).

3.3 Variables and data sources

In this paper we investigate how the institutions influence entrepreneurship activities so that our dependent variable for the study is entrepreneurship and independent variable is related to three institutional dimensions such as control of corruption, rule of law and regulatory quality. We expect the impact of various institutional dimensions is likely to differ according to the stage of entrepreneurial activities. To reflect differences between two stages of entrepreneurial activities, Total Early-Activity rate (TEA rate) and established business ownership rate (EBO rate) are employed. It should be stressed that we work with the cross-sectional data covered year, more precisely it is 2016. Our data derived from the data published in the GEM Global report 2016/2017 and the online database like the Worldwide Governance Indicators (WGI) project. The more detail description of the entrepreneurial and institutional variables, their sources is given in Table 1.

Table 1 – Description of the variables

Dimension	Variable	Description	Source
Entrepreneurship	*Dependent*		
	Total Early-stage Entrepreneurial Activity (TEA rate)	the share of the adult population aged 18 to 64 years who have taken steps to start a new business (start-up entrepreneurs) or managed a new business and paid their salary in 3 months and less than 42 months (new entrepreneurs) (GEM, 2016).	GEM
	Established business ownership rate (EBO rate)	the share of the adult population aged 18 to 64 who is currently the owner-manager of the established business, in particular earns and manages that has paid salaries, wages or any other payments to the owners for more than 42 months (GEM, 2016).	GEM

Table 1. 1 continued

Institutional Indicators	*Independent*		
	Control of corruption	perceptions the degree to which public power is exercised for private gain, including petty and grand forms of corruption, as well as "capture" of the state by elites and private interests (WGI, 2020).	WGI
	Rule of Law	perceptions of the degree to which agents have confidence in and abide by the rules of society, in particular, the contract enforcement quality, property rights protection, the police, and the court system, as well as the probability of crime and violence (WGI, 2020).	WGI
	Regulatory Quality	perceptions of the government ability to formulate and implement sound policies and regulations that allow and promote private sector development (WGI, 2020).	WGI

Source: Authors' illustration

3.4 Descriptive statistics

Statistical analysis of the data was executed using STATA software. The summary statistics provide us the content of variables which is important to make a comparison between groups of countries, on the one side, and also better understand the behavior of indicators.

Table 2 and Table 3 demonstrate the descriptive statistics for the variables which are used in our study. The consideration of the TEA rate allows us to obtain two results. Firstly, the TEA rate has the tendency to be higher in efficiency-driven countries rather than in innovation-driven countries. Secondly, the value of the TEA rate inside on group of the same development level shows substantial variation. In the case of efficiency-driven economies, this indicator has a value between 4.7 and 24.2. In the case of innovation-driven economies the TEA rate takes a value between 4.4 and 11. At the same time, in the innovation-driven economies established business ownership rates are higher than for the efficiency-driven economies. For example, in the case of 11 innovation-driven economies, it takes a value between 5.2 and 11.1, and for efficiency-driven economies, this indicator varies between 2.5 and 9.

The interpretation of the statistical results related to entrepreneurship dimensions gives the key message that not all entrepreneurs who operate in early-stage entrepreneurial activity can move to the

stage of established businesses like a mature business. Other words, established business that runs more than 42 months is associated with the sustainability of entrepreneurship in an economy.

Table 2 – Descriptive statistics, efficiency-driven countries

Variable	Obs.	Mean	Std. Dev.	Min	Max
TEA rate	11	10.364	5.559	4.7	24.2
EBO rate	11	6.345	2.058	2.5	9.5
Control of corruption	11	67.876	11.146	50.96	88.46
Rule of Law	11	69.625	9.329	52.4	85.1
Regulatory Quality	11	75.612	8.214	62.02	89.9

Source: Authors' calculation based on the GEM and WGI

Table 3 – Descriptive statistics, innovation-driven countries

Variable	Obs.	Mean	Std. Dev.	Min	Max
TEA rate	11	7.345	2.067	4.4	11
EBO rate	11	7.627	1.752	5.2	11.1
Control of corruption	11	82.475	13.471	59.62	99.52
Rule of Law	11	87.545	10.756	62.02	99.04
Regulatory Quality	11	87.063	9.707	73.08	98.56

Source: Authors' calculation based on the GEM and WGI

According to our statistical results from institutional dimensions (see Table 2 and 3), including for all three indicators, are higher in innovation-driven economies. It should be noted that the value of institutional indicators measures in percentile rank terms from 0 to 100 where higher values refer to better outcomes. Furthermore, the variation among countries is substantial. For example, in efficiency-driven countries, the rule of law has minimum value is 52.4 and the highest value as 85.1, with a relatively modest standard deviation of 9.33.

