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Facultad de Ciencias Económicas y Empresariales

TRABAJO FIN DE GRADO/MÁSTER EN

Programa Internacional del Doble Grado en Administración y Dirección de Empresas y en Economía

ENTREPRENEURSHIP: AN EMPIRICAL APPROACH

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Pamplona-Iruña, 20 de Abril de 2023

Módulo: Métodos cuantitativos

NOMBRE DIRECTOR/A:

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ABSTRACT

This paper examines the economic and institutional drivers of entrepreneurship in a panel of 91 countries over the period 2000-2020. Using a dataset from the World Bank and World Development Indicators, it estimates the effects of various macroeconomic and institutional factors on two measures of entrepreneurship: new business density and the proportion of new companies over total companies. The results suggest that access to finance and economic development are positively associated with entrepreneurship. Additionally, political instability and corruption have negative effects on business creation. context. The findings are robust to the inclusion in the analysis of different control variables.

KEY WORDS

Entrepreneurship, Corruption, Panel Data

CONTENTS

1. INTRODUCTION AND MOTIVATION

Entrepreneurship has its origin in the French word "entreprendre", which means to do something. However, although the entrepreneurship figure has historically been a subject of study in economics by authors like Schumpeter, Cantillon or Adam Smith; it can be defined or represented by different figures and represent different things. Several definitions have been made about entrepreneurship, one of the most used is the definition made by Cantillon (1755): *"a person who pays a certain price for a product and resells it at an uncertain price, making decisions about obtaining and using the resources while consequently admitting the risk of enterprise"*. Furthermore, according to Schumpeter, the entrepreneur constitutes one of the key factors in the economic development of a country. Schumpeter studied the entrepreneurship underlying the concept of innovation (Schumpeter, 1911). Other authors, like Kirzner, stated that entrepreneurs respond to opportunities rather than creating them (Kirzner, 1973). A more detailed study of economic development and entrepreneurship from a theoretical point of view can be consulted by Toma et al, (2014).

However, although several definitions have been made about entrepreneurship, what can be concluded is that the entrepreneurial spirit is a key aspect of modern economies. In almost every economy, authorities and governments try to stimulate the level of entrepreneurship and the number of companies created. Business creation is a clear economic stimulus and contributes to economic growth, which is an objective for authorities and governments. Entrepreneurship contributes to economic growth by increasing spending, the level of employment, and the transfer of knowledge among other aspects (Meyer et al., 2018). Entrepreneurship promotes business creation, and that may foster competition between firms, which is one of the drivers for increasing productivity of economies, as competition leads to innovation and new technologies (Acs, 2008).

Entrepreneurship is a multi-faceted phenomenon, and entrepreneurship research covers several branches of economics. In this study, it will be empirically examined which factors affect entrepreneurship, in order to observe if the rules and their enforcement, measured by quality of institutions variables , have a higher effect on entrepreneurship than the economic resources and the economic environment of the business-creation

process. This statement has already been studied by several authors (e.g. Baumol, 1996).

The objective of this study is to determine which economic factors can be considered the drivers of entrepreneurship and, after having determined them, test the previously mentioned hypothesis (if institutional factors have higher relevance in entrepreneurship than the economic environment itself). This study's dataset has been manually constructed from different data sources since the key variables of the model are not provided in a single dataset, resulting in a final panel of data with 81 countries. Furthermore, the study has been performed using two definitions for dependent variable entrepreneurship, and the model has been tested with extensive robustness checks.

The structure of the paper is as follows. Section 2 reviews previous studies regarding entrepreneurship and its main drivers. In section 3, the variables of the model are briefly described, showing empirical facts and the data trends over time. After that, in section 4 entrepreneurship is analyzed in an empirical way using panel data, including a description of the model developed and showing its main results. Finally, section 5 shows the main conclusions and findings of the empirical analysis of entrepreneurship.

2. LITERATURE REVIEW

This section presents a brief review of the empirical literature investigating the determinants of entrepreneurship. As will be detailed in this paper, there are diverse studies studying which factors affect entrepreneurship.

Regarding economic factors, diverse authors have studied how entrepreneurship affects and contributes to economic growth and development. . Meyer et al., 2014; developed quantitative research using data from five selected European countries. They concluded that the development of SME sectors especially in transition economies should be centralized as essential focus areas in order to improve economic and social growth outlooks. Lowrey (2004) investigated the effect of business density on economic well-being using 50 United States business/firm data and macroeconomic data. However, there is a lack of clear empirical evidence of whether entrepreneurship drives economic growth, productivity, or employment (Naudé, 2013).

Nevertheless, when the question is reversed, and when studying which are the economic drivers of entrepreneurship, there is a clear lack of empirical work, and this aspect has clearly motivated the development of this paper. For example, the contributions of the Global Entrepreneurship Monitor (GEM) in this area show that entrepreneurship has higher rates in countries with higher income inequality, in which necessity entrepreneurship has a more important function in the economy than opportunity entrepreneurship, apparently because finding paid work is more difficult than in other economic settings (Reynolds et al., 2001).

Conversely, other authors have tried to demonstrate that risk preference is the variable that affects entrepreneurship. Authors like Kihlstrom and Laffont (1979), created a theory in which risk-tolerant people become entrepreneurs and risk-averse people become employees. This theory was created using an entrepreneurial model with roots in the work of Knight in the 1920s. Knight stated that entrepreneurs should be compensated due to uncertainty´s potential losses. Nevertheless, in this paper risk is not taken into account as a driver of entrepreneurship.

These studies have been challenged by other authors that do not consider only economic factors or risk aversion to affect entrepreneurship. Most of these studies focus on how institutions can influence the number of companies created and entrepreneurship measured in different ways. Institutions can be defined in several manners, being a multidimensional variable. However, in general, authors usually try to validate if the rules and their enforcement, institutions and wealth have a higher effect on entrepreneurship than the economic resources and the economic environment of the business-creation process (Baumol, 1996). Some authors like Stel et al., 2010; Agostino et al., 2019, have investigated the effects of the Rule of Law on entrepreneurship. Agostino et al., 2019, studied the effect of this variable in the creation of companies in Italian regions between 2004 and 2012 and Stel et al, 2010, investigated the effect of the Rule of Law in twenty developed countries. Some limitations of these studies can be that conclusions obtained can be limited for developing or non-developing countries, which are taken into account in this paper.

Other authors, on the other hand, have studied the effect of corruption on business creation (Avnimelech et al., 2014; Anokhin et al., 2009). Both found empirical evidence that countries with high levels of corruption usually face low levels of productive entrepreneurship. However, in the study developed by Avnimelech et al., a different indicator of entrepreneurship was used. They used a unique data set of entrepreneurial activity within 176 countries, collected from the professional networking site LinkedIn. Furthermore, corruption was measured using the CPI score (Transparency International). In the second mentioned study, developed by Anokhin et al., entrepreneurship was measured using the Global Entrepreneurship Monitor (GEM), which uses survey methods to estimate levels of entrepreneurial activity around the world with data between 1996 and 2002. The indicator that this study used to measure corruption (Control of Corruption estimate from the World Development Indicators) will be used in this study. It is interesting to mention that in both studies, developing and undeveloped countries were taken into account, so conclusions can be extracted worldwide (as some studies only take into account developed countries).

As mentioned before, although it is not studied directly in this paper, several authors have investigated the effect of education on business creation. These studies have investigated different types of education. Some investigations (Vakili et al., 2016) have

investigated the effects of entrepreneurship education, finding an upward relationship between this type of education and business creation. Other studies (e.g. Ashenfelter et al., 1999) have investigated which are the effects of education on earnings. Even if education is not considered an explanatory variable in this study, it is included as a control variable.

3. EMPIRICAL FACTS ABOUT ENTREPRENEURSHIP, ECONOMIC AND INSTITUTIONAL VARIABLES

This section presents the main empirical facts describing the evolution of entrepreneurship across countries. The database used in the paper is explained in detail in the next section (4.1). Furthermore, a graphical representation of each key variable evolution of certain countries will be included, in order to better understand the research question proposed in this paper.

3.1 Entrepreneurship: A Global Perspective

Before presenting empirical facts about entrepreneurship evolution, it is important to take into account that there are three important databases which describe the worldwide entrepreneurial activity of countries (Naudé, 2013).

-The International Labour Organization (ILO), which measures self-employment.

-The Global Entrepreneurship Monitor (GEM), which measures start-up rates of new firms.

-The World Bank, who measures the registration of new firms.

The database that has been taken into account in this study is the World Bank's database, which measures the registration of limited liability new firms. Because of that, the empirical facts regarding entrepreneurship will be provided using the World Bank database (for a comparison of these databases, see Desai, 2010). These facts are represented using a graph (Figures 1-7) with a selection of countries. In order to choose which countries are included in the graphical representation of the variables, countries have been divided into three different groups.

The first group represents the developed countries, and for representing the group, it has been chosen by the G7. However, the US and Canada will not appear in the graphs as there is no information about them or certain variables in the World Bank (there is no information regarding new limited companies and total limited companies from both countries in the World Bank indicators).

The second group represents developing countries, and this group is represented by BRICS (Brazil, Russia, India, China, and South Africa). However, Brazil will not appear in the graphs because there is not enough information regarding the total limited

companies of the country in the World Bank (there is only information about the total limited companies of the country in 2020, which is not enough for plotting the trend). Furthermore, South Africa does not appear in the graphs either, as there is no information in the World Bank regarding its total number of companies.

Finally, the third and last group represents non-developed countries, which have been selected according to the UN list of least developed countries (Please, see the whole list in Appendix). However, they need to meet certain requirements according to the availability of data from the different variables that appear in the model. There are only four countries on the list which have information on the principal variables of the model for at least 3 different years (Madagascar, Nepal, Senegal and Togo). Because of that, these countries have not been taken into account for plotting the evolution of the different variables, although they have been included in the model.

