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DETERMINANTS OF IMPROVEMENT-DRIVEN OPPORTUNITY  
ENTREPRENEURSHIP: CROSS-REGIONAL ANALYSIS

Master's Thesis by the 2<sup>nd</sup> year student

Concentration – Information Technologies and Innovation Management

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## ЗАЯВЛЕНИЕ О САМОСТОЯТЕЛЬНОМ ХАРАКТЕРЕ ВЫПОЛНЕНИЯ ВЫПУСКНОЙ КВАЛИФИКАЦИОННОЙ РАБОТЫ

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## АННОТАЦИЯ

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Описание цели, задач и основных результатов	Целью данной исследовательской работы является определение детерминантов высокопритязательного добровольного предпринимательства. На основании обзора литературы выявлен пробел в исследованиях и сформулированы гипотезы. Семь институциональных и экономических факторов были протестированы на данных за 4 года (2014-2017 гг.) для 4 групп стран: Европы, Северной Америки и Австралии (объединены в одну группу), Латинской Америки, Африки и Азии. Согласно результатам, разные факторы значимы для разных групп стран. На основании полученных результатов предложена система классификации детерминантов на 3 группы: базово-регулируемые, специально-предпринимательские и направленные на развитие. Также описаны варианты применения результатов исследования на практике.
Ключевые слова	Предпринимательство, высокопритязательное предпринимательство, региональное исследование, детерминанты предпринимательства, мотивация предпринимательства

## ABSTRACT

Master Student's Name	Elizaveta Medvedeva
Master Thesis Title	Determinants of improvement-driven opportunity entrepreneurship: cross-regional analysis
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Description of the goal, tasks and main results	The goal of the research paper is the identification of determinants of improvement-driven opportunity entrepreneurship. Following the literature review, research gap is defined, and hypotheses are stated. 7 institutional and economic factors were tested on data for 4 years (2014-2017) on 4 groups of countries: Europe, Northern America and Australia (tested as one group), Latin America, Africa and Asia. According to the results, different sets of determinants are significant for different groups of countries. Based on the results, classification of the determinants into 3 groups is proposed: basic-regulatory, specific-entrepreneurial and improvement-driving. Practical implications of the results of the research are covered.
Keywords	Entrepreneurship, improvement-driven opportunity entrepreneurship, determinants of entrepreneurship, entrepreneurship motivation

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## **Introduction**

Entrepreneurship is widely discussed and studied area of scientific research nowadays. The relevance of the research in this field is associated with the connection between entrepreneurship and economic growth (Acs et al., 2012; Yu et al., 2016). The factors which determine entrepreneurship are accessed to determine the sensitivity of entrepreneurship to them and indirectly affect it.

If entrepreneurship is discussed out of the field of classical economic theory which treats it as one of factors of production (Marshall, 1890), usually it is referred as a set of personal characteristics and features of a man or woman which allow them to “develop, organize and manage a business venture along with any of its risks in order to make a profit” (Business Dictionary, 2018). However, those characteristics are not the only ones which determine the decision to start own business: the decision of starting entrepreneurship is a result of the aggregation of external and internal factors (Gartner, 1988; Cope, 2003; Ajayi-Obe, 2007). This research paper is focused on external factors.

Entrepreneurship is vitally important and valuable element of the modern world, as it is the crucial driver of economic development (Schumpeter, 1934; Toma et al., 2014). Scientists argue about the nature of the relationship between entrepreneurship and economic development and regarding the direction of the causality effect between them (Smith, 1776; Drucker, 1985; Gutterman, 2012; Toma et al., 2014).

Among the variety of classifications of entrepreneurship, motivation to start a business as the diversifying mechanism is exploited in this paper. This classification was introduced and employed by Reynolds et al. (1999). Motivation to start an enterprise is either opportunity (including both independence or increase income motives) or necessity-motivated entrepreneurship. Opportunity entrepreneurs start a business because they believe that in current social/economic/cultural/institutional circumstances it is perspective and profitable. Improvement-driven opportunity entrepreneurs are who indicate that they are motivated by an idea of a business, not independence or income needs. Necessity-motivated entrepreneurs are those entrepreneurs who start a business because they are not able to find any job and earn money in any other activity; entrepreneurship is the only and necessary option for them.

Some researchers suppose that only opportunity-driven entrepreneurship is associated with economic development, as it stimulates economic growth, while necessity-driven entrepreneurship

has no impact on economic growth (Acs et al., 2008). Following this theory, this research is focused on determinants of improvement-driven opportunity entrepreneurship.

There is a variety of research which is focused on determination of factors which affect entrepreneurship of different types in particular locations, countries, regions (groups of countries) and globally. The focus of the research is diverse and covers the broad set of factors which affect entrepreneurship. For instance, determinants of entrepreneurship on a global scale are widely studied (Rusu and Roman, 2016; Van Roy and Nepelski, 2017), while determinants of entrepreneurship in Asian regions are not deeply examined (Pihno et al., 2017), as well as in Africa (Youssef et al., 2017), comparing to the research focused on Latin America (Aparicio et al., 2016; Tabares, 2017) and Europe (Van Roy and Nepelski, 2017; Dilli and Westerhuis, 2018). Additionally, the factors of entrepreneurship vary for developed and developing countries (Schott and Jensen, 2008; Vivarelli, 2013).

Therefore, the goal of this paper is to explore determinants affecting improvement-driven opportunity entrepreneurship in different regional groups of countries.

To achieve this goal several objectives are stated. Firstly, the theoretical objectives are: identify the scope of definitions of entrepreneurship and determine to one to apply in the research; then, study the theories of entrepreneurship to focus on the nature of entrepreneurship and determinants of it. The next objective is to determine the topicality of the paper through the review of the connection between entrepreneurship and economic growth. After it, observe the recent studies on the factor of entrepreneurship on the global and regional level to directly identify and prove the existence of relevant research gap.

Secondly, methodological objectives are: identify the variables and the theoretical references for them, develop statistical research design and conduct it. Empirical objectives are the key ones and include the discussion of the results of the study. Following the next objective, systematization of the results should be performed. The final objective, to achieve the goal stated, is to formulate theoretical and practical implications.

The object of the paper is improvement-driven opportunity entrepreneurship in different countries and regions. The subject of this study is the list of determinants which affect the entrepreneurship.

To fulfill the goal and objectives stated above, this research is structured in the following way. Literature is reviewed in the first chapter of the paper in order to determine the definition of entrepreneurship, the theoretical basis of entrepreneurship, analyze and summarize the findings of research in the field, define research gap and formulate hypotheses. The second chapter covers the

methodology of the empirical research and provides the review of data processing and the results of quantitative analysis. The third chapter is devoted to discussion of the key findings and explanation of the results, policy and managerial applications of the research.



## **Chapter 1. Theoretical Background of Entrepreneurship and its determinants**

The field of the research associated with entrepreneurship is quite broad. Firstly, the definitions of entrepreneurship are covered in order to choose the one which is the most relevant to the purposes of this paper. Theories of entrepreneurship are briefly covered to determine the scope of theories of the nature of entrepreneurship and determinants of it. Then the literature on the influence of the entrepreneurship over economic growth and development generally is provided to prove the importance and relevance of the paper. After it, the literature about the factors of entrepreneurship (including regional specific research) is observed in order to structure existing research and detect the gap. Some theoretical aspects of the entrepreneurship are also briefly reviewed align. Following each of these sections the summary of conclusions which are influential regarding the research is provided.

### **Definition of entrepreneurship**

This section aims to identify the variety of definitions of entrepreneurship, structure them, observe the logic of the development of the term which led to the definition which is chosen for this research as the most suitable for the purposes of this research.

Entrepreneurship as an academic term exists in multiple disciplines including sociology, economics, marketing, management, anthropology (Kaufmann and Dant, 1999; Ahmad and Seymour, 2008; Simpeh, 2011). Moreover, the number of empirical research of entrepreneurship significantly exceeds conceptual framework research on it (Shane and Venkataraman, 2000).

According to Gutterman (2012), it is possible to distinguish four stages of entrepreneurship definition evolution. On the first stage entrepreneurship is mainly focused on economic functions and refers to classical era, when entrepreneurship was associated with resale with some margin. The etymology of the word has the root in French verb “entreprendre” – “to undertake” (Kuratko and Hodgetts, 2004). The second stage of definition development is associated with discussion of the ability of an entrepreneur to take the risks produced by environmental instability. On the third stage the focus is moved towards innovation and creativity orientation of entrepreneurship. Schumpeter (1934) supposed that entrepreneurship is the key to innovation and economic development. The final stage of entrepreneurship definition formation is on “micro” level: scientists and researchers are interested in personal characteristics of entrepreneurs and

consider the set of them to be the key element (Gartner, 1988; Cope, 2003; Ajayi-Obe, 2007). Figure 1 summarizes the stages.

Generally speaking, all the definitions of entrepreneurship correspond to any of the stages of entrepreneurship. According to Ahmad and Seymour (2008), “the concept of entrepreneurship generally refers to enterprising individuals who display the readiness to take risks with new or innovative ideas to generate new products or services” (Ahmad and Seymour, 2008, p. 5). This definition corresponds to the final – fourth – stage of entrepreneurship. However, this definition leads to a question is it possible to consider businessmen who do not produce an innovative or new product or service to be an entrepreneur? According to the definition by Ahmad and Seymour (2008), businessman of this nature is not an entrepreneur, while according to Balamoune-Lutz (2007) and (Naudé, 2007), entrepreneurship is the process of new business creation and taking all corresponding risks generated by the environment. This definition leads to the conclusion that a businessman who starts and runs any business is an entrepreneur.

Turning to more general and global definitions of entrepreneurship, the following should be mentioned. Tijani-Alawiye (2004) considered entrepreneurship as a process of increasing the quantity and quality of small, medium and large businesses and enterprises in a country through development and growth of number of entrepreneurs with innovative orientation, in order to stimulate sustainable economic growth and development.

Barringer and Ireland (2008) offered the definition of entrepreneurship as a process of opportunities exploration through application of resources of labor (human), finance (capital) and material (resources). In other words, entrepreneurship is an ability to see the chance and catch it taking inherent risks. Entrepreneurship is a systematic and continuous process of creation.

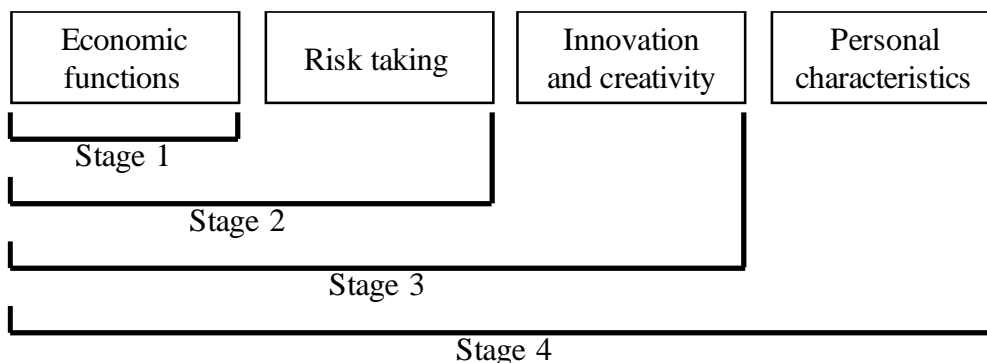


Figure 1. Stages of entrepreneurship definition formation.

Raimi (2015) split the variety of definitions of entrepreneurship into three categories (perspectives): traits, processes, and activities. Traits category contains the definitions of entrepreneurship which primarily refers to personal characteristics of an entrepreneur, answering the question “Who are those people who become entrepreneurs?”. Processes category refers to systematic and methodological exploitation of entrepreneurship, answering the question “How is it done?”. Activities category refers to the set of definitions which define entrepreneurs through the actions they take, answering the question “What is done?”.

In 1999 with the start of working Global Entrepreneurship Monitor (GEM) introduced the following definition of entrepreneurship: “[*entrepreneurship is*] any attempt at new business or new venture creation, 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” (Reynolds et al., 1999, p. 3). This definition corresponds to the first stage of entrepreneurship definition formation.

A brief review of definitions of entrepreneurship and its structure allows to specify and explain which stage of entrepreneurship definition is the most applicable in case of this research. The research is focused on global scale, and each observation corresponds to a country, not to a person. Thus, personal characteristics are not exploited, stage 4 is out of scope.

Data for the research are partially extracted from GEM database. Thus, the definition of entrepreneurship provided by GEM is applied in this study. Individual characteristics of people are not taken into account as well as risks taken or level of innovativeness of a business; this corresponds to the first stage of simple economic function, which defines entrepreneurship. However, the research is focused on improvement-driven opportunity entrepreneurship which is associated with innovation or creation of something new and taking the corresponding risks; this is the third stage; “advanced” entrepreneurship. Therefore, taking the most broad and general definition of entrepreneurship, the paper is rather focused on narrow type of entrepreneurship.

### **Theories of entrepreneurship**

This section aims to review different theories of entrepreneurship including economic theory, human capital theory, psychological theories, sociological theories and anthropological theories of entrepreneurship in order to deepen the context of the nature of entrepreneurship.

It is reasonable to start with the mainstream economic theories of entrepreneurship. Economists realized the importance of entrepreneurship development and its effect quite early but faced the problems with theoretical modeling of entrepreneurship (Klein and Cook, 2006).

Classical theories were mainly focused on the factors which determine and stimulate entrepreneurship development within market. Classical economists (Smith, 1776; Ricardo, 1817) wrote also about value creation through entrepreneurial activities. As for neo-classical economic theory, innovation and creativity became the central focus of entrepreneurship which changes market (Gutterman, 2012). Kirzner's theory defines entrepreneurship is an ability to see economic opportunities within market; profits are referred as an award (Kirzner, 1973). Later this approach was developed into an opportunity-based theory of entrepreneurship (Drucker, 1985). According to this theory, the external market situation provides and stimulates enterprises. Similar logic is applied in resource-based entrepreneurship theories, where accessibility of resources in market stimulates entrepreneurship (Stevenson and Jarillo, 1990).

Schultz (1971) considered entrepreneurship to be the element of human capital. Following this approach, education is the critical factor of entrepreneurship and economic growth. The psychological theory of personal trait states that inborn characteristics of people allow them to start an enterprise (Simpeh, 2011; Gutterman, 2012). Such characteristics as optimism, energy, and others are developed through education or imitated. Another psychological theory is locus of control theory, which considers entrepreneurship as dependent on both personal characteristics (internal locus of control) and external accessibility and support (external locus of support), for example, people who are rather oriented in external locus of control, have a strong belief that chance or fate determine their success (Pervin, 1980; Simpeh, 2011). The need of achievement theory states that people have a natural need to achieve something, and entrepreneurship is the form of an achievement which also leads to economic growth (Islam, 1989; Raimi and Adeleke, 2010; Simpeh, 2011). There also exist the block of sociological and institutional theories of entrepreneurship. Those theories are mainly focused on the decision making of starting an enterprise and explain which social, economic and cultural conditions affect it (Landstrom, 1998; Oyugi and Kasule, 2012; Acs et al., 2008; Strough, 2016).

The last block of theories to be mentioned is anthropological theories of entrepreneurship. Those theories consider entrepreneurship to a cultural process (Stewart, 1991) which is stimulated by four clusters: power distance, individualism versus collectivism, masculinity versus femininity and uncertainty avoidance. According to anthropological theory, each cultural block is associated with a unique set of the features, which determine entrepreneurship (Hayton et al., 2002).

A brief review of the theories of entrepreneurship helps to understand the wideness of the approaches and dimensions of it. Following the block of sociological and institutional theories, this research is associated with the external determinants of entrepreneurship activity.

## **The role of entrepreneurship in economic growth**

This section is devoted to the review and discussion of different roles and effects of entrepreneurship over economic growth and vis-a-versa. Researchers and scientists offer multiple approaches to definition of this relationship (Minniti, 2008; Lee, 2016; Stough, 2016; Bonito et al., 2017). Below the key ones are covered to detect the role of entrepreneurship and evaluate its importance.

As stated above, in 1934, on the third stage of entrepreneurship definition formation, Schumpeter developed some new approach as he considered entrepreneurship as one of the critical elements in economic growth and development as it was self-adopting institute: “dynamic disequilibrium brought on by the innovating entrepreneur... [are] the ‘norm’ of a healthy economy” (Schumpeter, cited in Peter Drucker, 1985, p. 27). As per Schumpeter, innovation and progress are affected and stimulated by entrepreneurs. As a result, efficiency and economic development are also influenced (Schumpeter, 1934).

In 1966 Kuznets proposed the opposite theory: as entrepreneurship is self-employment, it decreases the rate of commercial employment, and it leads to a slowdown of economic growth (Kuznetz, 1966). This theory is considered to be the first one which aimed to identify the relationship between entrepreneurship and economic growth. Later this theory was empirically tested and particularly accepted (Wennekers et al., 2005).

The discussion of entrepreneurship and economic growth is widely associated with government policies issues, as many researchers study entrepreneurship in order to develop recommendations regarding entrepreneurship development stimulation which as a result will positively affect economic growth. Minniti (2008) proved that there is substantial positive effect between the level of entrepreneurial development and economic growth. The author the paper emphasizes on the efficiency of economic development stimulation through entrepreneurship.

However, this approach and conclusions were called in a question. Following the recent economic crisis, Shane (2009) critically assessed the effect of entrepreneurship over economic development and governmental policies and programs of entrepreneurship support. According to the author, government subsidies small start-ups and enterprises, but they have too small economic power to make any impact over economic growth. Therefore, the effect of entrepreneurship over economic growth is overestimated. Start-ups and small enterprises provide a very limited number of workplaces and generate low profit margins. If an amount of subsidies (costs) is higher than margins (contribution to a country’s gross domestic product), this system is inefficient. Shane states that government subsidies should be allocated to companies and firms of bigger scale as it will result with higher impact for society and economy.

The research performed by Baumol and Storm (2007) adds some details into the analysis of entrepreneurship over economic growth. The authors stated the hypothesis that different types of entrepreneurship have a different impact over economic growth. In this study, entrepreneurship was classified based on the “driver” of it. Enterprises driven by innovation or technology-improvement affect economic growth more significantly. As a recommendation for government, this article suggests to adopt subsidiary allocation system and subsidize the start-ups and small enterprises which are more efficiency-oriented.

Wennekers et al. (2005) proposed the theory that relationship between the level of entrepreneurship activity and economic growth is U-shaped: entrepreneurship has negative effect over economic growth in countries with the lower level of development, in countries with higher level of economic development, positive dynamics of entrepreneurship is associated with higher economic growth. These hypotheses were tested on GEM data for 2002; the theory was supported: in countries with the lower level of economic development dynamics of entrepreneurship followed the negative trend; while in more developed countries the higher level of entrepreneurship was associated with economic growth.

Classification of economic development stages was applied by Acs et al. (2008) in order to check if each stage is connected to entrepreneurship on a specific way. Economies (countries) were divided into three groups: factor-driven (lower stage of economic development), efficiency-driven (medium stage of economic development) and innovation-driven (upper stage of economic development). Empirical study with application of GEM data supported the theory of U-shaped relationship. However, for the purposes of this research paper, the other conclusion is more important and crucial: necessity-motivated entrepreneurship is neutral to economic growth, while improvement-motivated opportunity entrepreneurship is positively associated with economic growth.

Acs and Varga (2005) also found empirical evidence that supports the theory that relationship of economic growth and entrepreneurship varies for different types of it. Ferreira et al. (2016) and Aparicio et al. (2016) received the similar results of empirical studies.

Moreover, this theory was tested not only on a national level (countries) but also on city-scale (Audretsch et al., 2015). The researchers examined empirical data for the level of entrepreneurship development in different European cities and identified that for big cities relationship is U-shaped, while for small cities no evidence was found.

The variety of researchers tried to take into account together with economic development stage some regional specifics applying both theoretical and empirical approaches of analysis (Fritsch and Wyrwich, 2016; Strough, 2016). Strough (2016) applied historical and

economic background of USA, Europe, and China in order to determine the pattern of entrepreneurship in each region. According to the author, in European countries entrepreneurship is mainly led and directed by government (Acs et al., 2012; Yu et al., 2016), in China it is determined and promoted by public sector (Bell, 2015; Applebaum et al., 2016), in USA – the least government support (Lipset, 1996; Yu et al., 2009).

Fritsch and Wyrwich (2016) studied the historical effect of culture on entrepreneurial activity in different regions in Germany. The findings state that effect of entrepreneurship has long-term effect; opportunity-based entrepreneurship is more developed in Western Germany rather than in Eastern, such institutes as infrastructure, entry barriers and level of bureaucracy affect it even inside one country.

GEM follows the approach that entrepreneurship affects economic growth. Figure 2 illustrates Conventional Model of National Economic Growth (Reynolds et al., 1999). According to it, social, cultural and political context of a country determines the general national framework conditions. Those conditions affect both major established firms and micro, small and medium firms. All those firms lead to national economic growth and development.