Table 4 and Table 5 show the median of the TEA rate in both groups of economies is lower than the mean. For instance, in efficiency-driven countries, the median is equal to 8.6 and the mean is 10.4. It leads to the fact that distribution is skewed to the right. Thus, the consideration of the median provides us the important information about the sample.

Table 4 – The median, efficiency-driven countries

	TEA rate	EBO rate	Control of corruption	Rule of law	Regulatory quality
Min	4.7	2.5	50.96	52.4	62.02
p25	6.9	4.7	60.58	64.9	69.23
p50	8.6	6.2	63.46	69.23	75.48
p75	14.1	8.0	75.96	74.52	81.73
Max	24.2	9.5	88.46	85.1	89.90

Source: Authors' calculation based on the GEM and WGI

Table 5 – The median, innovation-driven countries

	TEA rate	EBO rate	Control of corruption	Rule of law	Regulatory quality
Min	4.4	5.2	59.62	62.02	73.08
p25	5.2	6.6	68.27	83.17	76.44
p50	8	7.1	80.29	86.06	87.02
p75	8.2	8.8	94.71	97.12	96.63
Max	11	11.1	99.52	99.04	98.56

Source: Authors' calculation based on the GEM and WGI

4. Results

In this section we examine the relationship between three formal institutional dimensions (rule of law, control of corruption, and regulatory quality) and two different types of entrepreneurial activities (early and mature). We find a significant connection with these variables. However, we cannot postulate the direction of causality. Empirical results reflect that differences in institutional quality assist to explain differences in entrepreneurial activities (early and mature) across two groups of counties: efficiency-driven and innovation driven.

Analysis the TEA rate and three institutional indicators

Based on the empirical evidence from Figure 2 and Figure 3, we may summarize the following points such as:

1. In the case of efficiency-driven countries, the correlation between the TEA rate and institutional indicators is higher than in innovation-driven countries. It is proved by the correlation coefficient which fluctuates between 0.615 and 0.819 (see Appendix, Table B.1). One could suggest that the strength of the

relationship between these formal institutions and the early stage entrepreneurial rate is pretty much strong.

2. Nevertheless, the explanatory power of three institutional dimensions is different. As we can see from Figure 2, the rule of law explains more of the variation in the TEA rate for 11 efficiency-driven countries. Control of corruption explains less than the rule of law. The lower value of R-squared is associated with regulatory quality. For example, the upper-right scatterplot in Figure 2 depicts a fairly strong positive relationship between the TEA rate and rule of law in 11 efficiency-driven countries. The data points distribute close to the regression line. The correlation coefficient is equal to 0.819. Using the value of R-squared is 0.6707, this suggests that rule of law explains about 67.07% of the variation in the TEA rate under this sample of countries.

3. In the case of the innovation-driven countries, there is a positive correlation between institutional indicators and the total-early stage entrepreneurial activity rate in all three cases.

4. The explanatory power of three institutional dimensions in innovation-driven countries has the same sequence in descending order as in efficiency-driven countries like rule of law, control of corruption and regulatory quality. For instance, the upper-right scatterplot illustrates a more moderate positive relationship between variables such as the TEA rate and rule of law in comparison by other two scatterplots. Using the R-squared is 0.3210, we can assume that rule of law explains about 32.10 % of the variation in the TEA rate under the present sample of countries. It should be noted that three institutional dimensions can explain less the variation in the early entrepreneurial activity rate in innovation-driven countries than in efficiency-driven ones.