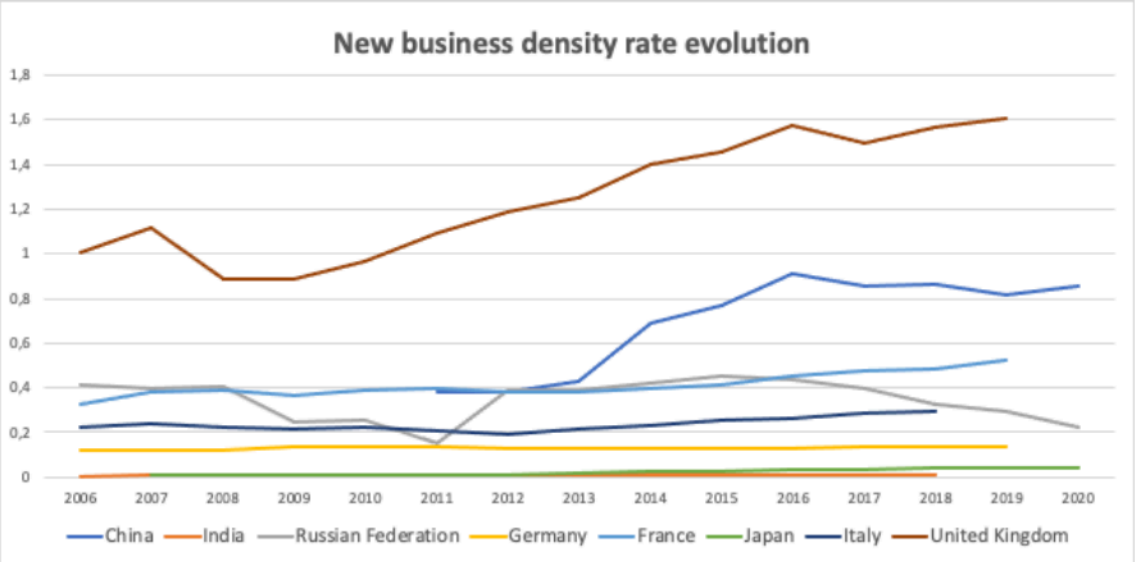

Figure 1. Source: Own elaboration with data from World Bank

Figure 1 shows the evolution of the new business density rate over time (new companies/adult population). The general trend is that the new business density rates are increasing over time across countries, which can be easily observed in the British, Chinese or French lines. Looking further into the British case, we observe an increase of around 60% between 2006 and 2019, while the number of new companies created was around 10 (per 1000 active population) in 2006, that value reached its maximum in 2019 with over 16 new companies. This is also observable with data in the cases of Japan and India which, although they have really low new business density rates in comparison with other countries, have improved a lot over time (100% annual increase

in the case of India between 2006 and 2018 and an impressive 600% increase in the case of Japan between 2007 and 2020). However, as their initial situation is quite low in comparison with other countries, this notable increase is not observable in the graph.

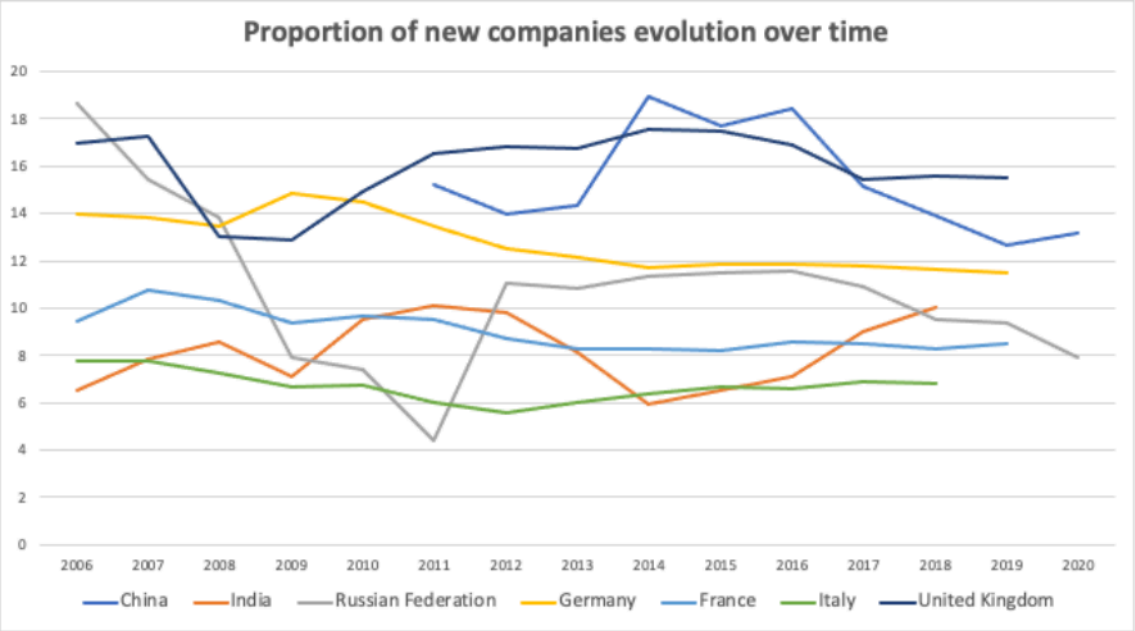

Figure 2. Source: Own elaboration with data from World Bank

Regarding Figure 2, which shows the evolution of the proportion of new companies (new companies / total number of companies) over time, it can be observed that the variable is decreasing over time in almost every country.

Although the evolution of the proportion of new companies is different in every country, it can be observed that almost every country has decreased the proportion of new companies if a comparison is made between the years 2006 and 2020. The highest decrease is experienced by the Russian Federation, which has experienced a decrease from over 18% in 2006 to a proportion of new companies of around 8% in 2020.

Another case in which the decreasing trend can be observed is the German case, in which the proportion of companies creates an almost straight downward sloping line (with the exemption of the years of the economic crisis of 2009, which can be produced due to the increase in the number of closed companies). The initial proportion of new companies in Germany was around 14% in 2006, and this proportion has decreased to a level below 12%.

The only exception to this general trend is the Indian case, which has experienced an increase in the proportion of new companies. Although its trend is quite unstable and is not really predictable, India has experienced an increase in the proportion of new companies from around 7% in 2006 to a level of around 10% in 2018.

What can be observed is that, as can be predicted, the proportion of new companies is decreasing over time. Although the growth rate of the new number of companies in a country has followed an increasing trend, the growth rate of the total number of companies in a country has experienced a higher increase, leading to the decreasing trend of the variable. This decreasing trend of the variable is explained because in general, the number of new companies created is higher than the number of closed companies, which leads to a higher growth rate of the total number of companies.

Once the entrepreneurial empirical facts have been presented, in the following subsections, potential determinants behind these empirical facts will be examined. First, we will focus on economic drivers, then we will investigate institutional quality drivers.

3.2 Economic Factors

Section 3.2 presents some empirical facts about the economic factors affecting entrepreneurship. These economic factors will be included in the model in order to capture how they affect entrepreneurship (additional information is provided in point 4).

The economic factors that are going to be detailed in the following lines are the GDP per capita (expressed in 2015 USD), the Research and Development expenditure and the Domestic Credit to the private sector(last both are expressed as % of the GDP).

3.2.1 GDP per capita

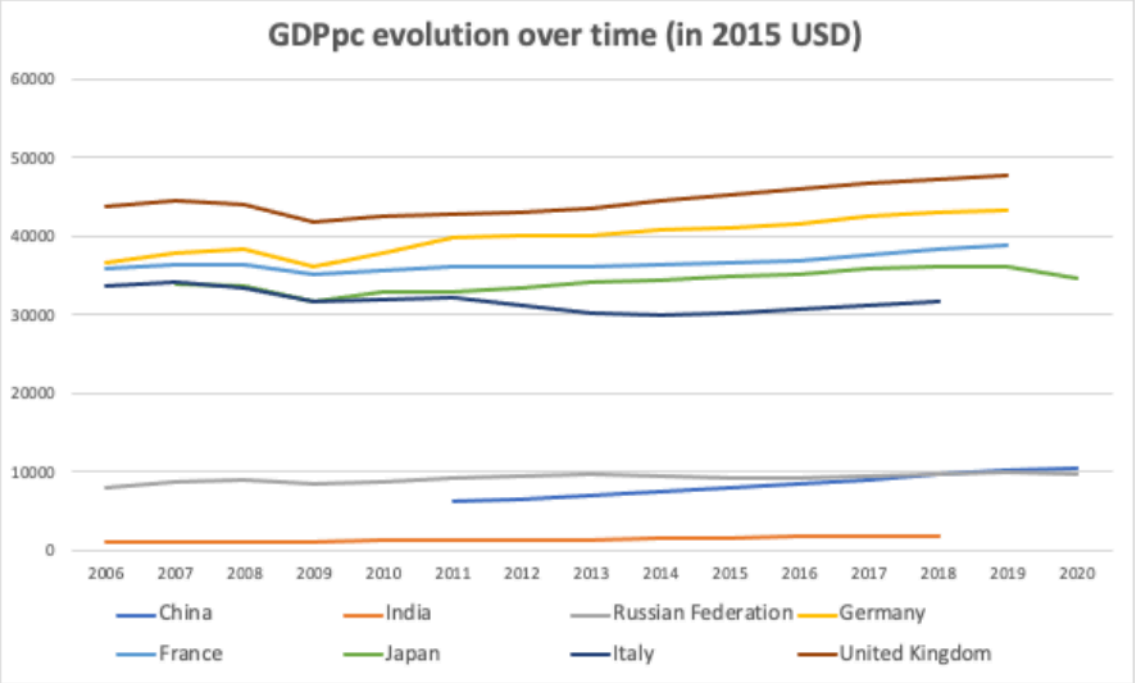

Figure 3. Source: Own elaboration with data from World Bank

Figure 3 shows the GDP per capita evolution for the countries that have been selected. It can be observed that the different countries' GDPs per capita have a slowly increasing trend over time.