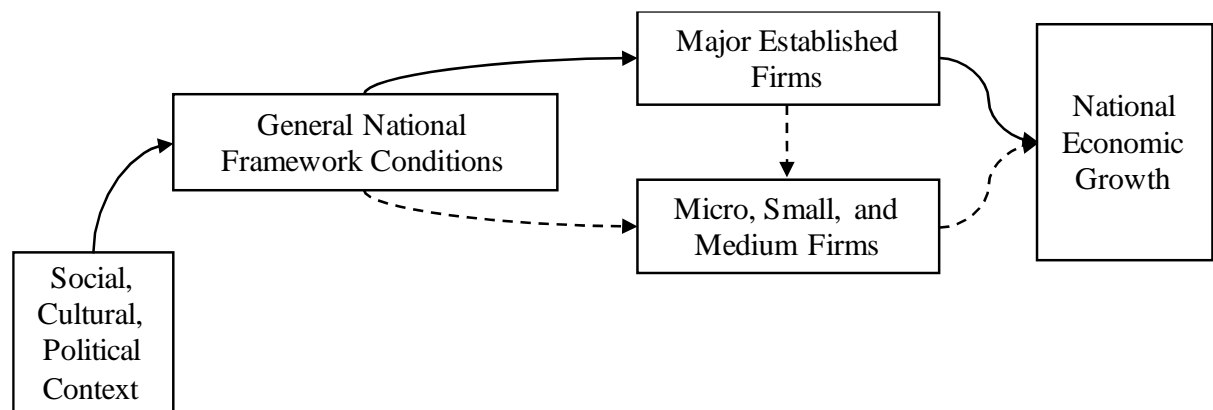


Figure 2. Conventional Model of National Economic Growth (Reynolds et al., 1999).

The relationship between entrepreneurship and economic growth is not the object of the research of this paper. However, the review of it gives the understanding of scientific trends and patterns of the field and contributes to the importance and relevance of the research. Several significant findings of this section affect the research and form it. Firstly, it is vital to diversify the type of entrepreneurship as each one is connected with economic growth in a unique way. Secondly, the level of economic development is associated with the different trend of entrepreneurial activity. Finally, both economic development and entrepreneurship vary depending on regional basis.

The nature of the relationship of entrepreneurship and economic growth is still questionable. However, the connection is undeniable and should be carefully taken into account during creation of the design of methodology of the research.

### **Empirical studies on the factors of entrepreneurship**

Entrepreneurship is one of the critical elements of an economy (Toma et al., 2014). This leads to the vast interest and research on the factors which determine and affect it. Together with the development of entrepreneurship activity and the variety of directions of it, the number of research and approaches to it was rising for several previous years. This section is devoted to the review of empirical studies performed in this field. Both methodologies and relevant findings are covered in order to form a strong base for the research of this paper and formulate hypotheses.

The first GEM Report was published in 1999. It included the set of indexes and indicators measuring entrepreneurial activity in different countries. A few years later the scope of the Report was extended, in GEM Report 2002 the classification of entrepreneurship based on motivation for starting a business was implemented and consolidated into the research. The motivation for starting an enterprise was classified as opportunity or necessity-driven. The empirical analysis showed the strong connection between the major motivation type and business development in a country: a higher share of opportunity-motivated entrepreneurship was associated with higher business development; necessity-motivated entrepreneurship – with lower (Acs et al., 2008). For this very first research of different types of entrepreneurship observations collected in 37 countries for 2002 were taken. 61% of entrepreneurship who recently started the business identified itself as opportunity-motivated; 37% – as necessity-motivated; the rest of 2% had “other” motivation to start a business (Reynolds et al., 1999; Reynolds et al., 2002).

After it, a broad number of research was performed based on GEM data in order to determine factors which affect the share of opportunity-motivated entrepreneurship and necessity-motivated entrepreneurship. Several papers are reviewed below.

McMullen et al. (2008) performed the study on the effect of institutional factors over the types of entrepreneurship. Dependent variables were opportunity and necessity-motivated entrepreneurship in 37 countries for 2002 (GEM, 2002); independent – 10 institutional factors extracted from Indexes of Economic Freedom by Heritage Foundation (*trade freedom, fiscal freedom, freedom from government, monetary freedom, investment freedom, labor freedom, property rights, business freedom, freedom from corruption, financial freedom*) and *GDP per capita* for 37 countries (all available information from GEM for that year).



Due to multicollinearity problem, variables *freedom from corruption* and *trade freedom* were excluded from the analysis. The sample was comparatively small, and the number of significant variables was limited. According to the findings of the research, for opportunity-motivated entrepreneurship *GPD per capita*, *labor freedom*, *property rights* variables were significant with a negative sign of beta coefficient. The authors explain the results applying opportunity cost theory, attitude to risk, rationality and government policies.

Research performed by Levie and Autio (2011) was based on data obtained from GEM, Ease of Doing Business project and World Bank. As dependent variables, strategic (business with the intention to employ 20 or more people during next five years) and non-strategic (businesses with no intention to employ 20 or more people in the next five years) entrepreneurship were used; the share of opportunity-motivated entrepreneurs among strategic entrepreneurs was the highest. As independent variables *rule of law index*, *regulatory burden* were employed. As control variables *GDP growth with one year lag*, *population growth* were included, as well as dummy variable for transit economies (China, India, Russia, Latvia, Hungary, Croatia and Slovenia). The results demonstrated the positive dependence of both strategic and non-strategic entrepreneurship on *GDP growth*, and dependence of strategic entrepreneurship on *rule of law index* with negative sign and on *regulatory burden* with positive sign.

The study developed by Fuentelsaz et al. (2015) aimed to explore how different formal institutions affect opportunity-motivated and necessity-motivated entrepreneurship. Dependent variables – *opportunity-motivated* and *necessity-motivated entrepreneurship* were obtained from GEM. Independent variables *property rights*, *business freedom*, *fiscal freedom*, *labor freedom*, *financial capital* were obtained from Index of Economic Freedom by Heritage Foundation; *educational capital* – from World Bank, as well as control variables *GDP growth*, *unemployment*, and *population growth*. For each independent variable, separate regression analysis was performed. According to the findings, *property rights*, *business freedom*, *labor freedom*, *financial capital* and *educational capital* are positively associated with opportunity-motivated entrepreneurship. *Fiscal freedom*, *GDP growth*, and *unemployment* are associated negatively.

Valdez and Richardson (2013) were looking on the effect of *normative*, *cultural-cognitive* (both obtained from GEM) and *regulative* (obtained from Index of Economic Freedom by Heritage Foundation) institutions on two types of entrepreneurship. *Gross national income per capita* was referred as a control variable. As per results, *cultural-cognitive* and *normative institutions* have positive connection with opportunity-motivated entrepreneurship, while *gross national income per capita* is negatively associated. The authors summarized that the direct effect

of government over entrepreneurship is limited, while indirect elements could be efficiently influenced.

The empirical study performed by Valliere (2008) aimed to validate the existing results and theories applying other data. Dependent variables were extracted from GEM, while independent – from Global Competitiveness Report. Semi-panel data for 4 years with 171 observations for 53 countries was constructed. Indexes from Global Competitiveness Report were divided into groups, regressed (with a very limited number of significant variables) and then split into 4 factors: *commercial munificence*, *technology openness*, *regulatory openness*, and *technology index*. The model constructed did not completely fit into existing theory, however, due to the number of limitations the author mentioned the need to validate the findings.

All the papers covered above were applying global data, all countries available in GEM were included in research. Together with those studies, GEM data was applied in research which were oriented on some particular countries or groups of countries in order to find some specific regional features.

Amoros et al. (2016) focused on 9 countries in Latin America. The authors referred to similar economic conditions of those countries and common cultural background. As independent variables *GDP per capita*, *purchase power parity*, *growth rate of GDP*, *inflation rate*, *unemployment rate*, *real minimum wage*, *informality*, *corruption perception*, *transparency* (obtained from GEM, World Bank, Transparency International, International Labor Organization). According to the results, in Latin America opportunity-motivated entrepreneurship is positively associated with *economic growth* and *informality*; negatively – with *GDP per capita*. To explain the results, authors refer to some examples and policies for the countries studied.

European Union countries were analyzed by Roman and Rusu (2016). Independent variables were extracted from GEM and World Bank: *GDP*, *GDP per capita*, *GDP growth rate*, *unemployment rate*, *inflation rate*, *domestic credit to private sector offered by banks*, *fear of failure*, *entrepreneurial intentions*, *perceived capabilities*, *time and cost of starting a business*. *Unemployment*, *inflation*, *entrepreneurial intentions* are associated with opportunity-entrepreneurship with negative sign of the coefficient, *domestic credit to private sector offered by banks* – with positive sign.

The examples of these two studies of different regions are not the only attempts to focus on some particular countries or regions and identify some local specifics (Tominc and Rebernik, 2007; Karadeniz and Ozcam, 2010; Neatu and Imbrisca, 2015;

Cruz-Ros et al., 2017; Pihno and Thompson, 2017). The majority of the studies is based on the data extracted from GEM for different countries and years.

Table 1 summarizes and reviews the indicators of entrepreneurship identified by different researchers. The variety is wide and includes institutional, social, and economic factors.

The study covered in this paper is conducted based on methodologies and findings of the studies covered in this section with significant adaptation to the purposes and hypotheses of this research.

*Table 1. Indicators applied in research on entrepreneurship*

Factors	References
<i>GDP per capita, freedom from corruption, trade freedom, labor freedom, property rights, fiscal freedom, monetary freedom</i>	McMullen et al., 2008
<i>GDP per capita, GDP per capita (squared), GDP change, population growth, established e-shop rate, Rule of Law index, Regulatory Burden index</i>	Levie and Autio, 2011
<i>GDP growth, unemployment rate, population growth, property rights, business freedom, labor freedom, financial capital, educational capital, fiscal freedom, unemployment rate</i>	Fuentelsaz et al., 2015
<i>Normative institutions, cultural-cognitive institutions, regulative institutions, gross national income per capita</i>	Valdez and Richardson, 2013
<i>Commercial munificence, technology openness, regulatory openness, technology index</i>	Valliere, 2008
<i>GDP per capita, purchase power parity, growth rate of GDP, inflation rate, unemployment rate, real minimum wage, informality, corruption perception, transparency</i>	Amoros et al., 2016
<i>GDP, GDP per capita, GDP growth rate, unemployment rate, inflation rate, domestic credit to private sector offered by banks, fear of failure, entrepreneurial intentions, perceived capabilities, time and cost of starting a business</i>	Roman and Rusu, 2016

## **Regional studies of entrepreneurship determinants**

Entrepreneurship is covered in the literature on different scales: local, national, country groups (regional) and global level (Sternberg, 2009). The variety of research is presented for each category with a focus on different issues including factors and determinants of entrepreneurship.

Local scale means that research is focused on cities and regions within a country and entrepreneurial activity of them. For example, Hector et al. (2005) were focused on the effect of clusters over entrepreneurship in Germany. Velilla (2018) aimed to analyze and compare dimensions of entrepreneurial activity between Spanish regions and identify individual determinants of entrepreneurship for them.

National level refers to the analysis of entrepreneurship within a country based on local cultural, historical, economic and social factors. Lukes et al. (2013) were analyzing the factors which affect the willingness to run a startup in the Czech Republic. As a result, the key factors for nascent entrepreneurship and startups were identified together with some local police recommendations. Dumitru and Dumitru (2018) were focused on Romania and factors of necessity and opportunity motivated entrepreneurship with a focus on individual features.

Typically, for local and national level studies individual features are considered to be independent variable; and this is reasonable: institutional and economic factors are almost entirely homogeneous between regions inside one country (Lukes et al., 2013).

Country groups level analysis of entrepreneurship include countries which are considered to be similar in some aspects, belong to some stable, ordered group. For example, Meyer (2017) focused the research of the relationship between entrepreneurial activity, economic growth and employment on BRICS countries: Brazil, Russia, India, China and South Africa, as these countries are emerging economies. For the research, national data were analyzed. Another and the most common principle is geographical criteria: countries are split into groups based in location principle. European region is a common object of study. Bosma et al. (2018) investigated the effects of institutions and entrepreneurship on economic growth. Dragan et al. (2017) examined long-term effect of economic freedom on 11 European economies. Liñán and Fernández-Serrano (2014) studied the effect of culture on entrepreneurship. Other global regions are also covered by research. Forms and specifics of entrepreneurship in Asia are covered by Terjesen and Hessels (2009); Udanoh and Zouria (2018) developed the model to predict the women entrepreneurship in Africa, entrepreneurial consolidation in Latin America was the object of study of Herranz et al. (2010). Those studies mainly use national data of economic, institutional and social indicators.

Global level studies include all countries the data for which is available. Those studies aim to find a pattern and correlations, the examples of several global studies are covered in the previous section (McMullen et al., 2008; Valliere, 2008; Levie and Autio, 2011; Valdez and Richardson, 2013; Fuentelsaz et al., 2015). Global level studies usually use national level data, but sometimes an individual level data is also employed (Larsson and Thulin, 2017).

Turning back to regional studies, the following major regions and studies on them should be outlined.

The European region is the most commonly studied in entrepreneurial research due to availability of data and relatively similar level of development (Van Roy and Nepelski, 2017; Dilli and Westerhuis, 2018). Rusu and Roman (2018) found positive effect of availability of financial resource and property rights protection over opportunity entrepreneurship. Fu et al. (2018) identified the positive effect of labor market rigidity over entrepreneurs who were employed before (not necessity entrepreneurs). Dilli and Westerhuis (2018) identified the positive effect of education and gender equality on entrepreneurship in European countries. Van Roy and Nepelski (2017) discovered the positive effect of education, infrastructure, less government regulation over high-tech enterprises. Vililla (2018) proved that United States, Canada, and Australia could be analyzed together with European countries due to the similarity of economic situation, approach to entrepreneurship and motivation of it. It would be reasonable to state that the variety of research on entrepreneurship in Europe is broad and diverse. The situation is different for other regions.

Latin America is quite widely studied as a group of countries as the countries in the region are homogeneous on the high extent (Aparicio et al., 2016). According to the findings of Tabares (2017), Latin America countries are less sensitive to rights and regulation institutions than developed countries (Europe) and more sensitive to the availability of finance provided by government or private parties. Lecuna et al. (2016) discovered that the key determinants of opportunity entrepreneurship are education and export orientation of business. Analysis of the relationship between economic development and entrepreneurship on Latin America dataset confirmed the hypothesis of U-shaped relationship (Amoros and Cristi, 2008). Despite the expectation of the researchers, empirical study by Alvarez and Urbano (2011), found no evidence that business skills or bureaucracy procedures affect entrepreneurship in Latin America.

Africa as a group of countries is not commonly studied in the academic literature on entrepreneurship. However, there are several findings of articles which are interesting to mention. According to Egu and Chiloane-Tsoka (2018), availability of finance is important for

entrepreneurship development in the region. Availability of finance and educational level are the essential determinants of opportunity entrepreneurship (Naudac et al., 2008). Shava and Maramura (2017) identified the lack of finance availability as one of the problems of South Africa (which is, according to the authors, representative for the whole region), as well as the lack of business skills and “entrepreneurial mind”. The research by Youssef et al. (2017) also confirms the lack of financial support and identifies innovation as a positive determinant of entrepreneurship in Africa. Saeedikiya et al. (2017) point out that at the current level of development, Africa is significantly less sensitive to innovation as entrepreneurship driver than Europe.

Asia group of countries is the least studied in entrepreneurial research; the number of research is very limited. Asian economies are sensitive to export orientation; education is critical determinant of opportunity entrepreneurship (Suchart, 2017). The share of shadow economy is high, thus statistical information is not very representative for analysis (Estrin et al., 2013). According to Pihno et al. (2017), Asian small enterprises are not sensitive to innovation; they stay at low productivity level (Giannetti and Simonov, 2009). Institutional factors of entrepreneurship can compensate or substitute each other (Autio and Fu, 2015).

The brief review of the literature on regional studies of entrepreneurship identifies the variety of approaches and results regarding the determinants of entrepreneurship. Moreover, the review helps to evaluate the field for the research gap.

### **Research gap definition and research goal statement**

Previous sections of the Chapter covered both theoretical and empirical studies on the field of entrepreneurship including the discourse into the definition of entrepreneurship, theories of entrepreneurship, the role of entrepreneurship in economic growth, factors of entrepreneurship for different countries on both global and regional levels.

The review of definitions was aimed to form the accurate understanding of the definition of entrepreneurship applied in this study. Theories of entrepreneurship are applied below in the empirical study to form hypotheses and explain the results of the study. Section devoted to the relationship between entrepreneurship and economic growth represents the diversity of views on this relationship and proves that the level of economic development can affect the whole path of development of entrepreneurship (Toma et al., 2014). Moreover, empirical studies prove that two types of entrepreneurship (opportunity-motivated and necessity-motivated) are associated with economic growth differently (Acs et al., 2008). Following these statements, this paper will be

focused on opportunity-motivated entrepreneurship only. The data for empirical data is divided into four sets of countries as different factors are important for different regional groups of countries (Dilli and Westerhuis, 2018; Van Roy and Nepelski, 2017; Tabares, 2017).

The section with the review of empirical studies of determinants of improvement-driven opportunity entrepreneurship identified the wide range of potentially important determinant factors, sources of this data and research methods and technics. Moreover, this section helped to identify the research gap: there are no studies which analyze countries in different regional groups on the same set of independent variables. At the same time, the examples of difference of the results for different regions are presented in the literature and illustrate the difference between the regions.

Datasets employed in entrepreneurship oriented studies are diverse and scalable. Groups of countries scale covers the variety of different countries in a numerical combination of groups. However, different research aim to identify different relationship and results for different groups of countries are not comparable.

Following the results of literature review the goal of this research is stated: explore the determinants affecting improvement-driven opportunity entrepreneurship in different regional groups of countries. Identification of determinants will lead to the proposition of several policy and managerial applications useful for authorities, managers, and individual entrepreneurs.

To achieve the purpose the list of hypotheses with strong theoretical references is presented below.

### **Hypotheses statement**

As discussed in the literature review, the results of determinants analysis for different groups of countries vary, this is the case, for example, for Latin America (Amoroso et al., 2016) and Europe (Roman and Rusu, 2016). Therefore, the regional groups of countries are the terms of this research. This leads to the following research question:

*What are the determinants of improvement-driven opportunity entrepreneurship in different regional groups of countries?*

Additionally, the relationship between entrepreneurship and economic development varies depending on the level of development (Winkers et al., 2005; Acs and Varga, 2005; Ferreira et al., 2016; Aparicio et al., 2016). The determinants for groups of countries with different level of development are not the same (Schott and Jensen, 2008)). Therefore, apart from the regional

groups of countries as the terms of the research, the determinants for groups of developed and developing countries are also analyzed to extend the research and review the determinants of regional groups of countries in the context of the development level.

Entrepreneurship is studied in the frame of four approaches: economic, psychological, organizational and institutional (Viviana, 1999; Verheul et al., 2002). Institutions understood to be the “rules of a game” in a variety of spheres. Institutions are perfectly described in the following quote:

“The instrumental rationality postulate of neoclassical theory assumes that the actors possess information necessary to evaluate correctly the alternatives and in consequence make choices that will achieve the desired ends. In fact, such a postulate has implicitly assumed the existence of a particular set of institutions and information. If institutions play a purely passive role so that they do not constrain the choices of the actors and the actors are in possession of the information necessary to make correct choices, then the instrumental rationality postulate is the correct building block. If on the other hand the actors are incompletely informed, devise subjective models as guides to choices, and can only very imperfectly correct their models with information feedback, then a procedural rationality postulate is the essential building block to theorizing.” (North, 1990, p. 108)

According to Gnyawali and Fogel (1994), institutional factors which affect entrepreneurship correspond to one of four dimensions: (1) government policies and procedures; (2) socioeconomic conditions; (3) entrepreneurial and business skills; (4) financial and non-financial assistance. The determinants and hypotheses associated with them are distributed between dimensions: (1) – *property rights and legal system*; (2) – *labor market, business sophistication*; (3) – *higher education and training*; (4) – *financial market, infrastructure and innovation*.

### ***Property rights and legal system***

Property rights and legal system refer to the degree of property rights protection guaranteed by the local government and straight of legal system in a country. This element is the key one for efficient business transactions as it provides the incentive for entrepreneurship (Baumol, 1990). Moreover, legal system is the instrument of prevention of error (Bowen and De Clercq, 2008; Levie and Autio, 2011). This mechanism indicates that laws could not be ignored.