5. In both groups of countries, the rule of law is stronger associated with the TEA rate compared with control of corruption and regulatory quality.
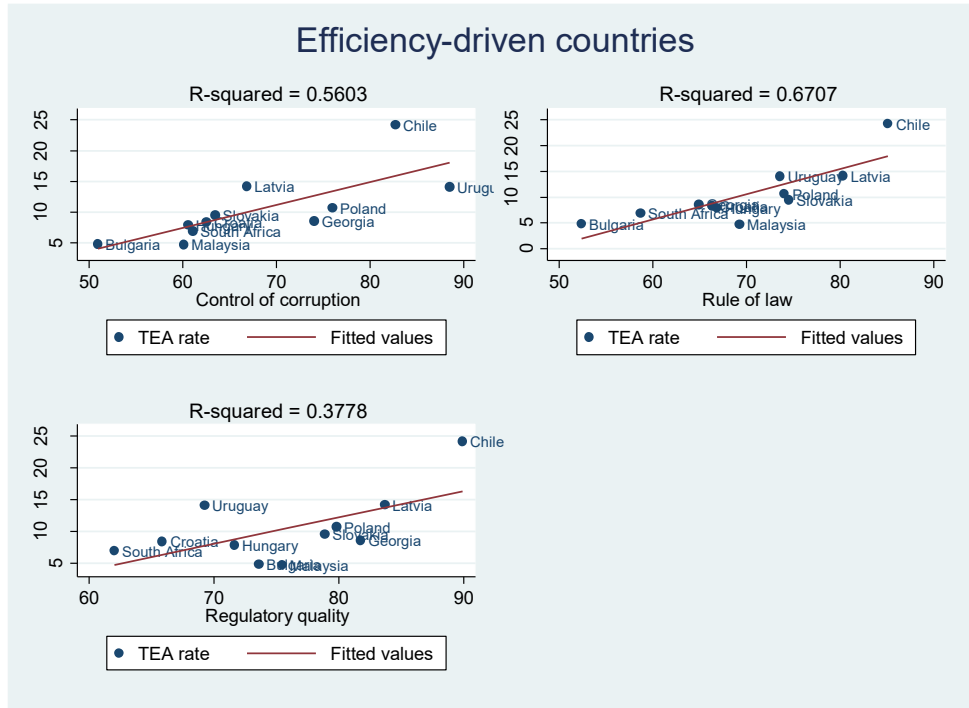
Efficiency-driven countries

R-squared = 0.5603

R-squared = 0.6707

R-squared = 0.3778

Figure 2 – TEA rate and three institutional dimensions, in efficiency-driven countries
Source: Authors' illustration