There are two clear groups that can be observed regarding GDP per capita. The countries that represent developed countries (UK, Germany, France, Japan and Italy) have a GDPpc higher than 30.000 USD (in constant 2015 USD). They have an increasing trend, but it can be clearly observed the effect of the financial crisis of 2008, as all of them suffered a decrease between 2008 and 2009. Furthermore, it can be observed the effect of the COVID-19 pandemic on the GDP per capita of Japan in 2020.

The second group that can be observed (which includes the Russian Federation, India and China), have a GDP per capita of less than 10.000$. What can be seen is that the GDPpc of these countries has an increasing slope too, which is quite clear in the Chinese case (with an increase of around 66% between 2011 and 2020).

What can be easily concluded from the figure is that GDPpc is quite helpful for identifying the level of development of a country. As mentioned before, the figure

shows two clear groups according to GDPpc, which agree with the previous classification groups of countries (developed and developing).

3.2.2 Research and Development expenditure

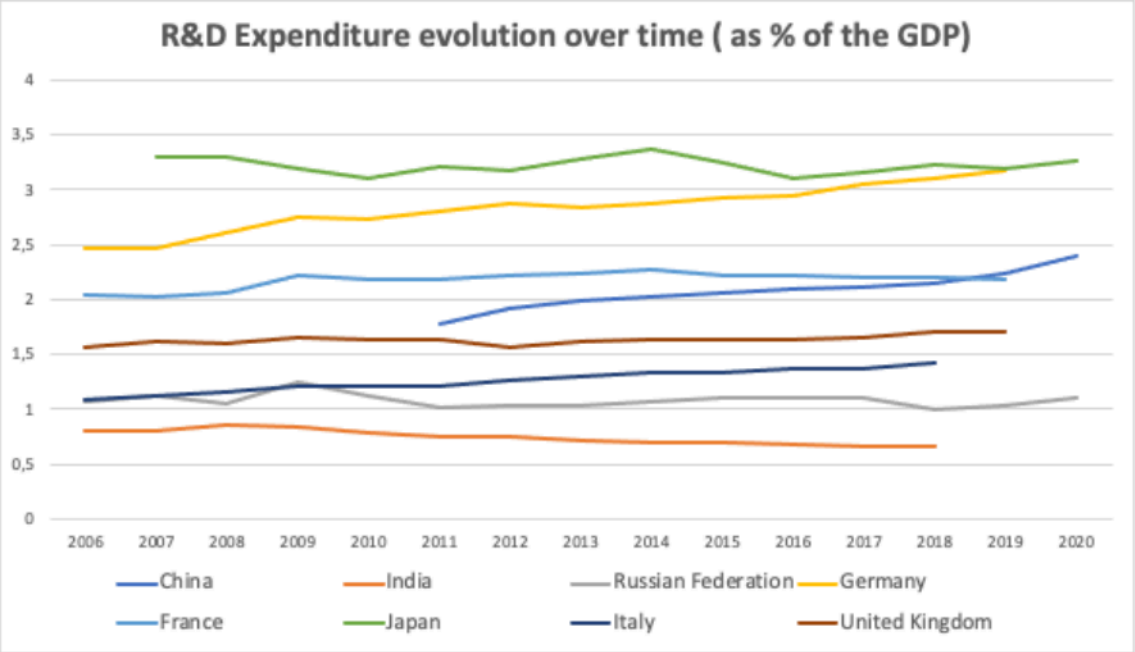

Figure 4. Source: Own elaboration with data from World Bank Indicators

According to the R&D expenditure over time, it can be observed initially that developed countries tend to expend more in R&D (with the exemption of the Chinese case). This tendency is more clear if non-developed countries are taken into account, as the R&D expenditure was lower than 0,6 for Madagascar, Nepal and Senegal. Furthermore, Research and development expenditure has been increasing in many countries in the last few years (the cases of China, France, Germany, Italy and the United Kingdom).

3.2.3 Domestic credit to private sector

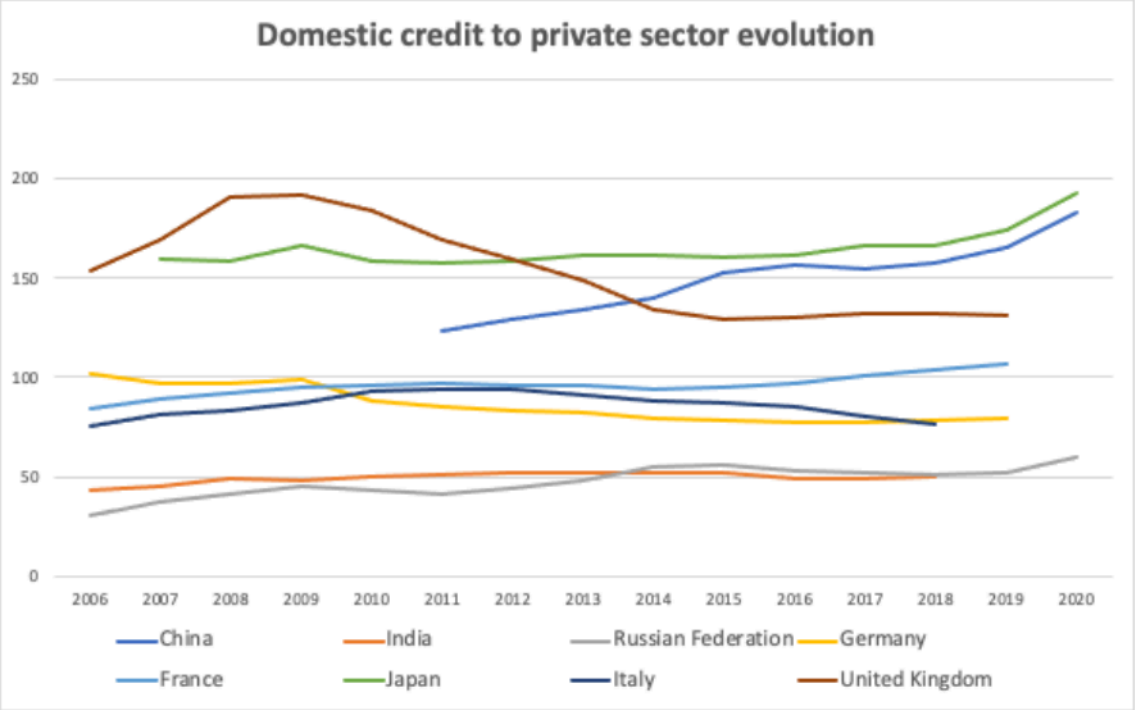

Figure 5. Source: Own elaboration with data from World Bank Indicators

In the case of domestic credit to private sector evolution, there are differences between developed countries and developing countries. Again, it can be observed that developed countries have higher domestic credit to private sector expenditures over time (again, China is an exemption). However, it can be observed that there is not a general trend in this variable between every country.

First, it can be observed that the United Kingdom and Germany have decreased their domestic credit over time, although other developed countries like Japan or France have increased it. What can be seen is how countries increased their domestic credit to the private sector in 2009, trying to fight the effects of the economic crisis. This increase in domestic credits can be observed for the countries with data for the year 2020, as there is a tremendous increase in the financial resources given to the private sector due to the COVID-19 pandemic.

Furthermore, it can be concluded that developing countries are increasing their domestic credit to the private sector, as can be observed in India and Russia. This increase in domestic credit is easily observable in the Chinese case, as they have experienced an increase of around 50% of their GDP.

Although non-developed countries are not included in the graph, their domestic credit to the private sector is quite lower than those of developed countries, as Madagascar, Nepal and Senegal have values lower than 60%. However, this value is similar to the domestic credit given to the private sector in Russia or India. According to these selected countries, there is no high difference between developing and non-developed countries regarding domestic credit to the private sector (as mentioned before, China is an exemption in this aspect).

3.3 Institutional Factors

Institutions are the humanly devised constraints that structure political, economic and social interaction. They consist of both informal constraints (sanctions, taboos, customs, traditions, and codes of conduct), and formal rules (constitutions, laws, property rights). (North, 1991). Section 3.3 describes the empirical facts of two institutional variables, the rule of law and the control of corruption, which are the institutional variables which will be included in the model.

The two institutional variables that are going to be presented in the following lines (Rule of Law and Control of Corruption) belong to the Worldwide Governance Indicators (WGI), which is a World Bank program of investigation composed of six different governance dimensions. The dataset was created in 1996 and aggregated data from over 200 countries. The WGI is produced by Daniel Kaufmann (President Emeritus, Natural Resource Governance Institute and Brookings Institution) and Aart Kraay (World Bank, Development Economics).