Moreover, opportunity-motivated entrepreneurship is generally associated with higher inspiration of growth and development (Hessels et al., 2008) and risks (Levie and Autio, 2011; Estrin et al., 2013). Additionally, property rights and legal system are highly correlated with freedom from corruption, which has positive effect over economic growth and entrepreneurship (Mauro, 1995; Glaeser and Saks, 2006; Dutta and Sobel, 2016). This leads to simple hypothesis H1.1. However, there is the opposite relationship for countries with poorer business climate (Dreher and Gassebner, 2013): the weakness of legal system increases benefits from bribes and corruption and simplifies the process of starting and leading business, increasing entrepreneurship activity through this mechanism.

Being the leading and the most developed countries, Europe, Northern America and Australia are expected to follow the path offered by theory (Baumol, 1990; Bowen and De Clercq, 2008; Levie and Autio, 2011).

Being the countries with the lower level of development than Europe, Northern America and Australia, Latin America, Africa and Asia are considered to employ the approach described by Dreher and Gassebner (2013): the weakness of legal system decreases barriers and simplifies the processes. This leads to the following hypotheses:

H1.1. Property rights and legal system are positively associated with improvement-driven opportunity entrepreneurship in Europe, Northern America and Australia.

H1.2. Property rights and legal system are negatively associated with improvement-driven opportunity entrepreneurship in Latin America.

H1.3. Property rights and legal system are negatively associated with improvement-driven opportunity entrepreneurship in Africa.

H1.4. Property rights and legal system are negatively associated with improvement-driven opportunity entrepreneurship in Asia.

### ***Infrastructure***

Infrastructure refers to the aggregate level of development of roads, water supply, electricity supply, telecommunications. The role of environment in entrepreneurship as for a new venture is highly important (Delmar and Wiklund, 2008; Ahmad et al., 2010; Fritsch and Wyrwich, 2016). Infrastructure and its level of development is the element to which entrepreneurship is sensitive (Pennings, 1980). According to Fogel (1994), infrastructure is the fundamental and more very sophisticated element of an environment, especially for countries with

limited level of economic development. Beck and Demirguc-Kunt (2006) referred to environment as the tool which should be stimulated and developed as a part of entrepreneurship development. Additionally, infrastructure is not commonly studied element of entrepreneurial environment. Thus, it would be interesting to empirically test theoretical knowledge of it.

Van Roy and Nepelski (2017) identified the positive connection between high-tech entrepreneurship in Europe and the level of physical infrastructure development. According to the research, quality of infrastructure and logistics services are important for business. Thus, H2.1. is stated.

Due to the limitation of the research associated with the effect of infrastructure on entrepreneurship, the following hypotheses are based on the results on two papers (Van Roy and Nepelski, 2017; Audretsch et al., 2015), which argue for the positive effect of infrastructure over entrepreneurship. Hypotheses are the following:

H2.1. Infrastructure is positively associated with improvement-driven opportunity entrepreneurship in Europe, Northern America and Australia.

H2.2. Infrastructure is positively associated with improvement-driven opportunity entrepreneurship in Latin America.

H2.3. Infrastructure is positively associated with improvement-driven opportunity entrepreneurship in Africa.

H2.4. Infrastructure is positively associated with improvement-driven opportunity entrepreneurship in Asia.

### ***Higher education and training***

Several studies prove that there are the connections between education and economic development in a country (Glaeser et al., 2004) and between education and entrepreneurship (Reynolds et al., 1999). However, there exist two approaches to the issue. On the one hand, education provides people with business skills (Bowen and De Clercq, 2008) to detect market opportunities and estimate risks. On the other hand, a higher level of education increases to opportunity costs for an entrepreneur as alternative to entrepreneurial activity is a well-paid job (Carree and Verheul, 2012). However, this reasoning is more applicable for necessity-motivated entrepreneurship as a higher level of education in a country decreases the share of this type of entrepreneurship (Malchow-Moller et al., 2010).

The variety of studies and research support the theoretical approaches. Dilli and Westerhuis (2018) identified the positive effect of education and gender equality on entrepreneurship in European countries. Gender equality is to the variable included into this empirical study, but the effect of higher education and training is due to the analysis. This leads to hypothesis H3.1.

Business skills are identified as one of the critical determinants of entrepreneurship in Latin America (Lecuna et al., 2016); at the same time, Alvarez and Urbano (2011) found no evidence. Following these findings and theoretical hypotheses, it would be interesting to test the hypothesis H3.2.

Lack of business skills is one of the reasons of low entrepreneurial development in Africa (Shava and Maramura, 2017), while it is very important (Naudac et al., 2008). Thus, it would be interesting to test the hypothesis H3.3, but it is reasonable to expect both positive and insignificant effect of education determinant over improvement-driven opportunity entrepreneurship.

The number of research on entrepreneurship in Asia is limited. However, there exists the evidence of positive effect of education over entrepreneurship (Suchart, 2017). Following these findings it would be reasonable to state hypothesis H3.4 for the type of entrepreneurship studied in this paper:

H3.1. Higher education and training is positively associated with improvement-driven opportunity entrepreneurship in Europe, Northern America and Australia.

H3.2. Higher education and training is positively associated with improvement-driven opportunity entrepreneurship in Latin America.

H3.3. Higher education and training is positively associated with improvement-driven opportunity entrepreneurship in Africa.

H3.4. Higher education and training is positively associated with improvement-driven opportunity entrepreneurship in Asia.

### ***Labor market***

Labor market represents how regulations and practices of labor in a country are efficient. In some countries, governance is robust and determines working conditions, compensation policy and every aspect of the relationship between worker and employer (Schwab, 2013). Complicated and strong labor regulation decreases the power of an entrepreneur to determine conditions and compensation (McMullen et al., 2008). Moreover, labor market overcomplication can become an

entry barrier for an entrepreneur. Moreover, low efficiency of labor market may engage people to stay longer on their workplaces (Levie and Autio, 2011; McMullen et al., 2008); potential entrepreneurs in the country with lower labor market efficiency may avoid entrepreneurial activities. Moreover, opportunity entrepreneurs are generally oriented in hiring more people (Reynolds et al., 2003), and in more efficient labor market it is significantly easier.

According to the approach offered by Fu et al. (2018), labor market is one of the key determinants of entrepreneurship development in Europe. Improvement-driven opportunity entrepreneurs are expected to be even more sensitive to this determinant than the entrepreneurs as a whole. Thus, hypothesis H4.1 is stated.

Labor market is not widely studied as a determinant for the other regions. Thus, following theory and the same approach as to entrepreneurship in Europe, Northern America and Australia, the next hypotheses are stated.

H4.1. Labor market is positively associated with improvement-driven opportunity entrepreneurship in Europe, Northern America and Australia.

H4.2. Labor market is positively associated with improvement-driven opportunity entrepreneurship in Latin America.

H4.3. Labor market is positively associated with improvement-driven opportunity entrepreneurship in Africa.

H4.4. Labor market is positively associated with improvement-driven opportunity entrepreneurship in Asia.

### ***Financial market***

Financial market refers to the availability of financial support and funds for entrepreneurs. Usually entrepreneurship is associated with investments which could not be fully covered by personal savings of entrepreneurs (Blanchflower and Oswald, 1998). Unavailability of loans is one of the common entry barriers (Levie and Autio, 2008), credit is a prerequisite for business activity (Schumpeter, 1934). Improvement-driven entrepreneurship, being riskier and capital requesting (Reynolds et al., 2003; Hessels et al., 2008), is very sensitive to financial market changes.

Improvement-driven opportunity entrepreneurship, as well as high-tech startups in Europe, requires significant financial support (Van Roy and Nepelski, 2017). Entrepreneurs from Latin America group of countries are considered to be even more sensitive to the availability of finance than European entrepreneurs (Tabares, 2017).

Africa suffers from the shortage of financial support for entrepreneurs, while this determinant is crucial (Egu and Chiloane-Tsoka, 2018; Naudac et al., 2008). Following these facts, it is reasonable to expect positive or neutral effect of the determinant as the shortage affects the dependent variable. The high share of shadow economy in Asia may affect the results and lead to false results (Estrin et al., 2013). However, following the theory and evidence from other regions, the hypothesis is stated as the following:

H5.1. Financial market is positively associated with improvement-driven opportunity entrepreneurship in Europe, Northern America and Australia.

H5.2. Financial market is positively associated with improvement-driven opportunity entrepreneurship in Latin America.

H5.3. Financial market is positively associated with improvement-driven opportunity entrepreneurship in Africa.

H5.4. Financial market is positively associated with improvement-driven opportunity entrepreneurship in Asia.

### ***Business sophistication***

Business sophistication contains all the regulations, rules and procedures associated with business activity (Heckelman, 2000). Some researchers suppose that overregulation and bureaucracy destruct entrepreneurial activity (Spencer and Gómez, 2004; Klapper et al., 2006; Levie and Autio, 2011). Sometimes business sophistication is reviewed in the frame of signaling theory (Spence, 1973). Following this approach, sophistication of processes on the entry steps signals entrepreneurs that starting a business at that time is hard; it requires a lot of effort (Djankov et al., 2002; Levie and Autio, 2011). Thus, opportunity-motivated entrepreneurship would suffer from business sophistication.

Van Roy and Nepelski (2017) stated that business sophistication (referred as government regulation in the paper) is the sensitive determinant for high-tech sectors in European countries. It is reasonable to propose that high-tech enterprises are determined by similar factors as improvement-driven opportunity entrepreneurship in Europe, Northern America and Australia. Hypothesis H7.1 is stated.

Tabares (2017) states that in Latin America countries being emerging economies, regulations and bureaucracy procedures are not very influential over entrepreneurship. As the

majority of countries included into groups of Latin America, Africa, and Asia are emerging economies also, the following hypotheses are stated:

H7.1. Business sophistication is negatively associated with improvement-driven opportunity entrepreneurship in Europe, Northern America and Australia.

H7.2. Business sophistication is neutrally associated with improvement-driven opportunity entrepreneurship in Latin America.

H7.3. Business sophistication is neutrally associated with improvement-driven opportunity entrepreneurship in Africa.

H7.4. Business sophistication is neutrally associated with improvement-driven opportunity entrepreneurship in Asia.

### ***Innovation***

Innovation refers to availability and ubiquity of innovative technologies and innovation capacity in a country. Innovation is considered to be the key element of entrepreneurship which stimulates the development and moves economies forward (Schumpeter, 1934). Opportunity-motivated entrepreneurs are oriented on innovation more often than necessity-motivated entrepreneurs (Levie and Autio, 2011). However, it would be important to mention that the innovation is connected to market entry decision as potential entrepreneurs could be afraid of high capacity and competition (Aghion et al., 2006). However, innovation is diverse, thus, the negative effect should be eliminated.

Europe is considered to be the most innovation-oriented region (Van Roy and Nepelski, 2017). Latin America, Africa, and Asia are emerging economies with few exceptions (Tabares, 2017). Asia countries are the leading among emerging economies. In Asia entrepreneurs are not very sensitive to innovation as they stay at low productivity level (Giannetti and Simonov, 2009). Thus, it is reasonable to expect that in less developed economies of Latin America and Africa, the sensitivity to innovation is similar. Following all these findings, the hypotheses are:

H7.1. Innovation is positively associated with improvement-driven opportunity entrepreneurship in Europe, Northern America and Australia.

H7.2. Innovation is neutrally associated with improvement-driven opportunity entrepreneurship in Latin America.

H7.3. Innovation is neutrally associated with improvement-driven opportunity entrepreneurship in Africa.

H7.4. Innovation is neutrally associated with improvement-driven opportunity entrepreneurship in Asia.

Table 2 provides the aggregate hypotheses stated for this paper.

*Table 2. Summary of hypotheses*

	Europe, Northern America and Australia	Latin America	Africa	Asia
Property rights and legal system	+	-	-	-
Infrastructure	+	+	+	+
Higher education and training	+	+	+	+
Labor market	+	+	+	+
Financial market	+	+	+	+
Business sophistication	-	○	○	○
Innovation	+	○	○	○

+ - positive association

- - negative association

○ - neutral association

In this Chapter the key sections of literature are covered. Based on them research gap and research goal are identified. Hypotheses stated are based on literature aim to fill the goal gap. To test the hypotheses stated on empirical data, econometric models were developed, next Chapter covers methodology and each step of data analysis.

## **Chapter 2. Empirical study on the determinants of improvement-driven opportunity entrepreneurship**

To achieve the goal of the research and test the hypotheses stated, the study based on secondary data is performed. Below databases are described, dependent, independent and control variables and the set of statistical and econometric procedures.

### **Methodology of the empirical research**

#### ***Databases and Resources***

Data for the study was collected from several sources. A brief description of them is below.

GEM. The Global Entrepreneurship Monitor was created in 1997 as a joint research group of Babson College and London Business School. The aim of GEM was to collect the data of the best scholars in entrepreneurship worldwide to research the relationship between entrepreneurship and economic growth. The first GEM Report was issued in 1999, and it covered 10 countries, by now more than 100 economies were covered by GEM. GEM performs more than 200.000 of interviews with entrepreneurs from a variety of countries annually, more than 500 specialists in entrepreneurship research are working to publish the Reports which are available online. United Nations, World Economic Forum, World Bank, and the Organization for Economic Co-operation and Development (OECD) trust data of GEM. Together with the Reports, data collected during the research is published, this allows scientists to use this data and perform own research (Global Entrepreneurship Monitor, 2018).

GCR. Global Competitiveness Report is prepared and published by World Economic Forum annually. The World Economic Forum is a non-for-profit organization, operating from 1971, headquartered in Geneva, Switzerland, it is oriented on committing to improve and develop the state of the world. The primary product of GCR is Business Competitiveness Index, which contains the wide variety of macroeconomic, microeconomic and business aspects into the simple figure. Reports are published annually starting from 2004 with some minor changes in the approach together with data for all elements of the Index. (World Economic Forum Global Competitiveness Reports, 2018).

WB. World Bank was established in 1944 with headquarters in Washington DC, USA. The organization collects and analyses economic data. The global purpose of the organization is



to reduce poverty and promote economic development. Data for more than 50 years is available for publishing together with analytical reports developed by WB. (World Bank, 2018).

HDI. Human Development Index was developed by United Nations Development Programme in 1990, and starting from that time it is published annually. The idea is simple: better human development makes life better. Programme research the different aspects including salaries, work conditions and dynamics of labor market. HDI is the aggregate index of different components. Human Development Reports include several indexes (HDI, inequality-adjusted HDI, Gender Development Index, etc.). For this research, the only one the most basic and aggregate index HDI is applied (United Nations Development Programme Human Development Reports, 2018).

### ***Variables***

This section covers all the variables applied in the empirical study, their sources and methods of calculation.

*Dependent variable* was obtained from GEM database. According to the definition provided by GEM, improvement-driven opportunity entrepreneurship is “% within Total Early-Stage Entrepreneurial Activity (TEA) Improvement Driven Opportunity motive: independence or increase income”. The other shares of TEA are represented by necessity-motivated entrepreneurs or those entrepreneurs, who described the motivation to start a business as “other”. Thus, the value of the dependent variables varies from 0 to 100.

*Independent variables* are obtained from GCR. 28 indicators were considered to be important for entrepreneurship, then they were split into 7 factors and tested with Cronbach’s Alpha test. All indicators are similar in their structure and measured in the scale from 1 to 7 (best). Thus, after the analysis with Cronbach’s Alpha, average was calculated and considered to be the variable. Table 3 represents variables, corresponding indicators, and Cronbach’s Alpha.

*Control variables* for the study are unemployment rate, GDP growth rate (both obtained from WB) and HDI (obtained from HDR). Some other research (Bowen and De Clercq, 2008; Carree et al., 2002; Verheul et al., 2002; Periera Rodrigues, 2017) on the topic of entrepreneurship also included them, and they were significant. Thus, those variables are included into the study to control the results and extend the variety of factors.

Table 3. GCR indicators and factors.

	Factor		GCR indicators	Cronbach's Alpha
1	Property rights and legal system	1 2 3 4 5 6 7 8	Property rights, 1-7 (best) Intellectual property protection, 1-7 (best) Public trust in politicians, 1-7 (best) Judicial independence, 1-7 (best) Efficiency of legal framework in settling disputes, 1-7 (best) Efficiency of legal framework in challenging regs., 1-7 (best) Reliability of police services, 1-7 (best) Strength of auditing and reporting standards, 1-7 (best)	0.9670
2	Infrastructure	9 10	Quality of overall infrastructure, 1-7 (best) Quality of electricity supply, 1-7 (best)	0.8858
3	Higher education and training	11 12 13	Quality of the education system, 1-7 (best) Quality of management schools, 1-7 (best) Availability of research and training services, 1-7 (best)	0.9189
4	Labor market	14 15	Cooperation in labor-employer relations, 1-7 (best) Reliance on professional management, 1-7 (best)	0.8065
5	Financial market	16 17 18 19 20 21	Financial services meeting business needs, 1-7 (best) Affordability of financial services, 1-7 (best) Financing through local equity market, 1-7 (best) Ease of access to loans, 1-7 (best) Venture capital availability, 1-7 (best) Soundness of banks, 1-7 (best)	0.9177
6	Business sophistication	22 23 24	State of cluster development, 1-7 (best) Nature of competitive advantage, 1-7 (best) Production process sophistication, 1-7 (best)	0.9392
7	Innovation	25 26 27 28	Capacity for innovation, 1-7 (best) Quality of scientific research institutions, 1-7 (best) University-industry collaboration in R&D, 1-7 (best) Availability of scientists and engineers, 1-7 (best)	0.9335

Scientists argue for different approaches regarding the relationship between entrepreneurship and economic growth (Smith, 1776; Drucker, 1985; Gutterman, 2012; Toma et al., 2014). According to some scientists, economic growth determines entrepreneurship; while according to others – entrepreneurship determines economic growth. Thus, endogeneity problem could be raised by control variable *GDP growth rate*. To eliminate the endogeneity problem of potential causal relationship of entrepreneurship over economic growth, GDP growth rate is substituted by *lag(-1) GDP growth rate*.

Table 4 lists the variables and the resources from which each variable was obtained.

### *Samples*

Data is analyzed as semi-panel with overall 222 observations for 4 years (2014-2017) for 82 countries; similar to Valliere (2008). 101 observations are missing due to the absence of data in GEM and 4 due to the absence in GCR.

*Table 4. Variables of the research*

Dimension		Variable name	Data source
Dependent variables	1	Improvement-driven opportunity entrepreneurship	GEM
Independent variables	2	Property rights and legal system	GCR
	3	Infrastructure	GCR
	4	Higher education and training	GCR
	5	Labor market	GCR
	6	Financial market	GCR
	7	Business sophistication	GCR
	8	Innovation	GCR
	Control variables	9	Unemployment rate
10		lag(-1) GDP growth	WB
11		HDI	HDR

To divide the set of countries into developed and developing HDI was applied. Countries with HDI value above 0.8 are considered by HDR as “very high human development”; this research refers to this group of countries as to developed countries. The rest of countries with HDI value below 0.8 are referred as developing countries. Developed countries sample include 121 observations. Developing countries sample contain 101 observations. Appendix 1 provides the list of all countries and HDIs.

In order to develop the research, global set is also split into geographical groups following United Nations classification: Americas, Europe, Asia, Africa and Oceania. However, Oceania region is presented in GEM by only one country – Australia. HDI and other indexes for this country are high; and the most similar to Europe. Thus, Australia is added to Europe group. The other issue of classification is associated with a gap in values of HDI and indicators between Northern America (represented by the USA and Canada) and Latin America. Following the idea that groups of countries should be comparatively homogeneous, Northern America countries are transferred into the group of Europe and Australia. In the research on entrepreneurship by Velilla (2018) Australia, the United States and Canada were also added to European countries due to the similarity of those countries for the research purposes. Thus, four sets of countries are analyzed in this research: Europe, Northern America and Australia (as one group), Latin America, Africa, and Asia. There are 105 observations for Europe, Northern America and Australia; 34 – for Latin America; 32 – for Africa; 51 – for Asia. Appendix 2 provides the list of regions and countries included to each of them. Descriptive statistics for the sample is provided in Appendix 3.

### **Data analysis**

Distribution of mean values of independent variables shows the noticeable trend: Europe, Northern America and Australia group of countries has the highest mean for all independent

variables (determinants); Asia follows; then the mean values for Latin America and located; Africa has the smallest mean values. This situation follows the expectations and supports the approach of separate analysis of regions.

Figure 3 presents the means statistics for independent variables (on this figure scale starts with 3. The Figure with scale starting at 0 is provided together with descriptive statistics in Appendix 3).