Innovation-driven countries

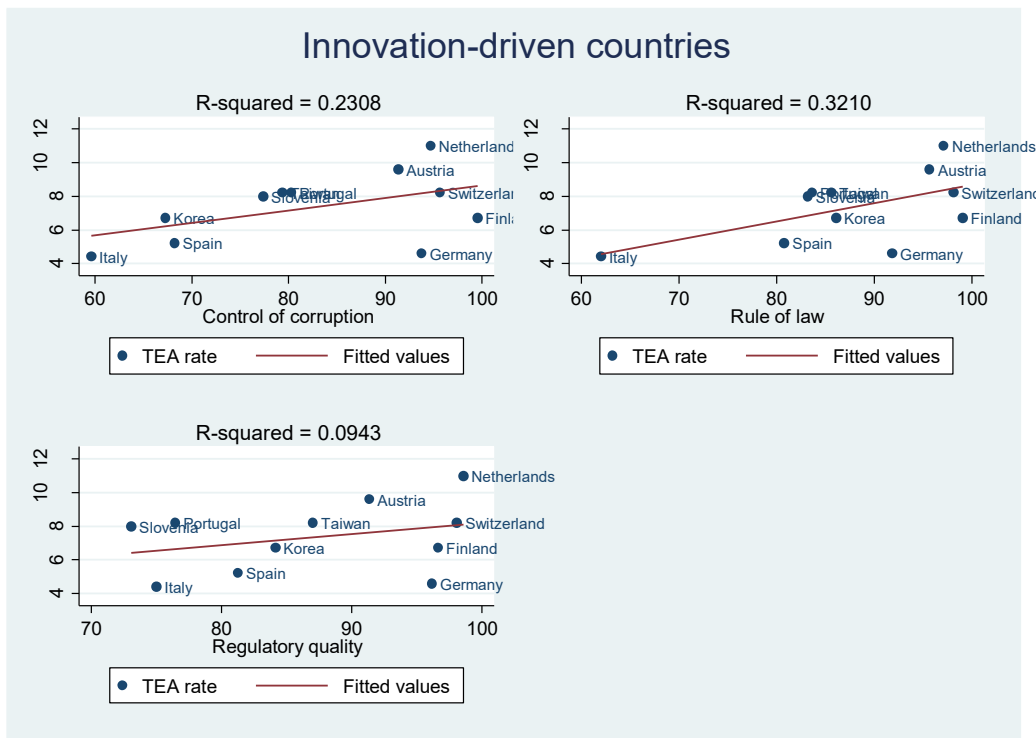R-squared = 0.2308

R-squared = 0.3210

R-squared = 0.0943

Figure 3 – TEA rate and three institutional dimensions, in innovation-driven countries
Source: Authors' illustration

Analysis of established business ownership rate and three institutional indicators

Based on the empirical evidence from Figure 4 and Figure 5, we could summarize the following results as:

1. In the case of efficiency-driven countries, there is a positive correlation between institutional indicators and the EBO rate. The correlation coefficient fluctuates between 0.5 - 0.8 (see Appendix, Table B.1) which is a proof that the strong correlation between variables does exist in all three cases.

2. However, the R-squared, shows a different degree of explanatory power in analyzed relationships. If we look at the lower-left scatter plot in Figure 4, we see the highest index of explanatory power in this country sample. The correlation index between regulatory quality and EBO rate equals to 0.801, and R-squared value is also greater than in other cases - 64% of the EBO rate is explained by regulatory quality in efficiency-driven group of countries. Less strong correlation and explanatory power index belongs to rule of law - it explains about 32% of EBO rate in efficiency driven countries. And the least explanatory power index is associated with control of corruption - 29%.

3. In the case of the innovation-driven countries, the correlation between the EBO rate and institutional indicators are higher than in efficiency-driven countries. It is proved by the correlation coefficient is more than 0.7 in all three cases and that means the strength of the relationship between these institutions and the entrepreneurial rate is very strong.

4. Regarding the explanatory power of three institutional dimensions, the sequence in descending order for innovation-driven countries are the following: the rule of law - explanatory power of 58%, then control of corruption with explanatory power of 53% and regulatory quality explanatory power of 52% . It assumes that all three institutional indicators explain half of the variation in the EBO rate, in the context of innovation-driven countries.