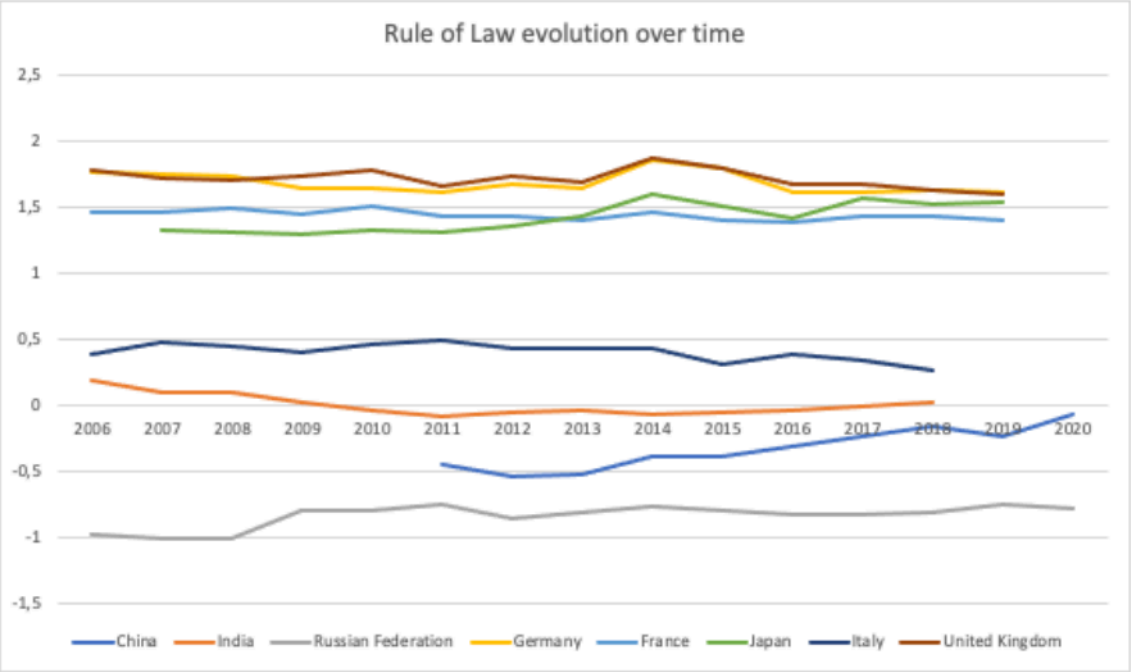

Figure 6. Source: Own elaboration with data from World Bank

Figure 6 describes the evolution of the Rule of Law scores of countries through the years. This estimate gives the country a score between -2.5 and +2.5 too (-2.5 indicates the lowest score, and +2.5 the highest). It can be observed that developed countries obtain better scores in the Rule of Law than developing countries. However, China is improving its score over the last few years and it will not be surprising that it surpasses Italy in the following years. However, Italy has a lower score (between 0 and 0,5) than other developed countries, which is around 1,5. Although they do not appear in the graph, non-developed countries perform worse in this estimate, with negative scores regarding rule of law (Madagascar, Nepal and Senegal).

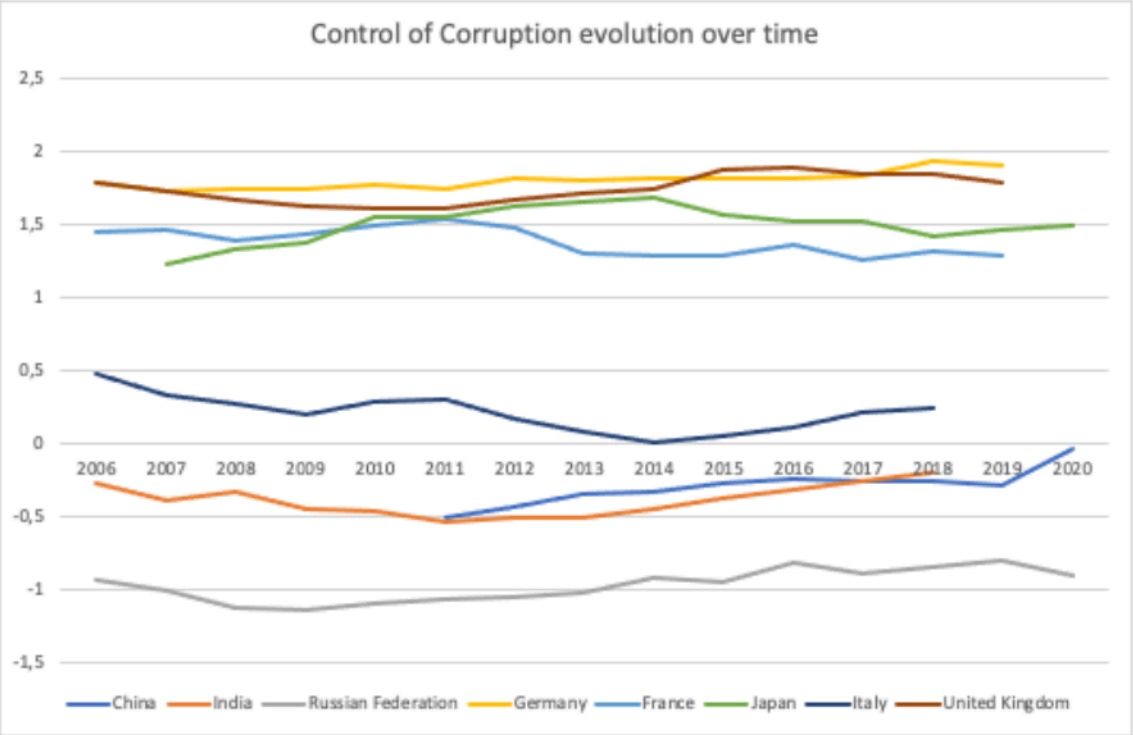

Figure 7. Source: Own elaboration with data from World Bank

Figure 7 shows the evolution over time of the Control of Corruption estimate score in the previously selected countries. This estimate has the same scale as the Rule of Law estimate. The conclusions that can be extracted from the Figure are similar to the conclusions obtained in the previous figure (Figure 6, Rule of Law evolution over time). Developed countries obtain better scores in Control of Corruption than developing countries. This difference is higher with non-developed countries that, although they are not included on the graph, do not perform well in control of corruption (with scores lower than -0,5 for Madagascar, Nepal and Senegal). However, Senegal has improved a lot regarding Control of Corruption and obtained a positive score in the year 2015.

Again, China is improving its Control of Corruption score in the last few years and it will not be surprising that the Chinese country will perform better than Italy in the following years. However, Italy has a big distance (around 1 point) again from other developed countries.

4. EMPIRICAL ANALYSIS. WHAT ARE THE DETERMINANTS OF ENTREPRENEURSHIP?

4.1. The empirical Strategy

The dataset used in this project contains data from two different official sources. While the first part of the database, which includes the dependent variables defining entrepreneurship, arises from a recently released dataset by the World Bank; the second part has been created using the World Development Indicators (WDI) open-access libraries for R (language and environment for statistical computing and graphics), taking annual observations from the years between 2000 and 2020 of every country of the world. This second part contains the independent variables and the control variables used in the empirical model (Please, see Appendix A3: Variables of the dataset). This part was added by merging it to the initial dataset using the country id codes (i.e., ISO 3 code).

After merging both datasets, small countries were eliminated. These eliminated countries are states with less than one million inhabitants, which have been removed in order to not take into account economies which can be "fictitious" due to their small size, leading to inconsistent or biased results in case they are not removed from the database ((Please, see Appendix A2: List of eliminated countries).

Finally, a dummy variable was included in the model taking the value 1 if the observation had values for every variable included in the model (independent or dependent variable) and the value 0 otherwise. After this step was taken, a subset was created taking into account only the observations with value 1 in the previously mentioned variable, having a total of 832 observations that represent 91 countries from the years 2000 to 2020.

4.2 The model

In this section, variables of the model will be presented, explaining their relevance and motivations for being included in the model. Further, this section includes how the database has been elaborated, and which are the structures of the models that are going to be developed in this study.

As mentioned in section 1, the objective of this study is to examine which factors affect entrepreneurship, in order to observe if the rules and their enforcement, institutions have a higher effect on entrepreneurship than the economic resources and the economic environment of the business-creation process. This statement has already been studied by several authors (e.g. Baumol, 1996).

In order to determine which economic factors can be considered drivers of entrepreneurship, a first model is created, in which only economic variables are included (Research & Development expenditure, Domestic credit to private sector and GDP per capita).

After having determined which are the economic drivers of entrepreneurship, a new model is created in which institutional variables are included, testing the previously mentioned hypothesis (if institutional factors have higher relevance in entrepreneurship than the economic environment itself).

Variable	N° Observations	Mean	Min.	Q1	Median	Q3	Max.
GDPpc	832	20581.6	465.4	5640.8	13617.6	35881.1	84776.1
Inflation	810	3.692	-10.067	1.065	2.527	4.855	59.220
Unemployment	754	8.063	0.390	4.553	6.855	9.867	31.020
Government debt	432	66.034	4.229	35.798	51.646	90.445	252.407
Interest rate	492	4.625	-33.597	1.305	3.737	7.123	60.877
Rural population	832	31.01	0	18.57	30.74	42.72	83.89
School enrollment	780	86.81	28.14	85.03	90.23	93.98	99.84
Fertility rate	832	1.974	0.868	1.470	1.740	2.188	6.203
R.D. Expenditure	832	1.18409	0.01036	0.37266	0.85027	1.71732	5.43562
Mortality rate	817	10.3	1.5	3.3	5.3	11.9	89.8
Total tax rate	757	42.23	7.4	30.1	40.4	50.3	137.6
CA balance	827	-0.5173	-43.7712	-4.0661	-0.9098	2.7842	38.7865
Domestic credit	832	72.371	2.476	38.296	57.926	96.030	304.575
Government Effectiveness	832	0.5730	-1.6022	-0.1112	0.5173	1.3748	2.4260
Control of Corruption	832	0.4299	-1.4622	-0.3842	0.2133	1.3901	2.4591
Rule of Law	832	0.4649	-1.8380	-0.3119	0.4253	1.3496	2.1248
Adult population	832	29848712	201363	3308038	6600278	26000331	903115190
New companies	832	47079	560	6070	16945	45444	684874
Total companies	832	499593	1220	68160	196640	565196	4416454

Table 1. Own elaboration with data extracted from the database.