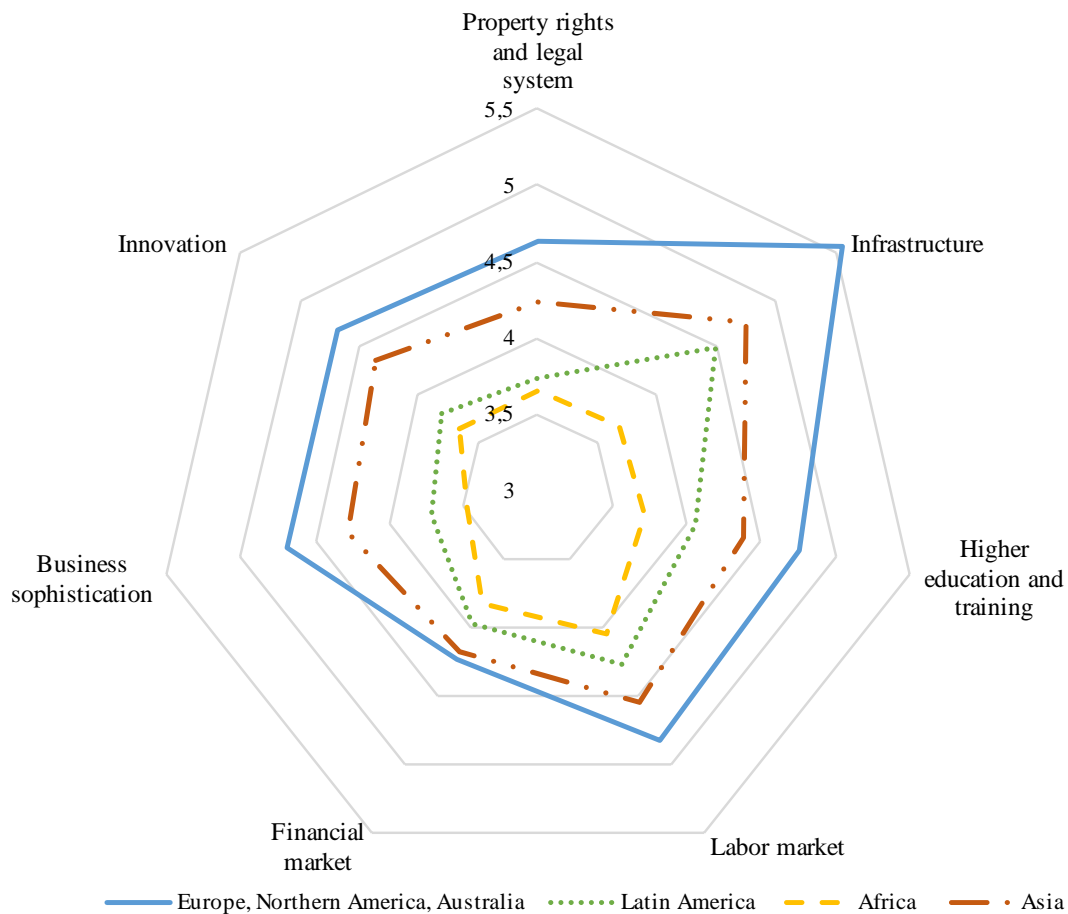


Figure 3. Mean values of independent variables (scale starts with 3 instead of 0).

The most significant difference is between Europe, Northern America and Australia and the rest of regions on *infrastructure* variable mean value (5.554 for Europe, Northern America and Australia against 4.314 average for other groups of countries); the smallest distribution is observed for *financial market* variable mean values (4.237, 3.976, 3.834 and 4.188 for Europe, Northern America and Australia, Latin America, Africa and Asia, respectively). Value of other determinants follows different patterns: for variables *property rights and legal system* and *innovation* values for Latin America (3.738 and 3.804, respectively) and Africa (3.655 and 3.655, respectively) are similar and comparatively low, while for Northern America and Australia (4.638 and 4.672, respectively) and Asia (4.235 and 4.363, respectively) values are higher. For *higher education and training*, *labor market* and *business sophistication* determinants the values of

means are different with the increase from the values for Africa (3.721, 4.048 and 3.481, respectively) to values of Latin America (4.947, 5.125 and 5.251, respectively), Asia (4.386, 4.550, 4.272, respectively), and finally Europe, Northern America and Australia (4.759, 4.835, 4.684, respectively). Among control variables, HDI follows the same trend: highest value of HDI is in Europe, Northern America and Australia (0.881), then Asia (0.832), Latin America (0.761) and the last one is Africa (0.656). GPD growth rate with one year lag mean value is highest in Asia (4.354%), followed by Africa (3.013%), Latin America (2.678%) and Europe, Northern America and Australia (2.139%). Unemployment rate mean value is the highest in Africa (10.216%), next smaller value is in Europe, Northern America and Australia (9.239%), then Latin America (6.515%) and lower mean value is in Asia (5.055%).

Correlation matrix for the independent and control variables is presented in Appendix 4. Despite several high correlations between independent variables, the maximum value of the variance inflation factor (VIF) is below 10 (8.67), no variables are omitted due to potential multicollinearity problem. To control the rise of the multicollinearity problem, VIFs are calculated for all the regression analyses presented below.

### **Results**

Regression analysis was performed on seven data sets with application of Stata 13.0 program. The basic formula for regression model is the following:

$$IDOE_i = const + \beta_1 \times X_1 + \beta_2 \times X_2 + \beta_3 \times X_3 + \beta_4 \times X_4 + \beta_5 \times X_5 \\ + \beta_6 \times X_6 + \beta_7 \times X_7 + \gamma_1 \times Z_1 + \gamma_2 \times Z_2 + + \gamma_3 \times Z_3 + \varepsilon_i$$

$IDOE_i$  is improvement-driven opportunity entrepreneurship;  $\beta_i$  and  $\gamma_j$  refers to the coefficients of independent variable and controls variables, respectively, to be determined;  $X_i$  represents the independent variables;  $Z_j$  is a control variable.

Table 5 presents the results of it. Full regression tables are provided in Appendix 5.

First, the whole set of data was analyzed. Breusch-Pagan/Cook-Weisberg test for heteroscedasticity rejected the hypothesis of homoscedasticity. However, it does not mean that model is wrong; it just can artificially decrease the significance of coefficients. According to the results of regression analysis, *labor market* and *financial market* variables are significant with positive coefficient value. All control variables are significant. Both *unemployment* and *GDP growth* are negatively associated with improvement-driven opportunity entrepreneurship. *HDI* is positive associated with dependent variable.  $R^2$  is equal to 0.3891. VIF values are below 10, heteroscedasticity is rejected; dummy variables for years are insignificant.

For the developing countries, only two variables are significant: *business sophistication* with positive sign and *innovation* with negative coefficient value. Among control variables *unemployment* with a positive coefficient value is significant.  $R^2$  is quite low and equals 0.1715. VIFs are below 10; heteroscedasticity is rejected. Year dummies are insignificant.

For the sample of developed countries, 3 independent variables are significant. *Higher education and training* and *financial market* are positively associated with improvement-driven opportunity entrepreneurship; *business sophistication* – negatively. *Unemployment* and *GDP growth* are also associated negatively. *HDI* has significant positive effect on the dependent variable. VIFs, homoscedasticity and years variables indicate no statistical problems.  $R^2$  value is relatively high; it indicates that 59.02% of observations are explained by the model. However, the results are not satisfying: number of significant independent variables is very limited, especially for developing countries. Thus, it is reasonable to move to groups of countries analysis and hypotheses *H1*, *H2*, *H3*, *H4*, *H5*, *H6*, *H7*.

The next regression model determines the factors for Europe, Northern America and Australia. *Property rights and legal system* and *business sophistication* are negatively associated with improvement-driven opportunity entrepreneurship. These results reject hypothesis *H1.1* and support *H7.1*. *Infrastructure*, *financial market*, and *innovation* positively affect the dependent variable. It supports hypotheses *H2.1*, *H5.1* and *H7.1*, respectively. Among control variables *unemployment rate* is significant with negative coefficient value; *HDI* is again positively associated with improvement-driven opportunity entrepreneurship. Other variables are insignificant, thereby, *H3.1* and *H4.1* are not tested. VIF values are below 10, heteroscedasticity is rejected.  $R^2$  value is high and equals 0.7372.

For Latin America countries determinant are different. *Infrastructure* and *innovation* are negatively associated with improvement-driven opportunity entrepreneurship; *higher education and training*, *financial market* and *business sophistication* – positively. *Unemployment rate* is the only control variable which is significant, and the coefficient of it is positive. However, VIF for *innovation* is extremely high and equals to 15.62, the variable was excluded. After it *infrastructure* is negatively associated with improvement-driven entrepreneurship; *higher education and training*, *financial market* – positively. *Business sophistication* is insignificant. Thus, hypothesis *H2.2* is rejected; *H3.2*, *H5.2*, *H6.2* and *H7.2* are supported; *H1.2*, *H4.2*, *H7.2* are omitted. VIFs are in normal range; heteroscedasticity problem has not been raised. Dummy variables for years are not significant.  $R^2$  is 0.4346.

Table 5. Determining factors of improvement-motivated opportunity entrepreneurship.

		All	Developing countries	Developed countries	Europe, Northern America and Australia	Latin America	Africa	Asia
Property rights and legal system	Coef. (S.E.)				-3.515* (2.0958)		-10.57** (4.4038)	-24.82** (6.9184)
Infrastructure	Coef. (S.E.)				5.391** (2.0196)	-5.61* (3.1896)		14.779** (4.2972)
Higher education and training	Coef. (S.E.)			4.377** (1.7482)		11.433** (4.8697)		13.46** (5.2847)
Labor market	Coef. (S.E.)	3.507** (1.6720)					12.383** (5.2544)	
Financial market	Coef. (S.E.)	3.759** (1.4518)		4.719** (1.3836)	7.728*** (1.7787)	8.69** (3.9140)		
Business sophistication	Coef. (S.E.)		14.203** (5.2594)	-4.567** (1.6279)	-6.049** (1.8555)			
Innovation	Coef. (S.E.)		-11.12** (5.2873)		7.004** (2.9729)			
Unemployment rate	Coef. (S.E.)	-0.678*** (0.1423)	-0.635** (0.1993)	-0.789*** (0.2087)	-0.485** (0.1766)	0.814 (0.6854)	0.284 (0.3889)	-2.404*** (0.5567)
Lag(-1) GDP growth rate	Coef. (S.E.)	-0.503 (0.2578)	-0.3822 (0.4611)	-0.484** (0.2759)	-0.09177 (0.2636)	0.675 (0.6853)	1.309 (0.5627)	-0.6678 (0.7413)
HDI	Coef. (S.E.)	14.638* (8,2935)	-8.377 (15.8736)	116.253** (34.0698)	102.688** (29.2586)	15.019 (27.6397)	10.91226 (19.1974)	6.5567 (33.4837)
Constant	Coef. (S.E.)	14.994** (6.2910)	49.984*** (13.1347)	-60.167** (24.2436)	-83.624*** (23.0385)	-22.909 (21.067)	24.09397 (17.7580)	35.5974* (20.7058)
VIF mean		2.05	2.91	2.78	4.34	2.07	2.71	3.65
Homoscedasticity		No	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies		Insignificant	Insignificant	Insignificant	Insignificant	Insignificant	Insignificant	Insignificant
N		222	101	121	105	34	32	51
R <sup>2</sup>		0.3891	0.1715	0.5902	0.7372	0.4346	0.4839	0.4739

\* p < 0.1

\*\* p < 0.05

\*\*\* p < 0.001

Africa region model showed only two independent variables to be significant. *Property rights and legal system* is negatively associated with improvement-driven opportunity entrepreneurship; hypothesis *H1.3* is supported. *Labor market* is positively associated with the dependent variable; hypothesis *H4.3* is supported, as well as *H6.3* and *H7.3* due to the expected insignificance of coefficients. The rest of hypotheses including *H2.3*, *H3.3*, *H5.3* are unable to be tested. Among control variables, only *GDP growth* is significant with positive coefficient value. VIFs of the model are below 10; heteroscedasticity does not occur.  $R^2$  value is equal to 0.4839.

The last model is for Asia region. According to the results, improvement-driven opportunity entrepreneurship is determined by *property rights and legal system* with negative coefficient value; *infrastructure* – with positive coefficient value and by *higher education and training* – also with positive value. Thus, *H1.4*, *H2.4*, and *H3.4* are supported. Hypotheses *H6.4* and *H7.4* are also supported due to insignificance of coefficients. Hypotheses *H.4.4*, *H.5.4* could not be rejected or supported. Unemployment negatively affects improvement-driven opportunity entrepreneurship. VIFs are below 10; heteroscedasticity is rejected. Year dummies are insignificant.  $R^2$  value is 0.4739.

Separate analysis of regions gave significantly different results regarding determinants of improvement-driven opportunity entrepreneurship. The results and reasons of them are discussed in the next Chapter of the paper.



## Chapter 3. Discussion and systematization of the results

This Chapter aims to discuss the results of empirical study applying theoretical concepts and offering the system to structure and aggregate the results making a theoretical contribution. After it several practical implications including policy and management oriented ones are proposed.

### Discussion of the results of empirical study

This section is devoted to discussion of the results of empirical study in the frame of theory and findings of previous research to explain the results. It is important to underline that effects of variables could intersect and affect each other. Each independent variable contains the variety of institutional, social, environmental factors which directly or indirectly affect entrepreneurship. This section aims to investigate these connections based on theoretical knowledge and studies on the topic. To be consistent, each independent and control variable is reviewed for each of seven regressions performed to check and compare the results. Figure 4 provides the simplified results of the empirical study. The next section aims to systematize and structure these results.

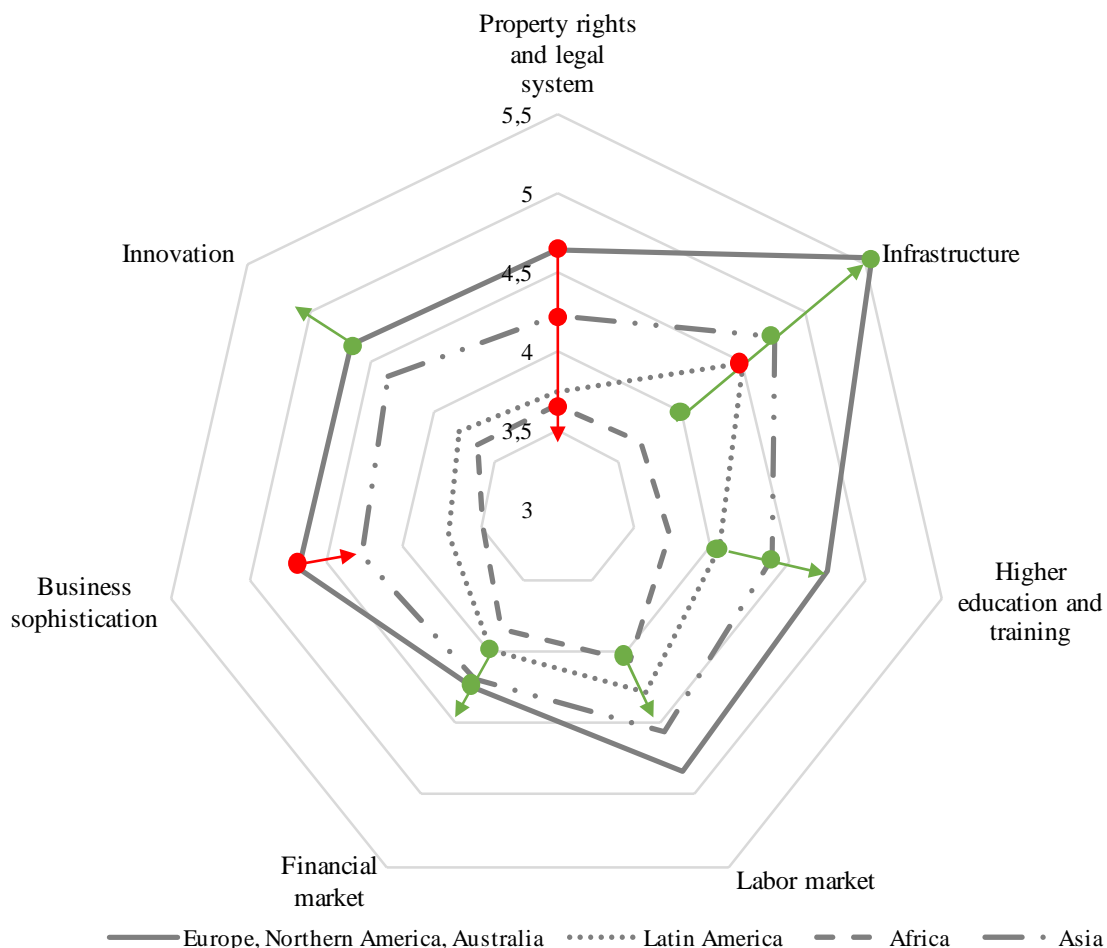
*Property rights and legal system* independent variable is significant with negative coefficient sign for three models: Europe, Northern America and Australia, Africa and Asia. It leads to the results for hypotheses listed below.

H1.1. Property rights and legal system are positively associated with improvement-driven opportunity entrepreneurship in Europe, Northern America and Australia. *Rejected.*

*Property rights and legal system* are negatively associated with improvement-driven opportunity entrepreneurship in Europe, Northern America and Australia, beta coefficient is 3.515 with standard error 2.0958 ( $p=0.097$ ). In the study by Fuentelsaz et al. (2015) property rights were positively associated with opportunity entrepreneurship, but there all the countries were included in the sample. On European countries sample entrepreneurship activity was positively affected by the variable (Rusu and Roman, 2018). In the paper by McMullen et al. (2008) property rights had the negative sign. There are several explanations for this unexpected result. Firstly, *property rights and legal system* as the determinant can be connected to bureaucracy and long and complicated processes associated with entrepreneurship. This may become a barrier to start a business despite the safety and guarantees which authorities offer in return.

Another explanation refers to the connection between *property rights and legal system* and corruption (Mauro, 1995; Glaeser and Saks, 2006; Dutta and Sobel, 2016). There exist the evidence that in some countries corruption is positively associated with entrepreneurship (Dreher and Gassebner, 2013), as the existence of corruption makes the processes of starting business and running is easier and less time-consuming. Thus, lower value of *property rights and legal system* leads to higher level of improvement-driven opportunity entrepreneurship. However, this relation is ordinarily applicable for countries with the lower level of development.

Other approach to the explanation of the result is referring to opportunity cost theory (Carree and Verheul, 2012). The opportunity cost of entrepreneurship is earnings obtained from wage labor. A higher level of wage labor is associated with lower willingness to become an entrepreneur, as the opportunity cost of this decision is to reject a well-paid job. However, HDI, which includes the level of wages, is positively associated with improvement-driven opportunity entrepreneurship in Europe, Northern America and Australia; it rejects the opportunity cost theory.



Green dots – positive significant variables.

Red dots –negative significant variables.

Figure 4. Simplified results of empirical study.

H1.2. Property rights and legal system are negatively associated with improvement-driven opportunity entrepreneurship in Latin America. *Not accepted.*

For Latin America group of countries *property rights and legal system* variable coefficient is insignificant. This group of countries is the only one for which the determinant is not significant. Mean value for the variable is 3.738 with standard error 0.7026, which is quite high (95% confidence interval is (2.361:5.115)), thus, it is not reasonable to suppose that effect of the variable is included to constant variables as *property rights and legal system* is not very stable variable. According to the empirical study by Aparicio et al. (2016), variable “number procedures to start a business” is negatively associated with opportunity entrepreneurship in Latin America. Tabares (2017) stated that Latin America countries are less sensitive to this determinant than Europe. The result of this study is supported by this approach.

Moreover, taking into account the number of observations for this sample (n=34) and number of significant variables (*infrastructure, higher education and training and financial market*), it is reasonable to suppose that following “rule of 10” (according to which number of independent variables should be 10 times smaller than the number of observations in analyzed sample) *property rights and legal system* independent variable is not significant due to the limited number of observations.

H1.3. Property rights and legal system are negatively associated with improvement-driven opportunity entrepreneurship in Africa. *Supported.*

*Property rights and legal system* variable’s beta coefficient is -10.57 with standard error 4.4038 (p=0.024). This result was expected and theory supports it: in countries with lower level of economic development, strong legal system makes the level of opportunity-motivated entrepreneurship lower (Fuentelsaz et al., 2015). Among the variety of studies of entrepreneurship in Africa (Meyer, 2017; Brixiova, 2010; Udanoh et al., 2018; Herranz et al., 2010; Egu et al., 2016) *property rights and legal system* were not included as independent variable into empirical studies, only as an element of “ease of doing business” (Egu et al., 2016). Thus, the model developed in this study could be considered as a theoretical contribution.

H1.4. Property rights and legal system are negatively associated with improvement-driven opportunity entrepreneurship in Asia. *Supported.*

*Property rights and legal system* variable’s beta coefficient in model for Asia is -24.82 with standard error 6.9184 (p=0.001). This hypothesis is very similar to the previous one and the result obtained from the empirical study is also similar: *property rights and legal system* is negatively associated with improvement-driven opportunity entrepreneurship. However, researchers indicate

the difference in attitude towards entrepreneurship in Asia (Pinho et al., 2018), comparing to other countries. According to the study, entrepreneurship in Asia is closely connected to the level of local competition and technology availability, which could be regulated by authorities. Stronger *legal system* regulation decreases opportunities and motivation to run a business, and it negatively affects opportunity entrepreneurship, which is more sensitive to external institutional factors than necessity entrepreneurship (McMullen et al., 2008).