5. The crucial findings are the following. The rule of law is stronger connected to the EBO rate in innovation-driven countries compared with the other two institutional dimensions (58%). The regulatory quality as a formal institution has the strongest correlation efficient and highest explanatory power in all cases analyzed (67%) with the EBO rate in efficiency-driven countries.
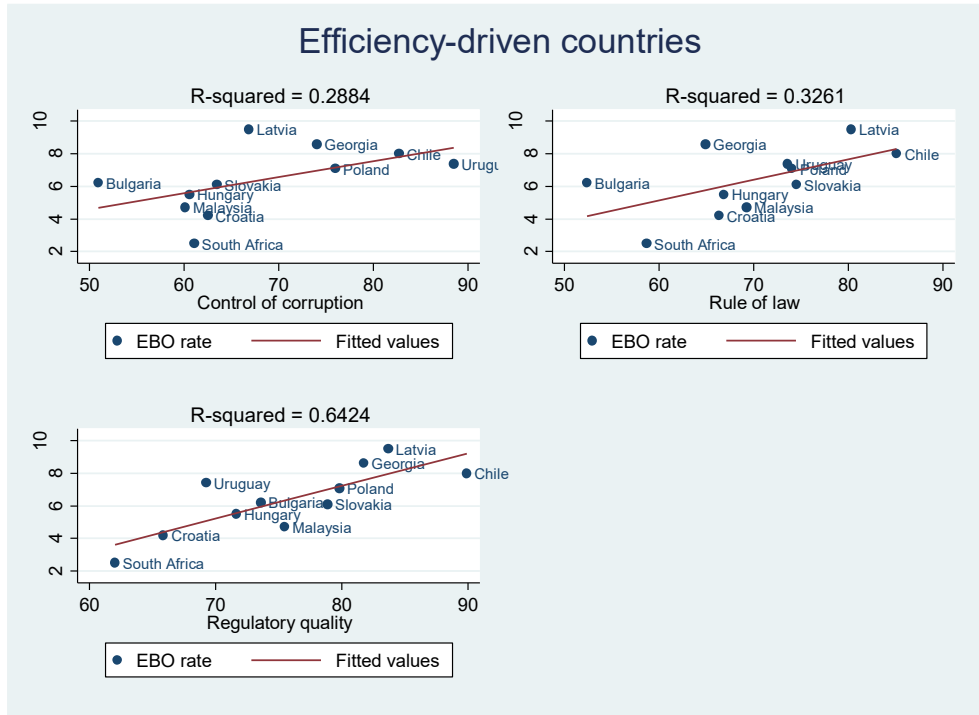
Figure 4 – EBO rate and three institutional dimensions, in efficiency-driven countries
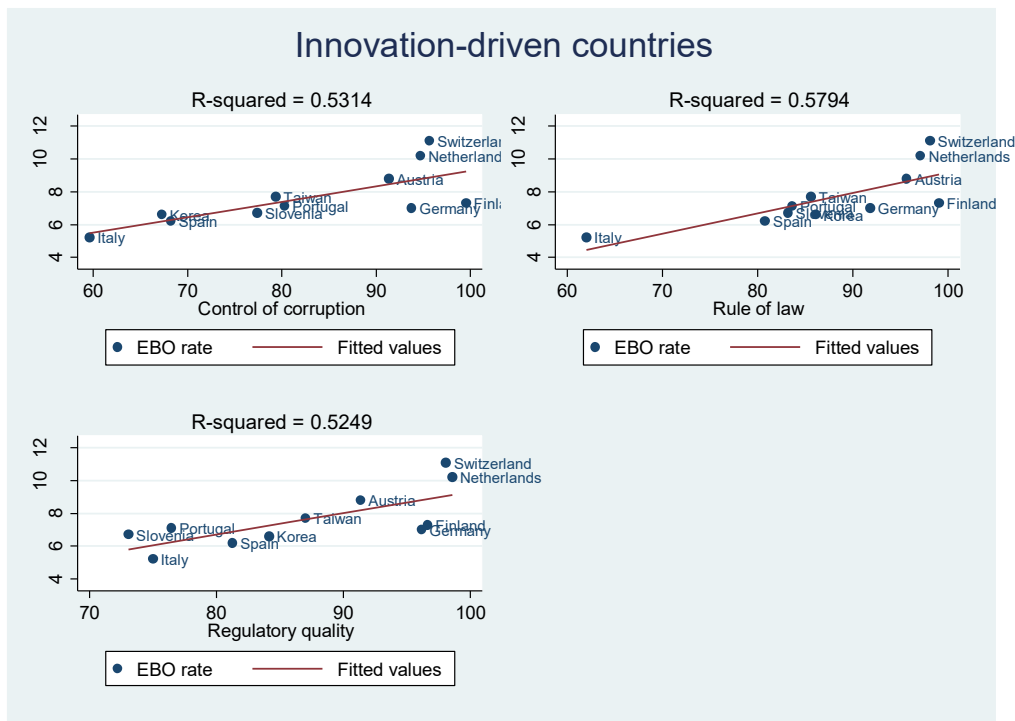*Source: Authors' illustration*

Figure 5 – EBO rate and three institutional dimensions, Innovation-driven countries
Source: Authors' illustration

5. Discussion

The main question of our research is to shed some light on the question of how the institutional context influences the development of entrepreneurship. Based on that research goal, we selected three institutional and two entrepreneurial indicators. In this section, we discuss our empirical results, obtained by using the linear regression and correlation analysis, and then we make a comparison of the results between two groups of countries. Evidence from our empirical results allows us to find out two different tendencies. On the one hand, in efficiency-driven countries, the TEA rate is more correlated to institutions than the EBO rate (especially regulatory quality). On the other hand, in innovation-driven countries, the EBO rate is more correlated to institutions than with the TEA rate (especially rule of law).