In order to measure which factors affect entrepreneurship, and to measure if institutional variables have higher relevance in business creation, the following models have been estimated:

Models without institutional variables:

Model 1 is defined as the following, for every country i, and year t:

$$BD_{it} = \alpha_i + \beta_1 \log GDPpc_{it} + \beta_2 \log GDPpc_{it}^2 + \beta_3 R\&D_{it} + \beta_5 DC_{it} + \gamma' X_{it} + \lambda_t + \varepsilon_{it}$$

$$NP_{it} = \alpha_i + \beta_1 \log GDPpc_{it} + \beta_2 \log GDPpc_{it}^2 + \beta_3 R\&D_{it} + \beta_5 DC_{it} + \gamma' X_{it} + \lambda_t + \varepsilon_{it}$$

where BD_{it} and NP_{it} are the dependent variables that measure entrepreneurship. The business density rate is defined by BD_{it} and the proportion of new companies over the total number of companies is defined by NP_{it}. GDPpc is the Gross Domestic Product per capita, which is included in levels and in square terms to capture potential nonlinearities between economic development and entrepreneurship (Kuznets, 1955).

$R\&D_{it}$ is the Research and Development expenditure as percentage of GDP. DC_{it} reflects the Domestic credit given to the private sector, expressed as percentage of GDP. α_i and λ_t stand for country-specific and year-specific effects and ε_{it} represents the corresponding error term. Finally, $\gamma' X_{it}$ denotes a set of variables that control for additional factors that are assumed to have an influence on entrepreneurship and α_i refers to country-specific effects.

The first dependent variable is a new business density rate, which consists of calculating the proportion of new limited liability companies divided by the adult population (aged between 15 and 64). This business density rate shows the number of newly registered firms with limited liability per 1000 working-age people (ages 15-64) per calendar year.

The second variable in order to measure entrepreneurship is the proportion of new companies obtained by dividing the new limited liability companies by the total number of limited liability companies in the country. This variable alone shows how the number of new companies is evolving over time and can be helpful for knowing the trend in different economies.

The first independent variable (that is included in both models) is the Gross Domestic Product per capita, which is measured in constant 2015 US dollars. This variable, as defined by the World Bank, is *"gross domestic product divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is*

calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources." Data is obtained from World Bank national accounts data and OECD National Accounts data files.

Regarding the inclusion of this variable to the model , the initial expectation is that GDPpc has a positive correlation with entrepreneurship. GDPpc is widely used as an economic development estimator of a country. Furthermore, the size of the country is taken into account in the model, as GDP is divided by the total population. The difference with Sambharya & Musteen (2014) is that in this model GDPpc is taken as an explanatory variable and not just a control variable.

It is expected that an increase in GDPpc, which refers to an increase in the economic activity of the country, leads to an increase in the number of companies created, as the economic context will be more favorable for undertaking new business. Kirchhoff (1994) and others have shown that firm births are positively associated with economic growth. Furthermore, with an increase in GDPpc new technologies and economies of scale arise, which create better business opportunities (Acs, 2008).

This business opportunities creation is one reason behind the positive correlation between GDPpc and the first dependent variable (new business density rate). However, the GDPpc correlation with the second dependent variable (proportion of new companies) is expected to be negative, as the GDPpc will have a higher effect on the total number of companies created (which is the denominator of the variable).

Research and Development expenditure, the second variable which is also included in both models, is measured as a percentage of GDP. This variable includes, according to the World Bank, *"both capital and current expenditures in the four main sectors: Business enterprise, Government, Higher education and Private non-profit. R&D covers basic research, applied research, and experimental development."* The World Bank obtains data on the variable from the UNESCO institute of statistics.

Respecting the model, what should be expected is a positive correlation between both variables. An increase in the R&D expenditure made by a country may increase the number of companies created, as R&D is usually linked with innovative sectors, in

which SMEs and start-ups are usually economic drivers for the development of the different sectors. Small firms innovate between 1.24 and 2.38 times more than large firms (Futures Group, 1984).

Kirchhoff, Armington, Hasan and Newbert (2002) found evidence that R&D expenditures have a significant local effect on firm births. They found that university R&D expenditure has similar effects on firm births than other effects described by other authors as "spillovers" (Audretsch & Feldman, 1996).

Furthermore, Kirchhoff, Armington, Hasan and Newbert's (2002) research showed that the effect of R&D expenditures on firm births endures annually for at least five years after the R&D spending occurs.

The last independent variable included in both models is the Domestic credit to the private sector, which is again expressed as a percentage of GDP. According to the World Bank, this variable refers to *"financial resources provided to the private sector, such as through loans, purchases of non-equity securities, and trade credits and other accounts receivable, that establish a claim for repayment. For some countries, these claims include credit to public enterprises."*

Regarding the model, the initial expectation is again a positive correlation between both variables. As an initial prediction, it is expected that an increase in the domestic credit to the private sector will lead to an increase in the number of new companies created, leading to an increase in our entrepreneurship variables. As defined before, domestic credit to the private sector refers to different financial resources provided to the private sector. An increase in the amount of these financial resources should lead to creating a more favorable context for business creation.

Finally, the model includes a set of variables that control for additional factors that could potentially influence entrepreneurship. The control variables are inflation, rural population, secondary education and unemployment. The control variables are analyzed in detail in Section 4.4

Country-fixed effects are included to control the time-invariant factors and features of the country that can affect entrepreneurship and business creation. One example of country-fixed effects can be the country's total area, which creates higher markets and can lead to higher business opportunities, which should lead to higher entrepreneurship spirit, as there should be better and more business opportunities.

Regarding time-fixed effects, they are included to control the country-invariant features or temporal shocks that can affect entrepreneurship and business creation. One example of time-fixed effects can be the 2008 economic crisis, which affected globally. A temporal shock like the 2008 economic crisis should have affected entrepreneurship and the number of companies created regardless of the country taken into account, as a temporal shock included as time-fixed effects are considered to affect every country.

Because of that, as previously explained, non-taking into account and not including country and time-fixed effects may lead to biased and inconsistent results.

As mentioned before, and after having determined which are the economic drivers of entrepreneurship with the first model, in order to validate previous empirical literature findings Model 1 is extended by including several variables that measure quantitatively the quality of institutions. In this way, we define model 2 as the following:

Model with institutional variables:

Model 2 is defined as the following, for every country i, and year t:

$$BD_{it} = \alpha_i + \beta_1 \log GDPpc_{it} + \beta_2 \log GDPpc_{it}^2 + \beta_3 R\&D_{it} + \beta_5 DC_{it} + \beta_6 RL_{it} + \beta_7 CC_{it} + \gamma' X_{it} + \lambda_t + \varepsilon_{it}$$

$$NP_{it} = \alpha_i + \beta_1 \log GDPpc_{it} + \beta_2 \log GDPpc_{it}^2 + \beta_3 R\&D_{it} + \beta_5 DC_{it} + \beta_6 RL_{it} + \beta_7 CC_{it} + \gamma' X_{it} + \lambda_t + \varepsilon_{it}$$

In the second model, institutional variables are included. RL_{it} refers to the Rule of Law estimator and CC_{it} refers to the Control of Corruption estimator. The rest of the model remains unvaried in comparison with model 1 to study how including the institutional variables affects the initial model.

The first institutional variable is the Rule of Law. This variable captures, according to the World Bank *"perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence."* As for Government effectiveness, this estimate gives the country a score between -2.5 and +2.5 too.

Rule of Law has been taken into account in other studies as a factor affecting entrepreneurship (e.g., Agostino et al., 2019). The difference is that in the mentioned paper the effect was investigated only for business formation in Italian regions. They concluded that local institutions and their quality positively affects business creation and that this effect was higher in high-tech industries. Other authors have taken into account the Rule of Law as an entrepreneurial factor (Stel et al., 2010) only considering its role in developed countries. So it is expected to observe a positive correlation between business creation and rule of law.

The other institutional variable that is taken into account in the model is the Control of Corruption. This estimate captures, according to the World Bank *"perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests"*. As for previous institutional variables, this estimate gives the country a score between -2.5 and 2.5.

Corruption is dishonest conduct by those in power, usually related to bribery. Corruption negatively affects business creation. If entrepreneurs or businessmen need to pay bribes to those in power, their potential benefit from their business activity is decreased, which leads to a decrease in the number of entrepreneurs. Because of that, the initial expectation is to observe a negative correlation between Control of Corruption and business creation.

Corruption has been taken into account as a factor which impacts entrepreneurship by several authors (e.g., Anokhin et al., 2008). The difference is that in the mentioned paper, the dependent variable used was the Total entrepreneurial activity (TEA) obtained from the Global Entrepreneurship Monitor. Other studies have taken into

account Control of Corruption as a factor with an impact on business creation. As an example, a study developed by Avnimelech et al. (2014) concluded that countries with high levels of corruption have lower rates of entrepreneurship. Furthermore, the effect of corruption in entrepreneurship is higher in developed countries than in developing countries.