Overall, *property rights and legal system* determinant resulted to have negative effect over improvement-driven opportunity entrepreneurship for all groups of countries except one – Latin America countries. This result gives an understanding of the approach of improvement-driven opportunity entrepreneurs: they are motivated by an idea to start a business, and less complicated and regulated environment better responds to their needs than a system with strong legal system.

The next set of hypotheses is oriented on the relationship between *infrastructure* and improvement-driven opportunity entrepreneurship. Infrastructure is not institutional determinant, which are normally applied in similar studies of the factors of entrepreneurship (McMullen et al., 2008; Levie and Autio, 2011; Fuentelsaz et al., 2015; Valdez and Richardson, 2013). The positive impact of infrastructure development is intuitively easily understandable: better infrastructure increases the opportunities and decreases barriers. However, following literature (Beck and Demircug-Kunt, 2006), hypotheses state that effect is infrastructure is more dramatic in countries with the lower level of development.

According to empirical study results, *infrastructure* independent variable is significant for Europe, Northern America and Australia, Latin America and Asia. Variable coefficients have positive sign except for Latin America group of countries. These results are discussed for each regional group separately below.

H2.1. Infrastructure is positively associated with improvement-driven opportunity entrepreneurship in Europe, Northern America and Australia. *Supported.*

*Infrastructure* variable's beta coefficient is equal to 5.391 with standard error 2.4038 ( $p=0.024$ ). Level of *infrastructure* development in Europe, Northern America and Australia is significantly higher than in other groups of countries (mean value is 5.554 against 4.314, respectively). Despite high mean value, *infrastructure* is significant for these countries. The study by Van Roy and Nepelski (2017) supports the result. Infrastructure is an indirect external factor (Ahmad et al., 2010), as it affects the whole economic ecosystem. Moreover, *infrastructure* is correlated with innovation (correlation is equal to 0.7464). However, both independent variables

are significant for Europe, Northern America and Australia; it indicates the outstanding sensitivity of improvement-driven opportunity entrepreneurship to those determinants.

H2.2. Infrastructure is positively associated with improvement-driven opportunity entrepreneurship in Latin America. *Rejected.*

Opposite to expectations and simple logic, according to the results of the empirical study, *infrastructure* is negatively associated with improvement-driven opportunity entrepreneurship in Latin America, variable's beta coefficient is equal to -5.61 with standard error 3.1896 ( $p=0.090$ ). Despite the significance of the result, it should not be determined as final and undebatable.

More in-depth analysis of variables and statistics gives the alternative explanation of the unexpected result. Dependent variable *improvement-driven opportunity entrepreneurship* is percentage share of TEA who were motivated to start an enterprise due to improvement motive (GEM definition). The opposite share of TEA are necessity entrepreneurs or those who were not able to specify the motivation. According to Amoros et al. (2011), this type of entrepreneurship is the most common in Latin America. Necessity entrepreneurs are motivated to start a business as they consider it as the last opportunity to earn money. Necessity entrepreneurs are less dependent on external institutional factors as they do not have a choice to become an entrepreneur or not (McMullen et al., 2008). However, necessity entrepreneurs are more sensitive to external environmental conditions (Amoros et al., 2016). Thus, the share of necessity entrepreneurs is dramatically dependent on infrastructure development level. With higher indicator of infrastructure development number of necessity entrepreneurs rises; as well as the share of necessity entrepreneurship in TEA. Increase in share of necessity entrepreneurs leads to artificial fall of share of opportunity-motivated entrepreneurs. Thus, improvement-driven entrepreneurship is not necessarily negatively associated with infrastructure. This relationship could be studied with the elimination of necessity-motivated entrepreneurship if the dependent variable is neutral to necessity entrepreneurship.

H2.3. Infrastructure is positively associated with improvement-driven opportunity entrepreneurship in Africa. *Not accepted.*

According to the results of the empirical study, beta coefficient for *infrastructure* variables is not significant. A statistical explanation of the result refers to the model analysis. The number of countries included into Africa sample is the smallest in this empirical study ( $n=32$ ); and there are three independent and control variables which are significant (*property rights and legal system*, *labor market* and *GDP growth rate with one year lag*). Following "rule of 10", the sample should be significantly increased to extend the number of potentially significant independent variables. However, for the sample applied in this study, *infrastructure* is not significant for Africa.

Another explanation comes from the review of descriptive statistics: the mean value of infrastructure in Africa is 3.683, which is significantly lower than for other groups with average 4.938. This leads to the hypothesis that level of *infrastructure* development is that low in Africa, so it does not affect improvement-driven entrepreneurship. However, this study is limited to its scope and can not be used to support or reject this hypothesis as it requires additional deeper statistical analysis.

H2.4. Infrastructure is positively associated with improvement-driven opportunity entrepreneurship in Asia. *Supported.*

Beta coefficient for *infrastructure* variables in Asia is equal to 14.779 with standard error 4.2972 ( $p=0.001$ ). Thus, the hypothesis is fully supported: for Asia infrastructure is important and positively affecting, it supports literature (Delmar and Wiklund, 2008; Ahmad et al., 2010). Following the results, it is reasonable to suspect that with the growth of infrastructure development the degree of its positive effect is falling.

Infrastructure as an element of the entrepreneurial framework is not among frequently studied determinants. For instance, infrastructure is not presented in the list of keywords for the studies which employ GEM data, according to the official website of GEM. However, this empirical study proves its importance. Infrastructure as a determinant of entrepreneurship is inherent for groups of countries with the level of development which exceeds some basic (undetermined) level. This result contradicts with findings of Fogel (1994), who stated that infrastructure is the basic element for entrepreneurial framework, especially for poorly developing countries. This gives a wide field for future research: infrastructure is not commonly studied element of the entrepreneurial environment; thus, it would be interesting to empirically test theoretical knowledge of it to understand which elements of infrastructure are critical for entrepreneurship and particularly for improvement-driven opportunity entrepreneurship.

*Higher education and training* as a determinant of entrepreneurship of widely studied (Fuentelsaz et al., 2015; Valliere, 2008). According to Reynolds et al. (1999), better level of education increases the entrepreneurial activity in a country. On the other hand, *higher education and training* increases the opportunity costs of starting a business (Carree and Verheul, 2012). The following hypotheses are describing the relationship between *higher education and training* and improvement-driven opportunity entrepreneurship. According to the empirical study, the relationship is positive in Latin America and Asia.

H3.1. Higher education and training is positively associated with improvement-driven opportunity entrepreneurship in Europe, Northern America and Australia. *Not accepted.*

Regression model for Europe, Northern America and Australia results with insignificant beta coefficient for *higher education and training*. This result is quite unexpected as in those countries *higher education and training* indicator is high (mean value is 4.759), but with a comparatively wide range of values (95% confidence interval is 3.087:6.431).

Theoretical explanation of the result for Europe, Northern America and Australia is balancing between positive effect of education over entrepreneurship and the negative effect. Education is important as it allows people to recognize business opportunities (Reynolds et al., 1999). Availability of education stimulates people to trust into legal system and better analyze the environment (Carree and Verheul, 2012), make entrepreneurial decisions. Thus, variable *higher education and training* should positively affect improvement-driven entrepreneurship, especially in countries with good institutional environment.

On the other hand, high values of the variable *higher education and training* and variable *HDI* (0.881 for Europe, Northern America and Australia and 0.729 on average for the rest of groups of countries) lead to the understanding that quality of life in this group of countries is high. This means that people are paid a good salary. A salary is an opportunity cost of entrepreneurship: a person rejects salary and leaves a job to start own business. With a higher level of salary, the incentive to stay with this job is higher. According to the correlation matrix, *higher education and training* and *HDI* are positively associated. In other words, in countries with better (higher) value of *higher education and training*, *HDI* (which contain average wage level) is also higher. Thus, people who are more educated and able to identify business opportunities, prefer to stay employed with high wages and no risks.

It is reasonable to suppose that both those approaches are correct. Those approaches being the opposite to each other, could affect the sample simultaneously; this is the reason why the variable *higher education and training* is not significant for Europe, Northern America and Australia.

H3.2. Higher education and training is positively associated with improvement-driven opportunity entrepreneurship in Latin America. *Supported*.

As beta coefficient for the determinant is 11.433 with standard error 4.8697 ( $p=0.026$ ). This result follows the theory of the connection between education level and the opportunity of people to see business perspectives and come up with improvement-driven ideas. The results accord with the findings of Lecuna et al. (2016). Moreover, *higher education and training* is negatively associated with necessity entrepreneurship (Malchow-Moller et al., 2010). Thus, with an increase in variable *higher education and training*, a number of necessity entrepreneurs decreases, the share of them in TEA also becomes smaller, artificially increasing the share of

improvement-driven opportunity entrepreneurship. Thus, the combination of effects from better business skills and opportunities identification together with necessity entrepreneurs result in the positive effect of *higher education and training* over improvement-driven opportunity entrepreneurship in Latin America.

H3.3. Higher education and training is positively associated with improvement-driven opportunity entrepreneurship in Africa. *Not accepted.*

Model of determinants of improvement-driven opportunity entrepreneurship in Africa resulted with insignificant beta coefficient for *higher education and training* variable. The mean for the variable in Africa is 3.722 against mean value of 4.401 for three other groups of countries, which is significantly higher. Standard error for the variable is 0.369, 95% confidence interval is (2.999:4.445). Thus, it is reasonable to state that level of *higher education and training* is low. Therefore, it is possible to suspect that low level of the variable is not significantly influential over improvement-driven opportunity entrepreneurship. Naudac et al. (2008) identified education as the important determinant of entrepreneurship in Africa, simultaneously stating that it is shallow in the region. Therefore, it is reasonable to suspect that such low level of education “blocks” entrepreneurial development. Additionally, the size of the sample is limited to 32 observations; the number of potentially significant independent variables is also limited. The result may be different for a bigger sample.

H3.4. Higher education and training is positively associated with improvement-driven opportunity entrepreneurship in Asia. *Supported.*

Beta coefficient of the variable *higher education and training* in Asia is equal to 13.46 with standard error 13.46 ( $p=0.014$ ). This result is similar to H3.2 covered above. The combination of effects from better business skills and opportunities identification together with necessity entrepreneurs show the positive effect of *higher education and training* over improvement-driven opportunity entrepreneurship in Asia. The result obtained by Suchart (2017) supports these findings.

*Higher education and training* is also significant for the sample of developed countries with beta coefficient 4.377 and standard error 1.7482 ( $p=0.014$ ). This result is extremely interesting as samples of developed countries and Europe, Northern America and Australia are very similar. The difference is the following: Argentina, Chile, Cyprus, Israel, Japan, Republic of Korea, Qatar, Saudi Arabia, Singapore and the United Arab Emirates are included into developed countries sample, but not in Europe, Northern America and Australia; Bosnia and Herzegovina, Bulgaria, Macedonia – vice versa. 30 other countries are included into both samples. The possible explanation is in the strong effect of *higher education and training* variable for



countries which are developed (HDI value is above 0.8), but belong to Latin America, Asia and Africa.

The independent variable *higher education and training* is significant for two groups of countries: Latin America and Asia, which are “in the middle” among groups of countries covered in this study. The difference between the results for developed countries sample and Europe, Northern America and Australia sample of countries further support this approach. Education as a determinant of entrepreneurship is studied quite widely (Valliere, 2008; Malchow-Moller et al., 2010; Fuentelsaz et al., 2015). The results of this study give a new direction for research: to identify if education as a determinant is significant depending on the level of development of a country.

The next variable is *labor market*. The variable represents how regulations and practices of labor in a country are efficient. Complicated and strong labor regulation decreases the power of an entrepreneur to determine conditions and compensation (McMullen et al., 2008). Moreover, labor market “overcomplication” (inefficiency) can become an entry barrier for an entrepreneur. According to the results of the empirical study, the variable is significant only for one group of countries out of four analyzed groups. Following this result, the structure of the analysis of the results for this variable is different from the structure applied above. First the result for the only model with significant *labor market* – Africa – is provided. After it the explanation of insignificance for all other groups of countries is provided.

H4.3. Labor market is positively associated with improvement-driven opportunity entrepreneurship in Africa. *Supported.*

*Labor market* variable’s beta coefficient is equal to 12.383 with standard error 5.2544 (p=0.026). It means that in countries in Africa with more efficient labor market practices (including cooperation in labor-employer relations and reliance on professional management) share of improvement-driven opportunity entrepreneurs is higher. Efficient labor market is simple and transparent. Complicated and strong labor regulation decreases the power of an entrepreneur to determine conditions and compensation (McMullen et al., 2008). Thus, labor regulation is lower for higher *labor market* variable. Labor market “overcomplication” can become an entry barrier for an entrepreneur, especially for improvement-driven opportunity entrepreneurs as usually those entrepreneurs are oriented on employing more people than necessity-motivated entrepreneurs (Reynolds et al., 2003). Thus, the result for *labor market* variable for the regression model is aligned with theory and other research (Fuentelsaz et al., 2015; Fu et al., 2018).

H4.1, H4.2, and H4.4. Labor market is positively associated with improvement-driven opportunity entrepreneurship in Europe, Northern America and Australia, Latin America and Asia. *Not accepted.*

Three hypotheses are not supported by the empirical study; the variable *labor market* is more significant for those groups of countries. There are several possible explanations. Firstly, the size of the samples for each group of countries is limited. Thus, the number of significant independent variables is also limited. It would be interesting to mention that *labor market* is also significant for the sample of all countries (n=222) with positive beta coefficient 3.507, standard error 1.672 (p=0.037). This leads to the hypotheses that in each group of countries for which *labor market* is not significant, some homogeneity of *labor market* among countries in each group of countries. However, the analysis for descriptive statistics for the groups of countries does not support this explanation: 95% confidence interval for labor market in Europe, Northern America and Australia is (3.171:6.499), Latin America – (3.479:5.081); and in Asia – (3.262:5.838). Another potential explanation comes from the level of development of countries: *labor market* as a determinant of improvement-driven opportunity entrepreneurship is crucial only for countries with the comparatively low level of development. This potential explanation requires additional in-depth research.

Therefore, following the results on empirical study, *labor market* as a determinant positively affects improvement-driven opportunity entrepreneurship in Africa; improvement-driven opportunity entrepreneurship in Europe, Northern America and Australia, Latin America and Asia is neutral to fluctuations of *labor market*.

*Financial market* independent variable is positively associated with entrepreneurship, according to the results of a variety of studies (McMullen et al., 2008; Fuentelsaz et al., 2015; Youssef et al., 2017; Rusu and Roman, 2018). Moreover, unavailability of financing is one of the critical entry barriers for entrepreneurship (Levie and Autio, 2008). Following these presuppositions, *financial market* was expected to be positively correlated with the dependent variable in all groups of countries.

H5.1. Financial market is positively associated with improvement-driven opportunity entrepreneurship in Europe, Northern America and Australia. *Supported*.

Beta coefficient for regression model for Europe, Northern America and Australia is equal to 7.728 with standard error 1.7787 (p=0.000). This result supports the previous findings (Reynolds et al., 2003; Hessels et al., 2008; Rusu and Roman, 2018). Entrepreneurship is associated with capital investments which could not always be covered by savings of an entrepreneur. Moreover, extremely low value of p-value advocates the robustness of association of *financial market* and improvement-driven opportunity entrepreneurship: share of improvement-driven opportunity entrepreneurship is higher in countries with a higher value of *financial market*.

It also supports the statement that European and American entrepreneurs are used to this instrument and depend on it (Stough, 2016).

H5.2. Financial market is positively associated with improvement-driven opportunity entrepreneurship in Latin America. *Supported.*

According to the regression model, beta coefficient is equal to 8.69 with standard error 3.9140 ( $p=0.035$ ). It supports the findings of Tabares (2017): Latin America countries are more sensitive to this determinant than Europe, the value of beta coefficient for Latin America countries is higher (for Europe, Northern America and Australia it is equal to 7.728). This could be explained by the specificity of improvement-driven opportunity entrepreneurs. They are motivated by an idea and tend to trust financial institutions as they are more sensitive and start a business.

H5.3 and H5.4. Financial market is positively associated with improvement-driven opportunity entrepreneurship in Africa and Asia. *Not accepted.*

There is no empirical evidence found to support an association of improvement-driven opportunity entrepreneurship with *financial market* indicator. This result may be explained statistically or theoretically. The statistical explanation is straightforward: both samples contain a limited number of observations: 32 for Africa and 51 for Asia. The other explanation is theoretical and refers to the decision-making process of an entrepreneur if the decision of starting a business depends on the availability of a loan or not. According to Stough (2016), entrepreneurs who are not from Europe and America do not depend on this tool that much. Additionally, the share of the shadow economy in Asia is high (Estrin et al., 2013), loans could also belong to it and be withdrawn from the official statistics. For Africa finance availability is poor (Naudac et al., 2008; Shava and Maramura, 2017). This aligns with the result of the empirical study. However, those explanations require additional testing and should be understood as hypotheses.

It should be additionally mentioned that *financial market* independent variable is significant for the overall sample with beta coefficient 3.759, standard error 1.4518 ( $p=0.010$ ). Additionally, the variable is significant for developed countries with beta coefficient 4.719, standard error 1.3836 ( $p=0.001$ ); *financial market* is not significant for developing countries. This generally follows the results of regressions models for groups of countries.

*Financial market* as a determinant of improvement-driven opportunity entrepreneurship is closely connected with the perception of this tool by entrepreneurs. This determinant is associated with both level of economic development and the attitude of entrepreneurs to this tool. However, it is also important to point out that the attitude could be dependent on the level of economic development as with growth of level of economic development, people tend to trust more financial

institutions (Valliere, 2008). However, this relationship lies on the individual level which is not considered in this research paper.

*Business sophistication* independent variable refers to regulations, rules, and procedures associated with business and entrepreneurship. According to the results of the empirical study, the variable is significant only for Europe, Northern America and Australia group of countries among groups of countries, but also for both developing and developed countries. First, the result for Europe, Northern America and Australia is explained; then the results of other samples.

H7.1. Business sophistication is negatively associated with improvement-driven opportunity entrepreneurship in Europe, Northern America and Australia. *Supported.*

Beta coefficient of the determinant in the regression model is -6.049 with standard error 1.8555 ( $p=0.002$ ). This result is supported by two theoretical explanations. Firstly, overregulation and the variety of bureaucracy procedures prevent people from starting a business (Spencer and Gómez, 2004; Klapper et al., 2006; Levie and Autio, 2011). This is simple and logical: if enterprise setting process takes a lot of time and effort, people tend to choose the easier activity, for example, stay with the well-paid job. The other less obvious and interesting theory is signaling theory described by Spence (1973). In accordance with this approach, business sophistication, being regulated by local authorities is a signal for entrepreneurs whether they should start a business or it is associated with the wide variety of procedures and potential problems. Both of these theories support the findings. Developed countries sample follows the Europe, Northern America and Australia sample trend: beta coefficient is -4.567 with standard error 1.6279 ( $p=0.006$ ).

H7.2, H7.3, and H7.4. Business sophistication is neutrally associated with improvement-driven opportunity entrepreneurship in Latin America, Africa and Asia. *Supported.*

*Business sophistication* is not significant in the regression model for groups of countries located in Latin America, Africa and Asia. This result is aligned with findings of Alvarez and Urbano (2011): Latin America entrepreneurs are neutral to bureaucratic procedures. Tabares (2017) also stated that in Latin America countries being emerging economies, regulations and bureaucracy procedures are not very influential over entrepreneurship. As the majority of countries included into groups of Latin America, Africa and Asia are emerging economies also, the result is consistent.

Moreover, it could be explained by the comparatively small size of the samples (34, 32 and 51 observations, respectively) and relative homogeneity of observations: 95% confidence interval for Latin America is (2.829:4.598); for Africa – (2.578:4.384) and for Asia – (2.802:5.743) against

wider interval for Europe, Northern America and Australia, for which the variable is significant – (2.793:6.575). Moreover, the significance of *business sophistication* variable for developing countries (beta coefficient is 14.203 with standard error 5.2594 (p=0.008)) supports the hypotheses that each group of countries has some level of inherent *business sophistication*. The positive effect of the variable could be explained by the review of the whole regression model for developing countries. *Property rights and legal system, infrastructure, higher education and training, labor market* and *financial market* variables are not significant. These variables are correlated with *business sophistication*. Thus, in this model *business sophistication* could be considered to be the proxy of the omitted variable and instead show the aggregate result of the variables than the effect of *business sophistication* itself. Moreover, R<sup>2</sup> for this regression model is low (0.1715); the results of the model should be considered very carefully.