The crucial part of our analysis was to evaluate whether formal institutions have the same impact on innovation-driven (mostly developed countries) and efficiency-driven countries (mostly developing countries). Before we move to our findings concerning the relationship between institutions and entrepreneurial activities, we discuss the specific aspects regarding the TEA rate and the EBO rate. As it was stated in various papers, namely, in the paper of Urbano et al. (2019) and Desai (2011), countries with the similar economic development stage differ in the rate of the entrepreneurial activities and level of institutional indicators. In this sense, efficiency-driven countries are more heterogeneous compared with innovation-driven.

It is important to underline that the GEM shows an economy could have a large number of potential and nascent entrepreneurs, but this amount will not be transformed directly to a high number of established firms that will be sustainable for a long time. It is expected that TEA rates are usually high in emerging economies, but established business ownership rate is usually low (GEM, 2019). Moreover, in developing countries there is a high rate of entrepreneurship, namely, the growth of new enterprises and a high proportion of startups. However, a much smaller percentage of such start-ups in developing efficiency-driven countries than in developed innovative-driven countries can become fast-growing firms and stay in the market, resulting in significant contribution to added value. It could be explained by the fact that a high proportion of entrepreneurial initiatives in innovation-driven countries are initiated by opportunities that indeed make a contribution to total economic growth (Amorós, 2009). Our two random samples of countries confirm this assumption (see Table 6).

Table 6 – Relationship between TEA rate & the EBO rate and economic development level

TEA rate in the Efficiency-driven countries	>	TEA rate in the Innovation-driven countries
EBO rate in the Efficiency-driven countries	<	EBO rate in the Innovation-driven countries

Source: Author's illustration

Hence, two crucial entrepreneurial indicators such as the total early-stage entrepreneurship and established entrepreneurship level is very important for a better understanding of the role of entrepreneurial activity in the economy. The TEA rate reflects the situation on new firms' registration, bureaucracy and different procedures to start the business; while the EBO rate reflects the sustainability of the business in the economy.

After we carefully analyzed many research papers, dedicated to this important topic, we suggest that institutions are equally important for all countries, but they have different impact from economy to economy due to the different historical and cultural backgrounds of institutions, and the period of time during which they have existed since then. Moreover, differences in institutional quality help to ascertain the differences in entrepreneurship between efficiency-and innovation-driven countries (Amorós, 2009). On the one hand, in efficiency-driven countries, the TEA rate is stronger connected to formal institutions than the EBO rate. This could indicate that institutions have more restrictive effect on total early entrepreneurial rate in developing countries. In addition, it could reflect that institutional system in these countries is quite young, so it affects mostly newly established businesses. On the other hand, in innovation-driven countries the EBO rate is stronger associated with these three formal institutions than the TEA rate. This might demonstrate the long-term historical interaction between institutions and entrepreneurship in developed countries. It might also depict less institutional restrictions and favorable conditions for total early stage entrepreneurial activities, such as start-ups and business incubators. Hence, newly established business contributes significantly to economic growth in these countries.

We discover that the institutional dimension with the highest correlation coefficient to entrepreneurial activity is the institution of *Rule of Law*. Note that this indicates very "healthy" interaction between entrepreneurs and the legislation system. The rule of law includes fundamental variables for business activity such as property rights protection and contract enforcement mechanism, as well as the court system, responsible for the solution of the occurring problems. This institutional dimension reflects the ability of the business to define property rights, to acquire or to dispose of the property as a result of business transactions on conditions fixed in a business contract.

If the contract is not implemented by one of the sides, the police and the judicial system included in this mechanism will intervene. In other words, the institution of the rule of law ensures the necessary legislative framework for the functioning of a business.

The second position fairly belongs to the *Control of Corruption*. It is also strongly correlated with entrepreneurial activity in all our studied cases. That institution comprises such variables as the level of transparency, the corruption level, trust in politicians, bribes and capture of the state by elites. This institution impacts both the TEA and EBA rates, because corruption may create information asymmetries, and as a result uncertainty, which has a negative effect on the business climate. Besides, in all the mentioned cases of corruption, there could be hidden barriers for "outsiders" to enter the market (capture of the state by the elite), as well as some corruption barriers such as transactional costs of "bribes" that make problems for established entrepreneurship (bribes to government officials).