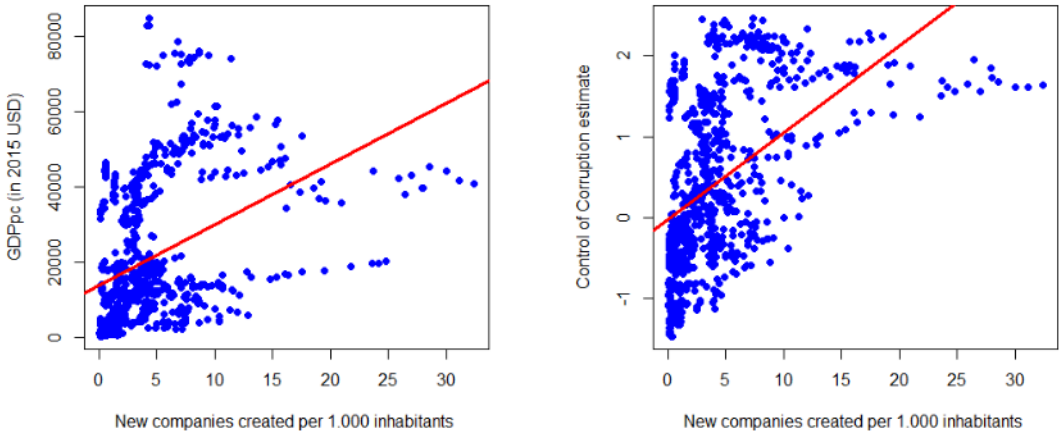

Figure 8. Source: Own elaboration with data from World Bank

The arguments discussed above suggest that a country's level of entrepreneurship should be higher (lower), the higher (lower) the Gross Domestic Product per capita of the country. This is confirmed by the scatter plots displayed in Figure 8, which show an increasing trend in the new business density when GDPpc increases. Furthermore, Figure 8 shows an increasing trend in new business density when the Control of Corruption estimate improves, confirming the previous arguments that suggested that a country's level of entrepreneurship should be higher (lower), the lower (higher) the level of corruption of the country.

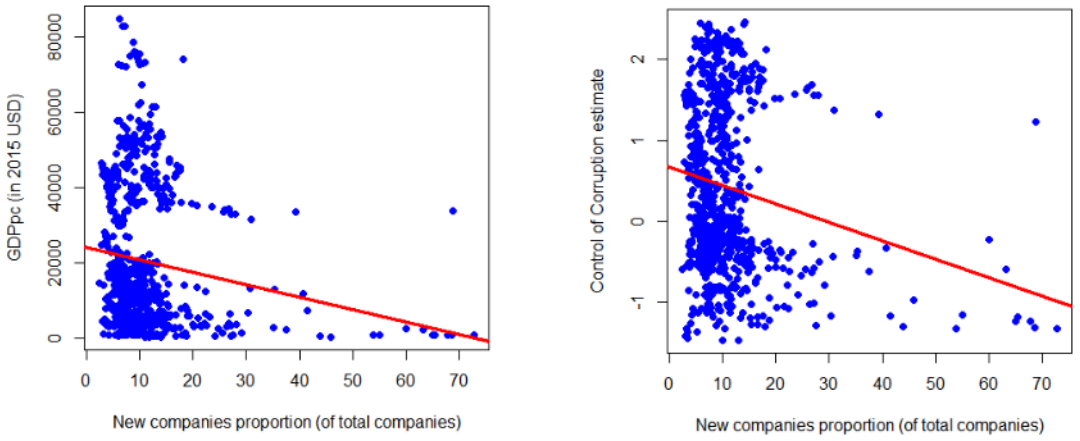

Figure 9. Source: Own elaboration with data from World Bank

However, when entrepreneurship is measured as the proportion of new companies over the total number of companies of the country, the previously discussed arguments do not hold. The scatter plots displayed in Figure 9 suggest that an increase in the GDPpc of a country leads to a decrease in the proportion of new companies over the total number of companies. This can be explained because the GDPpc effect on the number of companies is higher in the total number of companies than in the new companies.

This effect is similarly observed with the Control of Corruption estimate, as the estimate and the new companies proportion over total companies show a decreasing trend. This figure can suggest that when entrepreneurship is measured as the proportion of new companies over total companies, the results obtained can be different from the results obtained when entrepreneurship is measured as a business density rate.

4.3 Main results

Section 4.3 shows the main results obtained with the previously presented models, structured in the following way. First, models without institutional variables are presented, showing which are the economical drivers of entrepreneurship, understanding entrepreneurship in two different ways, and presenting the main differences among them. Then, the models with institutional variables are shown, presenting their main results and the differences between them. Finally, the last models

are presented, in which a set of variables are included as a control for additional factors to confirm the robustness of our primary results.

	Model 1: Business density rate as the dependent variable without institutional variables included	Model 2: Business density rate as the dependent variable with institutional variables included
Log GDP per capita	-1.6067(*)	-1.8599(*)
Log GDP per capita ^2	0.0970(*)	0.1020(*)
R&D Expenditure	0.0188	0.0183
Domestic credit to private sector	0.0024(***)	0.0021(***)
Rule of Law	(-)	0.0229
Control of Corruption	(-)	0.3349(***)
Country fixed effects	Yes	Yes
Time fixed effects	Yes	Yes
R-Squared	0.0287	0.0584
Countries	91	91
Observations	832	832

Table 2. Own elaboration with results obtained from own elaborated models

Table 2 shows the outcomes obtained when using business density rate as the dependent variable. The first model shows the results obtained when the institutional variables (rule of law and control of corruption) are not included and the right column (model 2), shows the results obtained when both institutional variables are included.

Regarding the first model, the new business density is regressed on the indicators of R&D Expenditure, domestic credit to the private sector and GDP per capita in levels and in square terms after transformation using logs. It can be observed that domestic credit to the private sector is the most significant variable of the model, with a p-value smaller than 0,01(***). The results obtained show that domestic credit to the private sector has a high significance on entrepreneurship, this hypothesis has been reinforced by several authors (e.g. Gnyawali and Fogel, 1994), concluding that governments have different ways of stimulating entrepreneurship through public spending, which in this case is measured with the domestic credit to the private sector. Domestic credit to the private sector has a coefficient of 0,0024. This means that an increase of 1% in the domestic credit to the private sector leads to an increase of 0,0024% in the business density rate.

For example, in the year 2019 in the United Kingdom the business density was 16,06 companies per 1000 inhabitants and the domestic credit to the private sector was 131,3%. In this case, an increase of the Domestic credit to the private sector to 132,3% would have led to an increase in the business density rate of 0,0024; leading to a

business density rate of 16,0624 in 2020. Although this increase seems to be not very high, increasing in a higher percentage the domestic credit to the private sector would lead to huge effects in business creation.

Furthermore, it can be observed that GDP per capita is a significant variable too, with a p-value smaller than 0.05(*). As GDP per capita is included in levels and in square terms, in order to capture potential nonlinearities between economic development and entrepreneurship, the interpretation of both coefficients has to be taken into account together. The coefficient for GDP per capita in levels is -1,6067 and the coefficient for GDP per capita in square terms is 0,0970. Results reinforce the idea that greater economic activity creates positive economic expectations and improves opportunities perception, motivating individuals to engage in entrepreneurial activity. Therefore, any initiative boosting economic activity and helping to establish a stable macroeconomic environment stimulates entrepreneurship (Bourguignon et al., 2000, Galor et al., 1993) as the coefficient of GDP per capita in levels is negative and the coefficient of the GDP per capita in square terms. At early stages of economic development, increasing GDPpc does not seem to increase entrepreneurship but to decrease it, and only at advanced levels of economic development GDPpc does seem to cause entrepreneurship to increase.

Finally, the first model has an R-Squared of 0,0287; which means that the model explains the 2,87% of the total changes in business density rate.

When institutional variables are taken into account in model 2, new business density is regressed on the indicators of R&D Expenditure, domestic credit to the private sector, GDP per capita in levels and in square terms after transformation using logs, control of corruption estimate and the rule of law estimate. What can be observed is that GDP per capita significativity is similar to the significativity of model 1, with a p-value lower than 0,05 (*).

The significance of domestic credit to the private sector is again similar to the previous model, with a p-value lower than 0,001 (***). This shows that the economic drivers behind entrepreneurship are maintained when institutional variables are considered. However, the coefficient of domestic credit to the private sector decreases to 0,0021;

which shows a decrease in the change in new business density due to a percentage change in domestic credit.

Regarding institutional variables, it can be observed that control of corruption is a significant variable, as its p-value is lower than 0,001 (***). Societies with less corruption and better training and education have higher levels of entrepreneurial activity (Castaño et al., 2015). The control of corruption variable has a coefficient of 0,3349, which means that an increase of 1% in the domestic credit to the private sector leads to an increase of 0,0024% in the business density rate. It can be concluded that corruption negatively affects entrepreneurship.

Finally, the second model has an R-Squared of 0,0584; which means that the model explains the 5,84% of the total changes in business density rate. This means that the inclusion of institutional variables has increased the percentage of total changes in the new business density rate explained by the new model by almost 3%.

	Model 3: Proportion of new companies as the dependent variable without institutional variables included	Model 4: Proportion of new companies as the dependent variable with institutional variables included
Log GDP per capita	-65.3631(***)	-65.8711(***)
Log GDP per capita ^2	3.2074(***)	3.2095(***)
R&D Expenditure	1.6276(*)	1.6572(*)
Domestic credit to private sector	-0.0095	-0.0114
Rule of Law	(-)	0.7147
Control of Corruption	(-)	0.7324
Country fixed effects	Yes	Yes
Time fixed effects	Yes	Yes
R-Squared	0.0688	0.0700
Countries	91	91
Observations	832	832

Table 3. Own elaboration with results obtained from own elaborated models

Table 3 shows the outcomes obtained when using the proportion of new companies as the dependent variable. The first column (model 3) shows the results obtained when the institutional variables (rule of law and control of corruption) are not included and the right column (model 4), shows the results obtained when both institutional variables are included.

Results obtained when changing the dependent variable differ from previously obtained results. In model 3, in which institutional variables are not included, it can be observed that GDP per capita is a significant variable, with a p-value lower than 0,001 (***).