Thus, it is possible to summarize that *business sophistication* as a determinant of improvement-driven opportunity entrepreneurship negatively affects dependent variable in Europe, Northern America and Australia. Other groups of countries are neutral to the variable.

The last variable discussed in this section is *innovation*. It includes capacity for innovation, quality of scientific research institutions, university-industry collaboration in R&D, availability of scientists and engineers. The effect of *innovation* on improvement-driven opportunity entrepreneurship is not widely studied in empirical research; it is not widely addressed in theoretical literature and considered to be the key element of entrepreneurship and economic growth (Schumpeter, 1934). That leads to some limitation of the theoretical background and explanation approaches. Following the existing theoretical resources, which suspects positive relationship between *innovation* and entrepreneurship (Levie and Autio, 2011), the determinant is significant for Europe, Northern America and Australia only.

H7.1. Innovation is positively associated with improvement-driven opportunity entrepreneurship in Europe, Northern America and Australia. *Supported*.

Beta coefficient for the determinant is 7.004 with standard error 2.9723 (p=0.021). Improvement-driven opportunity entrepreneurs usually are more often oriented toward innovation in their business activities than necessity-motivated entrepreneurs (Levie and Autio, 2011). *Innovation* includes the availability of research, R&D and other elements of innovation increases the opportunities for entrepreneurs and stimulate to start a business.

H7.2, H7.3, and H7.4. Innovation is neutrally associated with improvement-driven opportunity entrepreneurship in Latin America, Africa and Asia. *Supported*.

In regression models for Latin America, Africa and Asia *innovation* is not significant.

This result follows the hypotheses: being emerging economies, Latin America, Africa and Asia are not very sensitive to innovation as they stay at low productivity level (Giannetti and Simonov, 2009).

Additionally, it could also be explained by the “level” of the variable: *innovation* is inherent for countries which have accomplished some level of development. However, this statement requires additional research.

*Innovation* is significant in the regression model for developing countries with beta coefficient -11.12, standard error 5.2873 ( $p=0.038$ ). This result can be explained with the approach offered by Aghion et al. (2006). According to Aghion and other researchers, the level of innovation can indicate the level of competition for a potential entrepreneur and prevent new entrepreneurs from market entry. Moreover,  $R^2$  for the regression model for developing countries is low (0.1715); the results of the model should be considered very carefully. It is reasonable to suspect that *innovation* variable is a proxy of something else in this model.

Effect of innovation is not widely covered in empirical studies on the determinants of entrepreneurship. This research results in significant of the indicator for countries with high level of development (*HDI* is referred as a proxy of development).

Control variables resulted in quite expected and easy interpretable signs. *Unemployment rate* is significant with negative sign for the models for the whole sample, for developing and developed samples, for Europe, Northern America and Australia and for Asia. A similar result was obtained for opportunity entrepreneurship in several studies (Fuentelsaz et al., 2015; Amoros et al., 2016, Roman and Rusu, 2016). Improvement-driven opportunity entrepreneurship is closely connected to necessity entrepreneurship. This rise of unemployment in a country, necessity entrepreneurship also rises. Therefore, the share of improvement-driven opportunity entrepreneurship is artificially decreased, with a higher level of unemployment in a country. *Lag(-1) GDP growth rate* is insignificant in all models except developed countries; the same result was obtained by Fuentelsaz et al. (2015). *HDI* is significant with positive sign for models based on all data, developed countries sample and Europe, Northern America and Australia. The section of the paper provided the detailed explanation of the results of the empirical study. The next section aims to systematize and structure these results.

### **Aggregate determinants for groups of countries**

Before the systematization of the results of empirical study and aggregation of findings, potentially omitted variables should be discussed. The decision of starting an enterprise is the

result of wide variety of factors including internal and external (Gartner, 1988; Cope, 2003; Ajayi-Obe, 2007). This study is concentrated on external factors and is limited to several of them. However, entrepreneurship is not able to escape from local cultural factors (Jack and Anderson, 2002). Taking into account geographical division of countries into separate groups, this issue should be discussed.

Culture can have the effect over the economic behavior of people (including entrepreneurship) through three mechanisms: individual-centric, collective, and societal (Guiso et al., 2006; Oyserman and Lee, 2008). Individual-centric and collective mechanisms work on an individual level. The societal level is formed by formal and informal institutions. Some researchers suppose that culture is the central element of entrepreneurship (Hayton et al., 2002) as a culture in a country is “entrepreneurial” or not (Freytag and Thurik, 2007). However, results of empirical studies on the effect of culture over entrepreneurship are controversial (Bowen and De Clercq, 2008; Stephan and Uhlaner, 2010). For example, in the study performed by De Clercq et al. (2010), positive association between in-group collectivism and entrepreneurship was detected opposite to common approach. Wennekers et al. (2007) found the evidence of the positive relationship of the cultural disposition of uncertainty avoidance and entrepreneurship, again, opposite common opinion of this relationship.

The literature on the relationship between culture and entrepreneurship is limited; results are controversial. It happens due to the lack of objectivity of culture criteria and indicators (Wennberg et al., 2013), no commonly applied methodology and classification developed and approved by international scientific society (Autio et al., 2013).

The development of cultural framework is out of scope for this research, the following discussion of determinants of entrepreneurship which are important for different groups of countries is performed without taking into account cultural peculiarities and specifics of countries. This can be considered as a limitation of the research. However, the institutional factors employed in this paper as the determinants include local cultural elements due to its institutional nature.

According to the results of the empirical study, for Africa determinants are *property rights and legal system* and *labor market* (this variable is significant only in this group of countries). Other determinants are significant for Latin America group of countries: *infrastructure, higher education and training* and *financial market*. Improvement-driven opportunity entrepreneurship in Asia is determined by *property rights and legal system, infrastructure* and *higher education and training*. The list of determinants for Europe, Northern America and Australia is the following: *property rights and legal system, infrastructure, financial market, business sophistication* (the

determinant is significant only for this group of countries) and *innovation* (which is also significant for this group of countries only).

In order to structure and develop a system based on the results of the empirical study, the classification of determinants was performed. Groups of countries were ordered based on HDI mean value: Africa (mean HDI is 0.6558), Latin America (0.7609), Asia (0.7727) and Europe, Northern America and Australia (0.8811). Then the significant determinants were ordered based on the group of countries the determinant appeared as significant for the first time. Figure 5 represents the groups of factors and systematizes them based on the significance for different groups of countries.

This approach is limited due to omitted determinants of culture which affect entrepreneurship in each group of countries in a unique way. Therefore, this approach has a hypothetical nature and requires further research. Moreover, the insignificance of determinants is ignored as it may result from the limited number of observations.

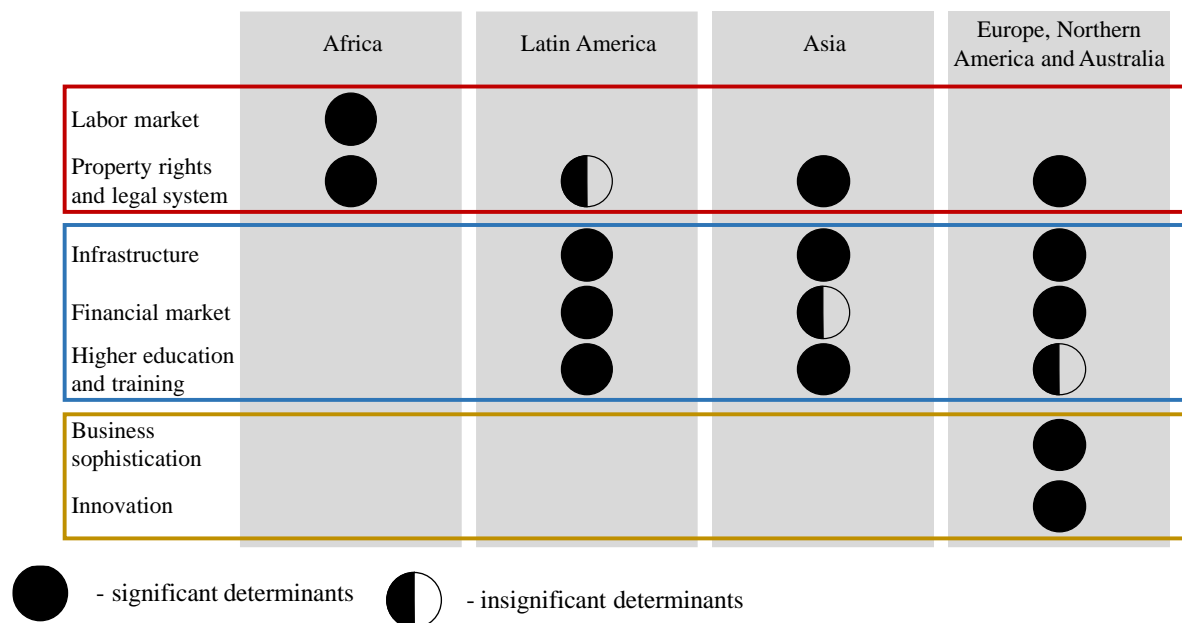


Figure 5. Systematization of determinants.

The first set of determinants contains *labor market* and *property rights and legal system*. These factors refer to the primary authority regulated determinants of entrepreneurship. *Labor market* represents how regulations and practices of labor in a country are efficient. This variable is important for improvement-driven entrepreneurs as normally they attend to employ people are inefficient labor market can become an entry barrier. *Property rights and legal system* determinant refers to the degree of property rights protection guaranteed by the local government and straight of legal system in a country. These two factors are very basic and general. Together the determinants could be referred as **basic-regulatory**.



The second set of determinants includes *infrastructure*, *financial market* and *higher education and training*. According to the results of the study, these determinants are important for emerging economies above some level of development (Africa group of countries is not sensitive to the factors; while Latin America and Asia are) and developed countries. *Infrastructure* indicates the level of physical development of infrastructure in a country. *Financial market* determinant refers to the degree of availability of loans and financial support for business in a country. *Higher education and training* represents the general level of education of people and the excess to it in a country. Together those factors are important for entrepreneurial decision. The aggregate set of these variables is specific and generally could be referred as **specific-entrepreneurial**.

The third set contains *business sophistication* and *innovation*. Only one group of countries is sensitive to those factors – Europe, Northern America and Australia. This leads to the hypothesis that only after exceeding of some level of development improvement-driven opportunity entrepreneurship in the economies is affected by these factors. *Business sophistication* is the set of bureaucracy procedures and processes associated with starting and running a business. *Innovation* refers to availability and ubiquity of innovative technologies and capacity in a country. Together those factors are **improvement-driving**.

This classification proposed could be treated as theoretical contribution of the paper. Nevertheless, it requires additional testing and development. The proposed approach to factors allows to identify the specific policy and managerial applications of the results of the empirical study and develop a direction for future research.

### **Policy and managerial applications**

The results of empirical study allow to offer policy and managerial applications. Policy recommendations are formulated for the groups of countries covered in this empirical study. Those policy recommendations are aiming to stimulate improvement-driven opportunity entrepreneurship following up-to-down approach.

Countries of Africa are characterized by the lowest level of value for all the determinants covered by this study. Following the classification of factors offered in the previous section, African countries' authorities should be concentrated on the development of basic-regulatory factors – *labor market* and *property rights and legal system*, as improvement-driven entrepreneurs of these countries are sensitive to these factors. Moreover, the factors of the second specific-entrepreneurial set *infrastructure*, *financial market* and *higher education and training* could also be targeted as they are important for emerging economies. It is reasonable to state that level of

development of African countries is not high enough to expect that stimulation of *business sophistication* and *innovation* determinants will have the effect over the entrepreneurship as it could be in more developed countries.

For Latin America group of countries, the determinants of the first and second set should be targeted. *Labor market* and *property rights and legal system* as the determinants of the basic-regulatory level are essential and should be developed. The determinants of the second specific-entrepreneurial set including *infrastructure*, *financial market* and *higher education and training* are the key ones for the groups and countries and have the greatest impact. *Business sophistication* and *innovation* are not significant for countries of Latin America region; current level of development does not allow to expect the effect from stimulation of *business sophistication* and *innovation*.

Asia is the group of countries which is the leading among emerging economies. Therefore, recommendations are similar to the ones for Latin America – focus on basic-regulatory and specific-entrepreneurial factors. However, a higher level of development allows to suspect that for countries of this group the development of *business sophistication* and *innovation* can also be efficient.

Recommendations for Europe, Northern America and Australia are the widest: all groups of determinants are important for the region. *Business sophistication* and *innovation* are significant and determine the level of improvement-driven opportunity entrepreneurship. *Business sophistication* could be assessed through simplification of bureaucracy procedures. *Innovation* responses to R&D, quality of research and innovation capacity. Together with maintaining of determinants of the basic-regulatory and specific-entrepreneurial groups, *business sophistication* and *innovation* should be specifically targeted.

Managerial implications contain two blocks: multinational and local company levels.

Multinational company level implications of this study identify how the findings of this research can help an extend a business of international scale. Internalization of businesses is a very broad common modern trend (Van Roy and Nepelski, 2017). Based on specifics identified for each group of countries, companies could be informed about local specifics, and adapt their practices to fit into the local environment. For example, education determinant is crucial for Asia region. Before entering the region, a company should structure and adapt to this specifics.

Local company level implications refer to the recommendation for companies already operating in regions. Improvement-driven entrepreneurs are people with fresh ideas. Companies could be interested in stimulating these people to become involved into corporate

entrepreneurship, which is an efficient tool of company's development (Urban and Wood, 2017). Identification of factors which are important for entrepreneurs will allow to gain the advantage and stimulate potential improvement-driven entrepreneurs to stay with a company and simultaneously be an entrepreneur. Important issue for this set of recommendations is that companies should perform ahead and target the determinants which are less developed and efficient in the region.

*Property rights and legal system and infrastructure* as the determinants of entrepreneurship could not be significantly affected on company level, these factors are determined on country and city level. However, a company could be engaged into lobbying of changes of the determinants.

*Higher education and training* determinant offers the wide variety of stimulation and development opportunities on a company level. Improvement-driven entrepreneurship is higher with the rise of *higher education and training* determinant. Thus, if a company invests in education and training of its employees, it increases the entrepreneurial potential of them. Countries of any group should be oriented on it.

*Labor market* may be treated as entirely external and fixed factor, but it is not completely accurate. A company is able to create an internal environment and give more freedom to corporate entrepreneurs and protect them as an employer.

*Financial market* is one of the key barriers for entrepreneurs, especially in Africa and Latin America. Thus, the provision of loans and resources for corporate entrepreneurs is able to attract people as in some countries it could be the only chance for talented potential improvement-driven entrepreneurs to start a business and turn the ideas into reality.

*Business sophistication and innovation* being the determinants of entrepreneurship in Europe, Northern America and Australia, could be extremely efficient applied in all countries to attract improvement-driven entrepreneurs and gain comparative advantage comparing to country level.

Therefore, the results of the empirical study presented in this paper have several implications including both policy and managerial implications.

### **Limitations of the study**

This paper is subject to several limitations which are briefly covered in this section.

The empirical study of the paper is based on secondary data; the mechanism of collection and calculation of these data is not entirely transparent. Improvement-driven opportunity

entrepreneurship is determined as the share of people who identify it as the reason to start a business, and this leads to response bias: people may feel better identifying themselves as improvement-driven entrepreneurs rather than necessity-motivated. Moreover, due to the implication of several data sources and the division of countries into several groups, the number of observations for the analysis in each group is quite small varying from 32 to 105. This leads to the limit of the number of significant variables, which could be potentially important (significant).

The pattern of the results was identified and analyzed. However, local specifics and culture are not taken into account. Thus, limitation leads to the direction of further research: improvement-driven opportunity entrepreneurship and its determinants should be reviewed in the frame of the regional or local level.

The other problem which is inherent for quantitative studies is omitted variables problem. The study covers the external factors of entrepreneurship, while this decision is based on both external factors and personal characteristics of people, which are ignored as national level data is analyzed. Additionally, national level data aggregates and artificially unifies entrepreneurs from one country.

The limitations are inherent for any research; the interpretation and discussion of the results allow to deal with it and extract practical value and apply the results.

## Conclusion

Entrepreneurship is widely studied in the field of science. It is generally associated with the positive effect of entrepreneurship over economic growth. The goal of this paper was to identify the determinants of improvement-driven opportunity entrepreneurship in different regional groups: Europe, Northern America and Australia (treated as one group), Latin America, Africa and Asia.

Literature review provided in Chapter 1 helps to identify the position of entrepreneurship in modern science. There are different approaches regarding entrepreneurship definition which may include only basic economic function or even the personal characteristics of an entrepreneur. This research follows the definition, according to which entrepreneur is a person who starts a business of any format. At the same time, the focus of the paper is on a narrow group of entrepreneurs, who are motivated to start a business by improvement opportunities.

The review of the literature on relationship of economic growth and entrepreneurship helped to identify the empirical evidence that the relationship between entrepreneurship and economic growth varies for different types of entrepreneurship: opportunity entrepreneurship is positively associated, while necessity entrepreneurship – neutrally (Acs et al., 2008).

The analysis of articles on the factors of entrepreneurs (global and regional) aimed to assess the variables and databases from which they are obtained. It encouraged to state the hypothesis that various factors affect entrepreneurship in regions of different development level differently. Hypotheses were stated for independent variables *property rights and legal system, infrastructure, higher education and training, labor market, financial market, business sophistication* and *innovation* regarding their effect on dependent variable improvement-driven opportunity entrepreneurship in Europe, Northern America and Australia, Latin America, Africa and Asia.

The methodology of the research is described in Chapter 2. It includes the description of databases, variables, samples, statistics. Regression models supported the proposition that a set of significant determinants is various for each regional group. Several hypotheses were omitted due to insignificance of beta coefficients of determinants, the majority of the hypotheses were supported. A few hypotheses were rejected: for example, opposite to expectations, *property rights and legal system* determinant is negatively associated with the dependent variable in Europe, Northern America and Australia.

In Chapter 3 detailed discussion of the results of the regression analysis was performed. Intuitive explanation applying different theoretical approaches solved the inconsistency of

hypotheses and results. Some articles which were covered in literature review supported the results obtained. Moreover, the discussion included the review of reasons why the sets of determinants of entrepreneurship differ between groups of countries. The systematization of the results and classification of the determinants was proposed as a theoretical contribution of the paper.

The factors of improvement-driven opportunity entrepreneurship vary for different regions. In Europe, Northern America and Australia the entrepreneurship is sensitive to *property rights and legal system, infrastructure, financial market, business sophistication, and innovation*. Latin America is sensitive to *infrastructure, higher education and training and financial market*. African countries are affected by *property rights and legal system and labor market*. Asian entrepreneurs are sensitive to *property rights and legal system, infrastructure and higher education and training*. Following the results and the level of development of each regional group, determinants are consolidated into three groups (classes): **basic-regulatory** (*labor market and property rights and legal system*), **specific-entrepreneurial** (*infrastructure, financial market and higher education and training*) and **improvement-driving** (*business sophistication and innovation*). Each group of countries is affected by one or more groups of determinants depending on its development level: Africa as a group of countries is the least developed and is affected by basic-regulatory determinants only. Latin America and Asia are sensitive to basic-regulatory and specific-entrepreneurial determinants. These findings lead to the specific recommendations for each regional group.

The findings of the research lead to the implications of them. One of the most crucial findings is the insignificance of *innovation* for all groups of countries but Europe, Northern America and Australia. Therefore, the development of *innovation* in Africa, for example, is not the priority, the basic-regulatory and specific-entrepreneurial determinants should be targeted first.

Similar to this, specific policy recommendations for each group of countries are provided. Moreover, the results of the study are applicable on company-level for internalization of companies helping to understand the institutional context in countries for potential entrance. Additionally, the results are applicable for stimulation of corporate entrepreneurship: for example, the provision of financial loans for talented employees for a company in Latin America can stimulate potential improvement-driven employees and break the problem of finance availability, which is inherent for the region.

The paper achieved the goal stated in the introduction and solved the objectives. However, during the preparation of the research several directions of further research were identified. The main of them is associated with cultural determinants which affect improvement-driven opportunity entrepreneurship.