The institution of *Regulatory Quality* has the least impact on entrepreneurial activity in all cases, except the EBO rate in efficiency-driven countries. The key finding is that the mature entrepreneurial activity in this group of countries has the strongest correlation with the regulatory quality compared with the rule of law and control of corruption. This leads to the assumption that mature established business is very sensitive to the regulatory quality institution, as it contains all necessary conditions for the business environment. Variables included in this institutional indicator are an investment and financial freedom, market conditions, taxes, ease of starting a business, etc. In developing countries, established business is very reactive to existing unfavorable business conditions. In this sense, financial freedom might mean low or no access to financial funds to start a business; bank loans are extremely high and unaffordable for entrepreneurs. Market conditions are also not favorable for the business. For instance, there may be unfair competitive practices, price controls and market monopolization cases, because anti-monopolistic regulations are weak. Other regulatory quality problems, that mature established business in efficiency-driven countries face, are discriminatory tariffs and taxes which can become unbearable regulatory burdens.

6. Conclusion

In this paper we contribute to the understanding of the impact of the particular institutional dimensions on the early and mature entrepreneurial activity. Our contribution to this topic consists of two steps. Firstly, we focus our attention on the selected set of institutional dimensions such as rule of law,

control of corruption and regulatory quality. We investigate how particular institutional dimension affect the different entrepreneurial activity rates. Hence, our analysis includes six institution-entrepreneurship relationships for each group of countries, so that we test three institutional dimensions with two entrepreneurial rates. We suggest that not all formal institutions from our set influence the level of entrepreneurship equally. It could be summarized, that formal institution may play an important role in understanding the early and mature entrepreneurial rates, and they have an impact on entrepreneurial activity in different scales. Secondly, we analyze two groups of countries from different development stages and compare their results. Our findings are that the institutional dimensions are correlated to different entrepreneurial activity rates, depending on the economic development stage. This supposes that better quality of institutions provides a more sustainable entrepreneurial ecosystem in the country.

The implication of our research paper intends to improve the entrepreneurial landscape. The comparison of institutional impact on early and mature entrepreneurial rates by using a simple linear regression model provides a basis for further sophisticated empirical investigation. The main message of this paper is that various formal institutions such as rule of law, control of corruption or regulatory quality have a heterogeneous effect on the total-early entrepreneurial rate and established business ownership rate.

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Appendix

Part A

Table A.1 – The list of countries

N	Country	Economic Development Phase:
1 Group		
1	Bulgaria	Efficiency-Driven
2	Chile	Efficiency-Driven
3	Croatia	Efficiency-Driven
4	Georgia	Efficiency-Driven
5	Hungary	Efficiency-Driven
6	Latvia	Efficiency-Driven
7	Malaysia	Efficiency-Driven
8	Poland	Efficiency-Driven
9	Slovakia	Efficiency-Driven
10	South Africa	Efficiency-Driven
11	Uruguay	Efficiency-Driven
2 Group		
1	Austria	Innovation-Driven
2	Finland	Innovation-Driven
3	Germany	Innovation-Driven
4	Italy	Innovation-Driven
5	Korea	Innovation-Driven
6	Netherlands	Innovation-Driven
7	Portugal	Innovation-Driven
8	Slovenia	Innovation-Driven
9	Spain	Innovation-Driven
10	Switzerland	Innovation-Driven
11	Taiwan	Innovation-Driven

Part B – Regression results

Table B.1 – The coefficient of correlation

	(r) for Efficiency-Driven countries	(r) for Innovation-Driven countries
Relationship		
TEA rate and Control of Corruption	0.749	0.480
TEA rate and Rule of Law	0.819	0.567
TEA rate and Regulatory Quality	0.615	0.307
EBO rate and Control of Corruption	0.537	0.729
EBO rate and Rule of Law	0.571	0.761
EBO rate and Regulatory Quality	0.802	0.725