Furthermore, it can be observed that domestic credit to the private sector is not a significant variable when the dependent variable is the proportion of new companies, but R&D expenditure becomes a significant variable, with a p-value lower than 0,05 (*). In model 3, R&D expenditure has a coefficient of 1,6276. This means that a 1% increase in R&D expenditure produces an increase in the proportion of new companies over total companies of 1,6276%. For example, in the United Kingdom in 2019 the proportion of new companies over total companies was 15,5% and R&D expenditure was 1,7%. In this case, increasing the R&D expenditure to 2,7% would have led to an increase in the proportion of new companies to 17,1572%. This suggests that R&D has an influence on entrepreneurship, which agrees with Drucker (1998), who concluded that innovation is central to entrepreneurial activity and encourages many entrepreneurs to engage in entrepreneurial activity. In addition, this result holds with previous conclusions presented before, linking Research and development expenditure and firm births (Kirchhoff et al., 2002).

Moreover, when the proportion of new companies is used as the dependent variable, a higher percentage of changes in the dependent variable is explained by the model, as the R-squared coefficient is 0,0688 (which means that 6,88% of the changes in the proportion of new companies is explained by the model).

However, when institutional variables are included, the results remain invariant, as GDP per capita and R&D expenditure are the significant variables of the model. Furthermore, the inclusion of institutional variables does not almost increase the R-square coefficient, which only increases by 0,0012. This suggests that institutional variables do not influence entrepreneurship when it is understood as the proportion of new companies.

If we compare the results obtained in the different models, and we put everything together, we can first observe that if we only take into account economic variables, both entrepreneurship indicators are clearly affected by the GDP per capita of the country,

and in both cases the correlation between them is similar (positive when GDP per capita is in square terms and negative when GDP per capita is in levels). However, we can observe differences in the effect of R&D expenditure and domestic credit in both indicators. Business density rate is affected by Domestic Credit and new companies proportion is affected only by R&D expenditure.

Moreover, when institutional variables are taken into account, we can observe huge differences in the results obtained. It can be observed that the Business density rate is affected by the Control of Corruption estimate. However, neither Control of Corruption nor Rule of Law estimates affect the proportion of new companies. This suggests that when entrepreneurship is measured using the business density rate, it can be concluded that institutional variables affect business creation and entrepreneurship. However, when entrepreneurship is measured by the proportion of new companies, it can be concluded that institutional variables do not affect business creation.

4.4 Robustness check

The analysis carried out thus far indicates that depending on how entrepreneurship is measured, different outcomes are obtained. When entrepreneurship is measured as a business density rate, institutional variables play an important role in business creation, which would reinforce our initial idea that institutions have a higher effect on entrepreneurship than the economic resources and the economic environment of the business-creation process (Baumol, 1996). In this section, we investigate the robustness of these findings.

4.4.1 Including control variables

In this subsection, a set of control variables are included in the model in order to investigate the robustness of these findings.

The first control variable taken into account is inflation. Inflation is measured as the variation in the percentage of the consumer prices index. Inflation is included as a control variable to capture that high levels of inflation can negatively affect the number of companies created, as high levels of inflation lead to uncertainty and economic crisis.

The second control variable is unemployment. Again, unemployment is included to capture that high levels of unemployment can negatively affect the number of

companies created, as higher levels of unemployment lead to uncertainty and are associated with economic crises.

The third control variable is school enrollment in secondary education. This variable measures, as the World Bank defines, the ratio of total enrollment, regardless of age, to the population that officially corresponds to secondary education. This variable is included as a control variable as it can be expected to positively affect the number of companies created. Several authors have studied the effect of education on entrepreneurship, from the point of view of entrepreneurship education (e.g. Vakili et al., 2016) or from the point of view of returns on schooling (e.g. Ashenfelter et al., 1999). Although in this work education is not considered an explanatory variable, it should be considered as a control variable.

Finally, the last control variable included in the model is the rural population. This variable measures the percentage of the population living in rural areas. It is included in the model because it is expected to negatively affect the number of companies created. Rural areas tend to have a lower concentration of companies. This effect can be explained because of clusters. This refers to the tendency of agglomeration in companies, which has been studied by several authors (e.g. Delgado et al. 2010). Because of that, the initial expectation is that the rural population and the new number of companies created should have a negative correlation between them.

	Model 5: Business density rate as the dependent variable with control variables included	Model 6: Proportion of new companies as the dependent variable with control variables included
Log GDP per capita	-1.6919	-141***)
Log GDP per capita ^2	0.1038	6.9363(***)
R&D Expenditure	-0.0199	0.2072
Domestic credit to private sector	0.0017(**)	0.0011
Rule of Law	0.1004	3.3164(*)
Control of Corruption	0.2158(*)	0.7380
School Enrollment	0.0038	-0.1309(*)
Rural population	0.0208	-0.4669(**)
Unemployment	-0.0043	-0.1484(*)
Inflation	0.0028	0.0832(*)
Country fixed effects	Yes	Yes
Time fixed effects	Yes	Yes
R-Squared	0.1006	0.1739
Countries	91	91
Observations	832	832

Table 4. Own elaboration with results obtained from own elaborated models

Table 4 shows the outcomes obtained in both models when control variables are included. Regarding model 5, in which the dependent variable is the business density rate, it can be observed that previous results hold, so they can be considered robust, in which Domestic Credit to the private sector and Control of Corruption estimate are significant variables that can be considered drivers of entrepreneurship. Furthermore, the inclusion of control variables in the model increases the R-Squared coefficient to over 0,1. As explained before, the R-squared coefficient describes the percentage of the total changes in the dependent variable that the model explains. In this case, the inclusion of the control variables in the model almost doubles the value of the R-squared coefficient.

Regarding model 6, in which the dependent variable is the proportion of new companies over total companies, what can be observed is that the inclusion of control variables changes the results obtained in the previous model (model 4). In model 6, GDP per capita is significant (with a p-value lower than 0,001 in both levels), as occurred in model 4. However, in model 6 Research and development expenditure is not significant anymore. Furthermore, when control variables are included, these control variables become significant too. This suggests that results obtained in model 4 are not robust enough.

4.4.2 Including Gross Domestic Product per capita at cube terms

	Model 7: Business density rate as the dependent variable with GDPpc at cube terms included	Model 8: Proportion of new companies as the dependent variable with GDPpc at cube terms included
Log GDP per capita	5.0034	110.0958
Log GDP per capita ^2	-0.6737	-16.6768(.)
Log GDP per capita ^3	0.0287	0.7356(*)
R&D Expenditure	0.0273	1.8889(*)
Domestic credit to private sector	0.0022(***)	-0.0095
Rule of Law	0.0465	1.3198
Control of Corruption	0.3448(***)	0.9866
Country fixed effects	Yes	Yes
Time fixed effects	Yes	Yes
R-Squared	0.0607	0.0762
Countries	91	91
Observations	832	832

Table 5. Own elaboration with results obtained from own elaborated models

Table 5 shows the outcomes obtained when GDP per capita at cube terms is included in both models, which has been done in order to search for non-linearities of GDP per

capita. This robustness check is performed for observing how business creation can be affected in countries with high levels of GDP per capita. We investigate if the positive effect from GDPpc arises at advanced stages of economic development and vanishes when the economy keeps increasing their GDPpc.

Regarding model 7, it can be observed that the inclusion of the GDP per capita at cube terms does not affect the previously obtained results, which suggests that there are no non-linearities of GDP per capita. Furthermore, when GDP per capita at cube terms is included, domestic credit to the private sector and control of corruption hold as significant variables in the model, which suggests that the findings obtained in the main model are robust.

However, when GDP per capita at cube terms is included in model 8, the GDP per capita in cube terms is significant (with a p-value lower than 0,01; *).

4.4.3 Including GDPpc at cube terms and control variables

	Model 9: Business density rate as the dependent variable with control variables and GDPpc at cube terms included	Model 10: Proportion of new companies as the dependent variable with control variables and GDPpc at cube terms included
Log GDP per capita	42,33(**)	-352.68(*)
Log GDP per capita ^2	-4,52(**)	29.198
Log GDP per capita^3	0,16(**)	-0.7734
R&D Expenditure	-0.0118	0.1683
Domestic credit to private sector	0.0019(**)	0.000202
Rule of Law	0.0941	3.3464(*)
Control of Corruption	0.2354(*)	0.6435
School Enrollment	0.0037	-0.1305(*)
Rural population	0.0262(.)	-0.4927(**)
Unemployment	-0.0072	-0.1342(*)
Inflation	0.0026	0.0843(**)
Country fixed effects	Yes	Yes
Time fixed effects	Yes	Yes
R-Squared	0.1200	0.1776
Countries	91	91
Observations	832	832

Table 6. Own elaboration with results obtained from own elaborated models

Finally, the last robustness check performed to both models is shown in table 6, which shows the outcomes obtained when GDP per capita at cube terms and control variables are included in both models, performing both robustness checks at the same time.

Model 9 shows the results obtained when business density rate is the dependent

variable. It can be observed that GDP per capita is significant in every level (with p-values lower than 0,001;**). Furthermore, the coefficients of GDP per capita at levels and in square terms are reversed. This shows that the inclusion of GDP per capita in cube terms changes the effect of GDP per capita on business creation at low values of GDP per capita, suggesting that the positive effect of GDP per capita in business creation is noticeable in countries with high levels of GDP per capita.

Moreover, it can be observed that domestic credit to the private sector and control of corruption continue to be significant variables, and only the rural population has a small significance in business creation (with a p-value lower than 0,05). Because of that, results obtained regarding model 9 suggest that the models presented before when business density rate is the dependent variable are robust enough.

Taking a look into the outcomes of model 10, on the other hand, we observe that they are similar to the findings observed in model 6, in which control variables were included. As observed in model 6, control variables become significant.