## List of References

1. Acs, Z. J., Szerb, L., Ortega-Argilés, R., Coduras, A., Aidis, R. (2012). The Regional Entrepreneurship and Development Index (REDI): The Case of Spain. *GMU School of Public Policy Research Paper No. 2012-04 (revised)*.
2. Acs, Z., Desai, S., Hessels, J. (2008). Entrepreneurship, economic development and institutions. *Small Business Economics*, 31(3), 219–234.
3. Acs, Z., Varga, A. (2005). Entrepreneurship, agglomeration and technological change. *Small Business Economics*, 24(3), 33–56.
4. Aghion, P., Fally, T., Scarpetta, S. (2006). Credit Constraints as a Barrier to the Entry and Post-Entry Growth of Firms: Lessons from Firm-Level Cross Country Panel Data. *Economic Policy* 22(52), 731–779.
5. Ahmad, N., Seymour, R. G. (2008). Defining Entrepreneurial Activity: Definitions Supporting Frameworks for Data Collection. *OECD Statistics Working Papers, 2008/01, OECD Publishing*.
6. Ahmad, S.Z., Abdul-Rani, S., Mohd-Kassim, S. (2010). Business challenges and strategies for development of small- and medium-sized enterprises (SMEs) in Malaysia. *International Journal of Business Competition and Growth*, 1(2), 177–97.
7. Ajayi-Obe, O.O. (2007). Franchising: The Entrepreneurial Paradox. *University of Surrey*.
8. Alvarez, C., Urbano, D. (2011). Environmental Factors and Entrepreneurial Activity in Latin America. *Academia, Revista Latinoamericana de Administración*, 48, 126–139.
9. Amorós J.E., Cristi, O. (2008). Longitudinal Analysis of Entrepreneurship and Competitiveness Dynamics in Latin America. *International Entrepreneurship and Management Journal*, 4, 381–399.
10. Amorós, J. E., Borraz, F., Veiga, L. (2016). Entrepreneurship and socioeconomic indicators in Latin America. *Latin American Research Review*, 51(4), 186–201.
11. Aparicio, S., Urbano, D., Audretsch, D. (2016). Institutional factors, opportunity entrepreneurship and economic growth: Panel data evidence. *Technological Forecasting and Social Change*, 102, 45–61.
12. Applebaum, R. P., Gebbie, M. A., Han, X., Stocking, G., and Kay, L. (2016). Will China's quest for indigenous innovation succeed? Some Lessons from Nanotechnology. *Technology in Society*, 46, 149–163.
13. Audretsch, D. B., Belitski, M., Desai, S. (2015). Entrepreneurship and economic development in cities. *The Annals of Regional Science*, 55(1), 33–60.

14. Audretsch, D. B., Heger, D., Veith, T. (2015). Infrastructure and entrepreneurship. *Small Business Economics*, 44(2), 219–230.
15. Audretsch, D.B., Thurik, A.R., Verheul, I., Wennekers, A.R.M. (2016). Entrepreneurship: Determinants and Policy in a European-US Comparison. *Boston/Dordrecht: Kluwer Academic Publishers*, 11–81.
16. Autio, E., Fu, K. (2015). Economic and political institutions and entry into formal and informal entrepreneurship. Economic and political institutions and entrepreneurship, *Asia Pacific Journal of Management*, 32(1), 67–94.
17. Autio, E., Pathak, S., Wennberg, K. (2013) Consequences of cultural practices for entrepreneurial behaviors. *Journal of International Business Studies*, 44(4), 334–362.
18. Balamoune-Lutz, M. (2007). Entrepreneurship, Reforms and Development: Empirical Evidence. *University of North Florida*.
19. Barringer, B.R., Ireland, R.D. (2008). Entrepreneurship. Successfully Launching New Ventures. *New Jersey: Pearson Prentice Hall*.
20. Baumol, W. (1990). Entrepreneurship: Productive, Unproductive and Destructive. *Journal of Political Economy*, 98(3), 893–921.
21. Baumol, W.J., Strom, R.J. (2007). Entrepreneurship and economic growth. *Strategical Entrepreneurship Journal*, 1(3), 233–237.
22. Beck, T., Demirguc-Kunt, A. (2006), Small and medium size enterprise: access to finance as a growth constraint. *Journal of Bank and Finance*, 30(1), 2931–43.
23. Bell, D. A. (2016). The China Model: Political Meritocracy and the Limits of Democracy. *Princeton, N.J.: Princeton University Press*.
24. Blanchflower, D.G., Oswald, A.J. (1998). What makes an entrepreneur? *Journal of Labor Economics*, 16(1), 26–60.
25. Bonito, J.D., Daantos, F.J.A., Mateo, J.C.A., Rosete, M.A.L. (2017). Do Entrepreneurship and Economic Growth Affect Poverty, Income Inequality and Economic Development? *Review of Integrative Business and Economics Research*, 6 (1), 33–43.
26. Bosma, N., Content, J., Sanders, M., Stam, E. (2018). Institutions, Entrepreneurship, and Economic Growth in Europe. *Small Business Economics*, 1, 1–17.
27. Bowen, H. P., De Clercq, D. (2008). Institutional Context and the Allocation of Entrepreneurial Effort. *Journal of International Business Studies*, 39(4), 1–21.
28. Brixiova, Z. (2010). Unlocking productive entrepreneurship in Africa's least developed countries. *African Development Review*, 22(3), 440–451.
29. Business Dictionary, retrieved from online on 7 April, 2018, <http://www.businessdictionary.com/definition/entrepreneurship.html>.



30. Carree, M. A., Verheul, I. (2012). What makes entrepreneurs happy? Determinants of satisfaction among founders. *Journal of Happiness Studies*, 13(2), 371–387.
31. Carree, M., Van Stel, A., Thurik, A.R., Wennekers, A.R.M. (2002). Economic development and business ownership: an analysis using data of 23 OECD countries in the period 1976-1996. *Small Business Economics*, 19(3), 271–290.
32. Cope, J. (2003). Entrepreneurial learning and critical reflection: discontinuous events as triggers for higher-level learning. *Management Learning*, 34(4), 429–450.
33. Cruz-Ros, S., Garzon, D., Mas-Tur, A. (2017). Entrepreneurial competencies and motivations to enhance marketing innovation in Europe. *Psychology and Marketing Journal*, 34(11), 1031–1038.
34. De Clercq, D., Danis, W., Dakhli, M. (2010). The Moderating Effect of Institutional Context on the Relationship Between Associational Activity and New Business Activity in Emerging Economies. *International Business Review* 19(1), 85–101.
35. Delmar, F., Wiklund, J. (2008). The effect of small business managers' growth and motivation on firm growth. *Entrepreneurship Theory and Practice*, 32(3), 437–453.
36. Dilli, S., Westerhuis, G. (2018). How institutions and gender differences in education shape entrepreneurial activity: a cross-national perspective. *Small Business Economics*, 1–22.
37. Djankov, S., La Porta, R., Lopez-de-Silanes, F., Shleifer, A. (2002). The regulation of entry. *The Quarterly Journal of Economics*, 117(1), 453–517.
38. Dragan, M., Borovic, Z., Jovicevic, M. (2017). Economic Freedom and Entrepreneurial Activity: Evidence from EU 11 countries. *Economics – Innovation and economic research*, 5(2), 9–15.
39. Dreher, A., Gassebner, M. (2013). Greasing the Wheels of Entrepreneurship? Impact of Regulations and Corruption on Firm Entry. *Public Choice*, 155(3), 413–432.
40. Drucker, P. F. (1985). *Innovation and Entrepreneurship*. New York: Harper & Row.
41. Drucker, P.F. (1985). *The Practice of Innovation, Innovation and Entrepreneurship Practice and Principles*. New York: Harper & Row, 19–33.
42. Dumitru I., Dumitru I., (2018). Drivers of Entrepreneurial intentions in Romania. *Romanian Journal of Economic Forecasting*, 21(1), 157–166.
43. Dutta, N., Sobel, R. (2016). Does corruption ever help entrepreneurship? *Small Business Economics*, 47(1), 179–199.
44. Egu, M., Chiloane-Tsoka, G. E. (2018). Small but mighty: The impact of listing on the JSE's AltX on SME performance. *19th Annual International Academy of African Business and Development Conference*. Southern Sun Elangeni and Maharani, Durban, South Africa.

45. Egu, M., Chiloane-Tsoka, G. E., Dhlamini, S. (2016). South African entrepreneurial chasms and determinant outcomes. *Conference: The Academy of International Business (AIB) Sub-Saharan Chapter Conference, At Lagos Business School - Pan-Atlantic University, Nigeria.*
46. Estrin, S., Korosteleva, J., Mickiewicz, T. (2013). Which institutions encourage entrepreneurial growth aspirations? *Journal of Business Venturing*, 28(4), 564–580.
47. Ferreira, J. J., Fayolle, A. Fernandes, C., Raposo, M. (2016). Effects of Schumpeterian and Kirznerian entrepreneurship on economic growth: panel data evidence. *Entrepreneurship and Regional Development: An International Journal*, 29(1-2), 27–50.
48. Fogel, G. (1994). Perception of small business owners: a study of the development of entrepreneurship in Hungary. *Chicago, IL: Midwest Review of Business Research, Academy of International Business*, 89–99.
49. Freytag, A., Thurik, R. (2007). Entrepreneurship and its Determinants in a Cross-Country Setting. *Journal of Evolutionary Economics*, 17, 117–131.
50. Fritsch, M., Wyrwich, M. (2016). The effect of entrepreneurship on economic development—an empirical analysis using regional entrepreneurship culture. *Journal of Economic Geography*, 17(1), 157–189.
51. Fu K., Larsson A.S., Wennberg K. (2018). Habitual Entrepreneurs in the Making: How Labour Market Rigidity and Employment Affects Entrepreneurial Re-entry. *Stockholm, Sweden: Ratio Working Paper No. 297 The Ration Institute.*
52. Fuentelsaz, L., Gonzalez, C., Maicas, J.P., Montero, J. (2015). How different formal institutions affect opportunity and necessity entrepreneurship. *Business Research Quarterly*, 18(4), 246–258.
53. Gartner, W. (1988). Who is an entrepreneur? Is the wrong question. *American Journal of Small Business*, 12(4), 11–32.
54. Giannetti, M., Simonov, A. (2009). Social interactions and entrepreneurial activity. *Journal of Economics Management Strategy*, 18(3), 665–709.
55. Glaeser, E.L., La Porta, R., López-De-Silanes, F., Shleifer, A. (2004). Do Institutions Cause Growth? *Journal of Economic Growth* 9(3), 271–303.
56. Glaeser, E.L., Saks, R.E. (2006). Corruption In America. *Journal of Public Economics*, 90(6-7), 1053–1072.
57. Global Entrepreneurship Monitor. *Retrieved from online on 20 April, 2018.* <http://www.gemconsortium.org/news>.
58. Gnyawali, D.R., Fogel, D.S. (1994). Environments for entrepreneurship development: key dimensions and research implications. *Entrepreneurship Theory and Practice*, 18(4), 43–62.

59. Guiso, L., Sapienza, P., Zingales, L. (2006). Does culture affect economic outcomes? *Journal of Economic Perspectives*, 20(2), 23–48.
60. Gutterman, A.S. (2012). Definitions of Entrepreneurship. [http://alangutterman.typepad.com/files/mec\\_02.06.2012.pdf](http://alangutterman.typepad.com/files/mec_02.06.2012.pdf) (accessed 16 April 2018).
61. Hayton, J.C., George, G., Zahra, S.A. (2002). National culture and entrepreneurship: a review of behavioral research. *Entrepreneurship Theory and Practice*, 26(4), 33–52.
62. Heckelman, J.C. (2000). Economic freedom and economic growth: a short-run causal investigation. *Journal of Applied Economics*, 3(1), 71–91.
63. Hector O., Rocha, H. O., Sternberg, R., (2005). Entrepreneurship: The Role of Clusters Theoretical Perspectives and Empirical Evidence from Germany. *Small Business Economics*, 24(3), 267–292.
64. Herranz A.Á., de Lara P. V., Barraza S., Legato A. M. (2010). Factors Determining the Entrepreneurial Consolidation in Latin America. *African Journal of Business Management*, 4(9), 1717–1722.
65. Hessels, J., Van Gelderen, M., Thurik, R. (2008). Entrepreneurial aspirations, motivations, and their drivers. *Small Business Economics*, 31(3), 323–339.
66. Islam, M.M. (1989). Theories on Entrepreneurship. *Bangladesh: University Grand Commission of Bangladesh*.
67. Jack, S. L., Anderson, A. R. (2002). The Effects of Embeddedness on the Entrepreneurial Process. *Journal of Business Venturing*, 17(5), 467–487.
68. Jahan, S., Eva Jespersen, E. (2015). Human Development Report 2015. *The United Nations Development Programme*.
69. Karadeniz, E., Ozcam, A. (2010). The Determinants of the Growth Expectations of the Early-Stage Entrepreneurs (TEA) Using the Ordinal Logistic Model (OLM): The Case of Turkey. *Economic and Business Review*, 12(1), 61–84.
70. Kaufmann, P.J., Dant, R.P. (1999). Franchising and the domain of entrepreneurship research. *Journal of Business Venturing*, 14(1), 5–16.
71. Kirzner, I.M. (1973). Competition and Entrepreneurship. *Chicago, IL: University of Chicago*.
72. Klapper, L., Laeven, L., Rajan, R. (2006). Entry regulation as a barrier to entrepreneurship. *Journal of Financial Economics*, 82(3), 591–629.
73. Klein, P.G., Cook, M.L. (2006). T.W. Schultz and the human-capital approach to entrepreneurship. *Review of Agricultural Economics*, 28(2), 344–350.
74. Kuratko, D.F., Hodgetts, R.M. (2004). Entrepreneurship: Theory, Process. *Mason, OH: South-Western Publishers*.

75. Kuznets, S. (1966). *Modern economic growth*. New Haven: Yale University Press.
76. Landstrom, H. (1998). The roots of entrepreneurship research. *Lyon, France: Conference Proceedings*.
77. Larsson J.P., Thulin P. (2017). Life Satisfaction of Necessity and Opportunity Entrepreneurs in 70 countries. *Swedish Entrepreneurship Forum, Working Paper 2017:55*.
78. Lecuna, A., Cohen, B., Chavez, R. (2017). Characteristics of high-growth entrepreneurs in Latin America. *International Entrepreneurship and Management Journal*, 13(1), 141–159.
79. Lee, Y. S. (2016). Entrepreneurship, small businesses and economic growth in cities. *Journal of Economic Geography*, 17(2), 311–343.
80. Levie, J., Autio, E. (2008). A theoretical grounding and test of the GEM model. *Small Business Economics*, 31(3), 235–263.
81. Levie, J., Autio, E. (2011). Regulatory Burden, Rule of Law, and Entry of Strategic Entrepreneurs: An International Panel Study. *Journal of Management Studies*, 48(6), 1392–1419.
82. Liñán, F., Fernandez-Serrano, R. (2014). National Culture, Entrepreneurship and Economic Development: Different Patterns across the European Union. *Small Business Economics*, 42(4), 685–701.
83. Lipset, S. M. (1996). *American Exceptionalism: Double-Edged Sword*. New York: W. W. Norton & Company.
84. Lukeš, M., Zouhar, J., Jakl, M., Očko, P. (2013). Factors Influencing Entrepreneurial Entry: Early-Stage Entrepreneurs in the Czech Republic. *Politická ekonomie, University of Economics, Prague*, 2013(2), 229–247.
85. Malchow-Moller, N., Markusen, J.R., Skaksen, J. (2010). Labour market institutions, learning and self-employment. *Small Business Economics*, 35(1), 35–52.
86. Marshall, A. (1890). *Principles of Economics*. London: Macmillan and Co.
87. Mauro, P. (1995). Corruption and Growth. *The Quarterly Journal of Economics*, 110(3), 681–712.
88. McMullen, J.S., Ray Bagby, D., Palich, L.E. (2008). Economic freedom and the motivation to engage in entrepreneurial action. *Entrepreneurship Theory Practice*, 32(5), 875–895.
89. Meyer, N. (2017). An Econometric Analysis of Entrepreneurial Activity, Economic Growth and Employment: The Case of the BRICS countries. *International Journal of Economic Perspectives*, 11, 429–441.
90. Minniti M. (2008). The role of government policy on entrepreneurial activity: productive, unproductive, or destructive? *Entrepreneurship Theory Practice*, 32(5), 779–790.

91. Naudac, W., Gries, T., Wood, E., Meintjies, A. (2008). Regional determinants of entrepreneurial start-ups in a developing country. *Entrepreneurship and Regional Development, Taylor & Francis Journals*, 20(2), 111–124.
92. Naudé, W. (2007). Peace, Prosperity, and Pro-Growth Entrepreneurship. *Helsinki: United Nations University*.
93. Neatu, A.-M., Imbrisca, C.-I. (2015). Entrepreneurship in Romania. A behavioral economics perspective. *Annals of Faculty of Economics, University of Oradea, Faculty of Economics*, 1(1), pages 95–105.
94. North, D. (1990). Institutions, institutional change and economic performance. *Cambridge: Cambridge University Press*.
95. Oyserman, D., Lee, S.W.S. (2008). Does culture influence what and how we think? Effects of priming individualism and collectivism. *Psychological Bulletin*, 134(2), 311–342.
96. Oyugi, J.L., Kasule, R. (2012). The Emergence of Social Entrepreneurs in the Informal Sector: Case Study of Paper Bead making Business in Kireka, Banda Zone A – Kampala. *Kampala, Uganda: School of Management and Entrepreneurship, Kyambogo University*.
97. Pennings, J.M. (1980). Environmental influences on the creation process. *Jossey-Bass, San Francisco, CA: The Organizational Life Cycle*.
98. Periera Rodrigues, I. (2017) Innovative Entrepreneurship in the Tourism Sector: New Insights on the Role of the Development Context. *Journal of Economics*, 21(1), 53–88.
99. Pervin, L.A. (1980). Personality: Theory, Assessment and Research. *New York: John Wiley & Sons*.
100. Pihno, J. C., Thompson, D. (2017). Institutional driven dimensions and the capacity to start a business: a preliminary study based on two countries. *International Marketing Review*, 34(6), 787–813.
101. Pinho, J. C. M., Martins, L., Soares, A. M. (2018). Small businesses' internationalization: International readiness in the context of Asian countries. *Asia-Pacific Journal of Business Administration*, 10(1), 50–63.
102. Raimi, L. (2015). Discourse analysis of entrepreneurship definitions and theories: implication for strengthening academic research. *International Journal of Entrepreneurship and Small Business*, 26(3), 368–388.
103. Raimi, L., Adeleke, I. (2010). Using entrepreneurship development and corporate social responsibility as strategies for conflict resolution in the Niger-Delta region in Nigeria. *The 34th Annual SPE International Technical Conference and Exhibition in Tinapa-Calabar, Cross Rivers State*.

104. Recardo, D. (1817). *On the Principles of Political Economy and Taxation*. London: John Murray.
105. Reynolds, P., Bygrave, W.D., Autio, E., Cox, L.W., Hay, M. (2003). *Global Entrepreneurship Monitor 2002 Executive Report*. Babson College, Wellesley, MA.
106. Reynolds, P., Hay, M., Camp S.M. (1999). *Global Entrepreneurship Monitor 1999 Executive Report*. Babson College/London Business School/Kauffman Center for Entrepreneurial Leadership, Babson Park, MA/London/Kansas City, MO.
107. Reynolds, P., Hay, M., Camp S.M. (2002). *Global Entrepreneurship Monitor 2002 Executive Report*. Babson College/London Business School/Kauffman Center for Entrepreneurial Leadership, Babson Park, MA/London/Kansas City, MO.
108. Roman, A., Rusu, V. D. (2016). Determining Factors of Entrepreneurial Motivation: Evidence from EU Countries. *Ovidius University Annals, Economic Sciences Series*, 0(1), 97–103.
109. Rusu, V. D., Roman, A. (2018). Entrepreneurial Motivations in the European Union Countries: An Empirical Approach. *Management Dynamics in the Knowledge Economy*, 6(1), 9–31.
110. Saeedikiya, M., Aeeni, Z., Motavaseli, M., Farsi, J.Y. (2017). The Effect of Innovation on Growth Aspirations and Internationalization in Firms: Africa Compared to the Protestant Europe. *20th International Scientific Conference "Enterprise and Competitive Environment"*, Brno, Czech Republic.
111. Schott, T., Jensen, K.W. (2008). The Coupling between Entrepreneurship and Public Policy: Tight in Developed Countries but Loose in Developing Countries. *Estudios de Economia*, 35(2), 195–214.
112. Schultz, T.W. (1971). *Investment in Human Capital: The Role of Education and of Research*. New York: Free Press.
113. Schumpeter, J.A. (1934). *The theory of economic development*. Cambridge, MA: Harvard University Press.
114. Schwab, K. (2013). *The Global Competitiveness Report 2013-2014*. World Economic Forum.
115. Shane, S. (2009). Why encouraging more people to become entrepreneurs is bad public policy. *Small Business Economics*, 33(2), 141–149.
116. Shane, S., Venkataraman, S. (2000). The promise of entrepreneurship as a field of research. *Academy of Management Review*, 25(1), 217–226.