Finally, it can be observed that, although GDP per capita is not significant at all in model 10, the inclusion of GDP per capita at cube levels reverses the coefficients of GDP per capita at square terms and in levels.

What can be concluded from the robustness checks that have been performed is that the effects of the Domestic Credit to Private Sector and the Control of Corruption variables are quite clear for the business density rate variable. Furthermore, it seems that in order to consistently estimate the effect of GDPpc, it could be attractive to decompose the sample by groups of countries. However, this exercise goes beyond the scope of this work.

5. CONCLUSIONS

In order to improve the understanding of the factors behind entrepreneurship, this paper has examined which are the main drivers of entrepreneurship in a panel of 91 countries over the period 2000-2020.

The main hypothesis that this paper has tried to validate since the beginning is if institutional variables play a more important role in determining entrepreneurship than the economic environment itself. Furthermore, as entrepreneurship is defined in several ways and there is not a unique way of measuring it, two different approaches have been used in order to define it.

When taking into account economic variables alone, both entrepreneurship indicators are clearly affected by the GDP per capita and it could be attractive to decompose the sample by groups of countries in order to consistently estimate the effects of this variable on entrepreneurship. However, results differ regarding R&D expenditure and Domestic credit to the private sector.

When institutional variables are taken into account, we find differences in the results obtained, which suggests that institutional variables play a more important role in determining entrepreneurship than the economic environment itself. This hypothesis is clearly validated when using business density rate as entrepreneurship determinant, which has been tested by several robustness checks. Nevertheless, when entrepreneurship is measured as the proportion of new companies over total companies, the results differ and the hypothesis is not validated at all.

It is important to note that this study has several limitations. Firstly, the dataset used only covers a relatively short period of 20 years, which may not capture long-term trends in entrepreneurship, and the number of observations (832) may be limited.

Secondly, the study is based on aggregate data and does not capture individual-level determinants of entrepreneurship, which may be important in explaining variations in entrepreneurship across different subgroups of the population.

Another limitation to take into account is that the study only includes a limited number of variables that may affect entrepreneurship, and other factors such as access to markets and networks, regulatory frameworks, and tax policies, were not considered.

Despite these limitations, this study provides valuable insights into the determinants of entrepreneurship and could inform policies aimed at promoting entrepreneurship around the world. The findings suggest that policies aimed at increasing economic health and facilitating access to credit could have a positive impact on entrepreneurship. Moreover, policies aimed at improving institutional quality and decreasing corruption could be particularly effective in promoting business density rate, while policies aimed at promoting innovation could be particularly effective in promoting the proportion of new companies over total companies.

Overall, this study highlights the importance of taking a multifaceted approach to analyzing entrepreneurship and underscores the need for policies that address the various determinants of entrepreneurship in a comprehensive manner. However, further research is needed to address the limitations of the study and to provide a more comprehensive understanding of the factors that influence entrepreneurship. Such research could help policymakers develop effective policies and strategies to promote entrepreneurship and foster economic growth.

BIBLIOGRAPHY

Acs, Z. (2008). How is entrepreneurship good for economic growth? In Entrepreneurship, Growth and Public Policy (pp. 291-301). Edward Elgar Publishing.

Acs, Z. J., & Audretsch, D. B. (1988). Innovation and firm size in manufacturing. Technovation, 7(3), 197-210.

Acs, Z. J., Audretsch, D. B., & Feldman, M. P. (1994). R & D spillovers and recipient firm size. The review of Economics and Statistics, 336-340.

Agostino, M., Nifo, A., Trivieri, F., & Vecchione, G. (2020). Rule of law and regulatory quality as drivers of entrepreneurship. Regional Studies, 54(6), 814-826.

Anokhin, S., & Schulze, W. S. (2009). Entrepreneurship, innovation, and corruption. Journal of business venturing, 24(5), 465-476.

Ashenfelter, O., Harmon, C., & Oosterbeek, H. (1999). A review of estimates of the schooling/earnings relationship, with tests for publication bias. Labour economics, 6(4), 453-470.

Avnimelech, G., Zelekha, Y., & Sharabi, E. (2014). The effect of corruption on entrepreneurship in developed vs non-developed countries. International Journal of Entrepreneurial Behavior & Research.

Baumol, W. J. (1996). Entrepreneurship: Productive, unproductive, and destructive. Journal of business venturing, 11(1), 3-22.

Bourguignon, F., & Verdier, T. (2000). Oligarchy, democracy, inequality and growth. Journal of Development Economics, 62(2), 285-313.

Cantillon, R. & Berg, V. R. D. (2020). Richard Cantillon's Essay on the Nature of Trade in General: A Variorum Edition (Annotated). Routledge.

Castaño, M. S., Méndez, M. T., & Galindo, M. Á. (2015). The effect of social, cultural, and economic factors on entrepreneurship. Journal of business research, 68(7), 1496-1500.

DataBank | The World Bank. (s. f.). https://databank.worldbank.org/

Delgado, M., Porter, M. E., & Stern, S. (2010). Clusters and entrepreneurship. Journal of economic geography, 10(4), 495-518.

Drucker, P. F. (1998). The discipline of innovation. Harvard business review, 76(6), 149-157.

Futures Group, 1984, Final Report: Characterization of Innovations Introduced on the U.S. Market in 1982, Glastonbury, CT: Futures Group, prepared for the Small Business Administration.

Galor, O., & Zeira, J. (1993). Income distribution and macroeconomics. The review of economic studies, 60(1), 35-52.

Hartog, C., Van Stel, A., & Storey, D. J. (2010). Institutions and entrepreneurship: The role of the rule of law. EIM Scales paper H, 201003, 591-629.

Kihlstrom, R. E., & Laffont, J. J. (1979). A general equilibrium entrepreneurial theory of firm formation

Kirchhoff, B. A. (1994). Entrepreneurship and dynamic capitalism: The economics of business firm formation and growth. ABC-CLIO.

Kirchhoff, B. A., Armington, C., Hasan, I., & Newbert, S. (2002). The influence of R&D expenditures on new firm formation and economic growth. Washington, DC: National Commission on Entrepreneurship, 27, 4-24., Kirchhoff

Lowrey, Y. (2004). Business density, entrepreneurship and economic well-being. Entrepreneurship and Economic Well-Being (June 2004).

Meyer, N., & de Jongh, J. (2018). The importance of entrepreneurship as a contributing factor to economic growth and development: The case of selected European countries. Journal of Economics and Behavioral Studies, 10(4 (J)), 287-299.

Naudé, W. (2013). Entrepreneurship and economic development: Theory, evidence and policy. Evidence and Policy. IZA Discussion Paper, (7507).

North, D. C. (1991). Institutions. Journal of economic perspectives, 5(1), 97-112.

Reynolds, P. D., Hay, M., & Camp, S. M. (1999). Global entrepreneurship monitor. Kansas City, Missouri: Kauffman Center for Entrepreneurial Leadership.

Sambharya, R., & Musteen, M. (2014). Institutional environment and entrepreneurship: An empirical study across countries. Journal of International Entrepreneurship, 12(4), 314-330.

Toma, S. G., Grigore, A. M., & Marinescu, P. (2014). Economic development and entrepreneurship. Procedia Economics and Finance, 8, 436-443.

Vakili, F., Tahmasebi, N., Tahmasebi, S., & Tahmasebi, D. (2016). Role of education in entrepreneurship development. Journal of Ecophysiology and Occupational Health, 16(3/4), 78-87.

WGI-Home. (s. f.). https://info.worldbank.org/governance/wgi

APPENDIX A

A1: List of least developed countries according to UN

(https://unctad.org/topic/least-developed-countries/list)

-Africa (33): Angola, Benin, Burkina Faso, Burundi, Central African Republic, Chad, Comoros, Democratic Republic of the Congo, Djibouti, Eritrea, Ethiopia, Gambia, Guinea, Guinea-Bissau, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Niger, Rwanda, Sao Tome and Principe, Senegal, Sierra Leone, Somalia, South Sudan, Sudan, Togo, Uganda, United Republic of Tanzania and Zambia

-Asia (9): Afghanistan, Bangladesh, Bhutan, Cambodia, Lao People's Democratic Republic, Myanmar, Nepal, Timor-Leste and Yemen

-Caribbean (1): Haiti

-Pacific (3): Kiribati, Solomon Islands and Tuvalu

A2: List of eliminated countries:

American Samoa, Andorra, Anguilla, Antigua and Barbuda, Aruba, The Bahamas, Barbados, Belize , Benin, Bermuda, Bhutan, British virgin islands, Brunei, Cabo verde, Cayman Islands, Channel Islands, Comoros, Cook islands, Cyprus, Dominica, Faroe Islands, Fiji, French Polynesia, Gibraltar, Greenland, Grenada, Guam, Guyana, Isle of man, Jersey, Channel Islands, Kiribati, Liechtenstein, Luxembourg, Macao SAR, Maldivas, Malta, Marshall islands, Martinique, Mauritius, Micronesia, Monaco, Nauru, Palau, Reunion, Samoa, San Marino, Santo tome and principe, Solomon islands, Surinam, Tuvalu, Vanuatu, Virgin Islands

A3: List of variables

Entrepreneurship indicators:

-New firms

-Total number of firms

-Adult population

Economic variables:

-GDPpc of the country in constant 2015 USD

-Inflation, Consumer prices (annual %)

-Unemployment, total (% of labor force), Nat. est.

-Rural population (% of total population)

-School enrollment secondary (%)

-Research and development expenditure (% of GDP)

-Domestic credit to private sector (% of GDP)

Institutional variables:

-Government Effectiveness: Estimate

-Control of Corruption: Estimate

-Rule of Law: Estimate