117. Shava, E., Maramura, T. C. (2017). National Development Plan as an Entrepreneurial Mechanism for Rural Economic Development in South Africa. *Journal of Economics and Behavioral Studies*, 9(2), 234–242.
118. Simpeh, K.N. (2011). Entrepreneurship theories and empirical research: a summary review of the literature. *European Journal of Business and Management*, 3(6), 1–9.
119. Smith, A. (1776). *The Wealth of Nations*. London: Strahan and T. Cadell.
120. Spence, M. (1973). Job market signaling. *The Quarterly Journal of Economics*, 87(3), 355–374.
121. Spencer, J.W., Gómez, C. (2004). The relationship among national institutional structures, economic factors and domestic entrepreneurial activity: a multicountry study. *Journal of Business Research*, 57(10), 1098–1107.
122. Stephan, U., Uhlaner, L. (2010). Performance-Based vs Socially Supportive Culture: A Cross- National Study of Descriptive Norms and Entrepreneurship. *Journal of International Business Studies*, 41(8), 1347–1364.
123. Sternberg, R., (2009). Regional Dimensions of Entrepreneurship. *Foundations and Trends in Entrepreneurship*, 5(4), 211–340.
124. Stevenson, H.H., Jarillo, J.C. (1990). A paradigm of entrepreneurship: entrepreneurial management. *Strategic Management Journal*, 11, 17–27.
125. Stewart, A. (1991). A prospectus on the anthropology of entrepreneurship. *Entrepreneurship Theory and Practice*, 16(2), 71–91.
126. Strough, R. R. (2016). Entrepreneurship and Regional Economic Development: Some reflections. *Investigaciones Regionales – Journal of Regional Research*, 36, 129–150.
127. Suchart, T. (2017). Factors Influencing Opportunity Driven Nascent Entrepreneurs in Europe and Asia. *European Research Studies Journal*, 10(3), 774–782.
128. Tabares, A. (2017). International entrepreneurship under an institutional regulative dimension: a cross-national study. *Revista Espacios*, 38(52), 2–18.
129. Terjesen S., Hessels, J. V. (2009). Varieties of Export-oriented Entrepreneurship in Asia. *Asia Pacific Journal of Management*, 26(3), 537–561.
130. Tijani-Alawiye, B. (2004). Entrepreneurship Processes and Small Business Management. *Ilaro, Nigeria: Book on Entrepreneurship*.
131. Toma, S.-G., Grigore, A.-M., Marinescu, P. (2014). Economic development and entrepreneurship. *Procedia Economics and Finance*, 8, 436 – 443.
132. Tominc, P., Rebernik, M. (2007). Growth Aspirations and Cultural Support for Entrepreneurship: A Comparison of Post-Socialist Countries. *Small Business Economics*, 28(2-3), 239–255.

133. Udanoh, M. U., Zouria, A. (2018). Using Gender Inequality to Predict the Rate of African Women Entrepreneurship. *International Journal of Emerging Trends in Social Sciences*, 3(1), 17–28.
134. United Nations Development Programme Human Development Reports. Retrieved from online on 20 April, 2018. <http://hdr.undp.org/en/humandev>, 20.04.2018.
135. Urban, B., Wood, E. (2017). The innovating firm as corporate entrepreneurship. *European Journal of Innovation Management*, 20(4), 534–556.
136. Valdez, M. E., Richardson, J. (2013). Institutional Determinants of Macro-Level Entrepreneurship. *Entrepreneurship Theory Practice*, 37(5), 1149–1175.
137. Valliere, D. (2008). Reconceptualizing entrepreneurial framework conditions. *International Entrepreneurship Management Journal*, 6(1), 97–112.
138. Van Roy, V., Nepelski, D. (2017). Determinants of high-tech entrepreneurship in Europe. *Luxembourg: Publications Office of the European Union*.
139. Veciana, J.M. (1999). Creación de Empresas como programa de investigación científica. *Revista Europea de Dirección y Economía de la Empresa*, 8(3), 11–36.
140. Velilla, J. (2018). The entrepreneurial activity using GEM data: evidence for Spain (national and regional) and for Europe. *University of Zaragoza, Spain*.
141. Verheul, I., Wennekers, A.R.M., Audretsch, D.B., Thurik, A.R. (2002). An eclectic theory of entrepreneurship. *Boston/Dordrecht: Kluwer Academic Publishers*.
142. Vivarelli, M. (2013). Is Entrepreneurship Necessarily Good? Microeconomic Evidence from Developed and Developing Countries. *Industrial and Corporate Change*, 22(6), 1453–95.
143. Wennberg, K., Pathak, S., Autio, E. (2013). How culture moulds the effects of self-efficacy and fear of failure on entrepreneurship. *Entrepreneurship and Regional Development*, 25(9-10), 756–780.
144. Wennekers, A.R.M., Van Stel, A., Thurik, A.R., Reynolds, P.D. (2005). Nascent entrepreneurship and the level of economic development. *Small Business Economics*, 24(3), 293–309.
145. Wennekers, S., Thurik, R., Stel, A., and Noorderhaven, N. (2007). Uncertainty Avoidance and the Rate of Business Ownership Across 21 OECD Countries, 1976–2004. *Journal of Evolutionary Economics*, 17(2), 133–160.
146. Wennekers, S., Van Wennekers, A., Thurik, R., Reynolds, P. (2005). Nascent Entrepreneurship and the Level of Economic Development. *Small Business Economics*, 24(3), 293–309.
147. World Bank. Retrieved from online on 20 April, 2018. <http://data.worldbank.org/about>.



148. World Economic Forum Global Competitiveness Reports. *Retrieved from online on 20 April, 2018.* <https://www.weforum.org/about/world-economic-forum>.
149. Youssef, A. B., Boubaker, S., Omri, A. (2017). Entrepreneurship and sustainability: The need for innovative and institutional solutions. *Technological Forecasting and Social Change, 129*, 232–241.
150. Yu, J., Stough, R. R., Nijkamp, P. (2009). Governing technological entrepreneurship in China and the West. *Public Administration Review, 69*(1), 95–100.
151. Yu, Y., Yu, J., Pau, X., and Stough, R. R. (2016). The Rise of China’s Economy: “Opening Up” Policy to Manufacturing Maturity, and on to Innovation Based Economic Growth and Labor Market Dynamics. *Social Sciences Research Network, 12*(2), 3–24.

## Appendices

### Appendix 1. List of developed and developing countries.

#### Developed countries

Country	HDI	Country	HDI	Country	HDI
Norway	0.9494	Israel	0.8988	Lithuania	0.8480
Switzerland	0.9391	Luxembourg	0.8984	Chile	0.8466
Australia	0.9386	France	0.8974	Saudi Arabia	0.8466
Germany	0.9256	Belgium	0.8955	Slovak Republic	0.8449
Singapore	0.9248	Finland	0.8945	Portugal	0.8426
Denmark	0.9246	Austria	0.8934	United Arab Emirates	0.8397
Netherlands	0.9243	Slovenia	0.8903	Hungary	0.8362
Ireland	0.9227	Italy	0.8865	Latvia	0.8298
Canada	0.9202	Spain	0.8841	Croatia	0.8274
United States	0.9195	Greece	0.8658	Argentina	0.8274
Sweden	0.9127	Estonia	0.8651	Russian Federation	0.8039
United Kingdom	0.9094	Cyprus	0.8556	Romania	0.8023
Japan	0.9034	Qatar	0.8555		
Korea, Rep.	0.9009	Poland	0.8552		

#### Developing countries

Country	HDI	Country	HDI	Country	HDI
Uruguay	0.7947	Brazil	0.7541	Philippines	0.6817
Barbados	0.7947	Bosnia and Herzegovina	0.7498	El Salvador	0.6797
Kazakhstan	0.7941	Macedonia, FYR	0.7480	Bolivia	0.6740
Bulgaria	0.7936	Thailand	0.7397	South Africa	0.6664
Malaysia	0.7894	Peru	0.7397	Morocco	0.6474
Panama	0.7876	Ecuador	0.7392	Guatemala	0.6395
Trinidad and Tobago	0.7799	China	0.7376	India	0.6235
Costa Rica	0.7764	Jamaica	0.7300	Angola	0.5334
Puerto Rico	0.7764	Colombia	0.7272	Cameroon	0.5175
Iran, Islamic Rep.	0.7740	Suriname	0.7249	Madagascar	0.5121
Georgia	0.7693	Tunisia	0.7245	Senegal	0.4939
Turkey	0.7669	Botswana	0.6976	Uganda	0.4928
Lebanon	0.7628	Indonesia	0.6888	Burkina Faso	0.4017
Mexico	0.7616	Viet Nam	0.6832		

## Appendix 2. List of countries included into each regional group.

Europe, Northern	Croatia	Latvia	Russian
America and	Denmark	Lithuania	Federation
Australia	Estonia	Luxembourg	Slovak Republic
Australia	Finland	Macedonia	Slovenia
Austria	France	Netherlands	Spain
Belgium	Germany	Norway	Sweden
Bosnia and	Greece	Poland	Switzerland
Herzegovina	Hungary	Portugal	United Kingdom
Bulgaria	Ireland	Romania	United States
Canada	Italy		

### Latin America

Argentina	Colombia	Guatemala	Suriname
Barbados	Costa Rica	Mexico	Trinidad and Tobago
Bolivia	Ecuador	Panama	Uruguay
Chile	El Salvador	Puerto Rico	

### Africa

Angola	Cameroon	Peru	Tunisia
Botswana	Jamaica	Senegal	Uganda
Brazil	Madagascar	South Africa	
Burkina Faso	Morocco	South Africa	

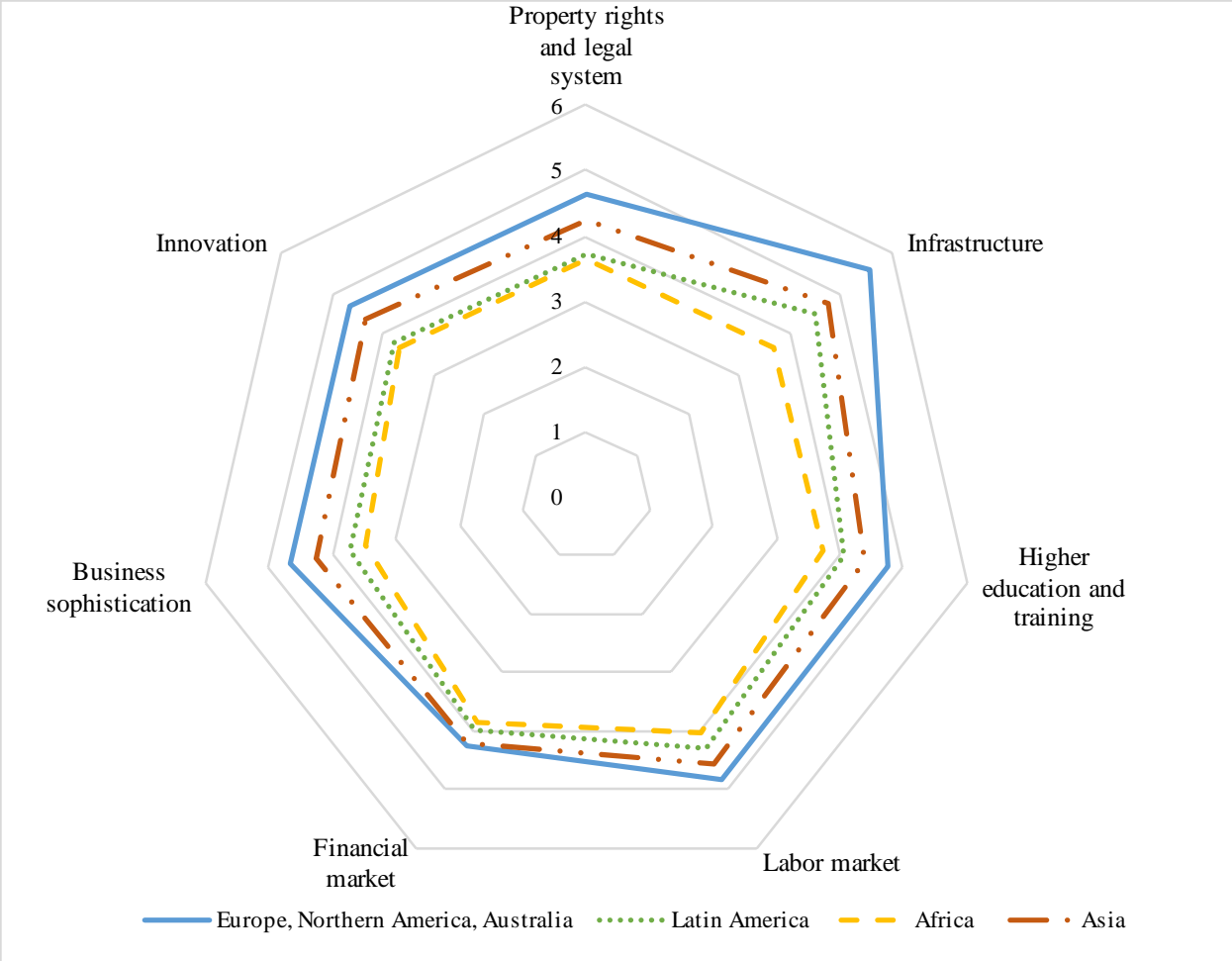
### Asia

China	Israel	Philippines	United Arab
Cyprus	Japan	Qatar	Emirates
Georgia	Kazakhstan	Saudi Arabia	Viet Nam
India	Korea, Rep.	Singapore	
Indonesia	Lebanon	Thailand	
Iran, Islamic Rep.	Malaysia	Turkey	

### Appendix 3. Descriptive statistics.

Variable	ALL n=222				DEVELOPING n=101				DEVELOPED n=121			
	$\mu$	$\sigma$	Min	Max	$\mu$	$\sigma$	Min	Max	$\mu$	$\sigma$	Min	Max
Property rights and legal system	4.266	.972	2.307	6.292	3.777	.590	2.307	5.182	4.674	1.039	2.496	6.292
Infrastructure	4.940	1.038	1.982	6.755	4.213	.799	1.982	5.921	5.547	.798	2.772	6.755
Higher education and training	4.416	.786	2.307	6.418	3.970	.517	2.307	5.438	4.788	.780	2.470	6.418
Labor market	4.571	.753	2.688	6.162	4.222	.493	2.688	5.618	4.862	.808	3.393	6.162
Financial market	4.127	.750	2.311	5.550	3.968	.581	2.604	5.226	4.260	.847	2.311	5.550
Business sophistication	4.267	.919	2.453	6.063	3.730	.531	2.453	5.250	4.715	.935	3.198	6.063
Innovation	4.321	.764	2.267	5.901	3.861	.506	2.267	5.388	4.705	.731	3.099	5.901
Unemployment rate	8.001	5.350	.2	27.3	7.736	6.051	.8	27.3	8.222	4.700	.2	26.5
Lag(-1) GDP growth rate	2.856	2.850	-3.769	25.557	3.742	2.697	-3.769	13.396	2.116	2.773	-3.241	25.557
HDI	.805	.106	.401	.949	.711	.083	.401	.794	.883	.038	.802	.9494
I-D Opportunity Entrepreneurship	51.463	12.711	22.690	79.711	47.729	12.469	22.690	77.091	54.581	12.101	28.109	79.711

Variable	EUROPE, NORTHERN AMERICA, AUSTRALIA n=105				LATIN EMERICA n=34				AFRICA n=32				ASIA n=51			
	$\mu$	$\sigma$	Min	Max	$\mu$	$\sigma$	Min	Max	$\mu$	$\sigma$	Min	Max	$\mu$	$\sigma$	Min	Max
Property rights and legal system	4.638	1.060	2.838	6.292	3.738	.702	2.496	4.995	3.655	.631	2.307	5.015	4.235	.736	3.104	5.914
Infrastructure	5.554	.7202	3.295	6.755	4.502	.740	2.772	5.921	3.683	.828	1.982	5.122	4.757	.965	1.990	6.482
Higher education and training	4.759	.853	2.470	6.418	4.057	.405	3.148	4.946	3.721	.369	2.307	4.355	4.386	.619	3.367	5.693
Labor market	4.835	.849	3.371	6.162	4.279	.408	3.673	5.124	4.048	.373	2.688	4.531	4.549	.657	3.329	6.0162
Financial market	4.236	.815	2.311	5.550	3.976	.646	2.713	5.112	3.834	.585	2.604	5.220	4.187	.722	2.719	5.520
Business sophistication	4.684	.964	3.119	6.063	3.713	.451	3.093	5.250	3.480	.460	2.453	4.233	4.272	.750	3.185	6.0174
Innovation	4.672	.765	3.099	5.901	3.803	.367	2.900	4.780	3.655	.426	2.267	4.421	4.363	.659	2.981	5.818
Unemployment rate	9.239	5.418	3.5	26.5	6.514	2.649	2.4	13.9	10.215	7.330	1.9	27.3	5.054	3.285	.2	13
Lag(-1) GDP growth rate	2.138	2.884	-3.241	25.557	2.678	2.352	-2.512	6.796	3.013	2.847	-3.769	11.343	4.354	2.552	-1.320	13.396
HDI	.881	.046	.748	.949	.760	.065	.639	.846	.655	.107	.401	.7616	.772	.083	.623	.924
I-D Opp Entrepreneurship	52.940	13.367	26.928	79.711	51.308	9.98	27.748	66.005	49.591	9.923	33.549	72.681	49.703	14.338	22.690	77.091



#### Appendix 4. Correlation and VIF matrixes.

Variable	1	2	3	4	5	6	7	8	9	10
1 Property rights and legal system	1									
2 Infrastructure	0.7376	1								
3 Higher education and training	0.8418	0.6991	1							
4 Labor market	0.8644	0.6915	0.8456	1						
5 Financial market	0.7583	0.5420	0.6475	0.7765	1					
6 Business sophistication	0.8296	0.7801	0.8512	0.8157	0.6653	1				
7 Innovation	0.8602	0.7464	0.6237	0.8371	0.6797	0.6230	1			
8 Unemployment rate	-0.1671	-0.0936	-0.2536	-0.3423	-0.3383	-0.2079	-0.2185	1		
9 Lag(-1) GDP growth rate	-0.0036	-0.1959	-0.0837	0.0235	0.0636	-0.0835	-0.0778	-0.2571	1	
10 HDI	0.5704	0.7766	0.5895	0.5475	0.3428	0.6615	0.6311	0.0161	-0.2783	1

Variable	VIF	1/VIF
1 Innovation	8.67	0.115340
2 Higher education and training	8.29	0.120622
3 Business sophistication	8.07	0.123860
4 Property rights and legal system	6.80	0.147023
5 Labor market	6.45	0.155137
6 Infrastructure	4.07	0.245568
7 Financial market	3.09	0.323537
8 HDI	2.89	0.345488
9 Unemployment rate	1.41	0.707789
10 Lag(-1) GDP growth rate	1.24	0.807655

## Appendix 6. Regression analysis results.

Variables designation

Variable	Designation
Improvement-driven opportunity entrepreneurship	TEAkey
Property rights and legal system	propleg
Infrastructure	infr
Higher education and training	edu
Labor market	labour
Financial market	finan
Business sophistication	soph
Innovation	innov
Unemployment rate	unem
lag(-1) GDP growth	gdpglog
HDI	HDI

All observations

```
. regress TEAkey labour finan unem gdpglog HDI
```

Source	SS	df	MS			
Model	13894.9077	5	2778.98154	Number of obs =	222	
Residual	21812.9346	216	100.985808	F( 5, 216) =	27.52	
Total	35707.8423	221	161.573947	Prob > F =	0.0000	
				R-squared =	0.3891	
				Adj R-squared =	0.3750	
				Root MSE =	10.049	

TEAkey	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
labour	3.506935	1.672094	2.10	0.037	.2112254	6.802645
finan	3.758628	1.451812	2.59	0.010	.8970966	6.62016
unem	-.6780133	.1423869	-4.76	0.000	-.9586589	-.3973676
gdpglog	-.503142	.2578768	-1.95	0.052	-1.011419	.0051351
HDI	14.63773	8.293538	1.76	0.079	-1.7089	30.98435
_cons	14.99386	6.291041	2.38	0.018	2.594172	27.39355



### Developing countries sample

```
. regress TEAkey soph innov unem gdpgrlog HDI
```

Source	SS	df	MS	Number of obs =	101
Model	2666.78523	5	533.357046	F( 5, 95) =	3.93
Residual	12881.4542	95	135.594255	Prob > F =	0.0028
				R-squared =	0.1715
				Adj R-squared =	0.1279
Total	15548.2395	100	155.482395	Root MSE =	11.644

TEAkey	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
soph	14.20262	5.259426	2.70	0.008	3.761336	24.6439
innov	-11.11997	5.287397	-2.10	0.038	-21.61678	-.6231642
unem	-.6346021	.1993874	-3.18	0.002	-1.030436	-.238768
gdpgrlog	-.3822887	.4611229	-0.83	0.409	-1.297733	.533156
HDI	-8.376833	15.87368	-0.53	0.599	-39.89007	23.1364
_cons	49.98385	13.1347	3.81	0.000	23.90818	76.05953

### Developed countries sample

```
. regress TEAkey edu finan soph unem gdpgrlog HDI
```

Source	SS	df	MS	Number of obs =	121
Model	10372.5306	6	1728.75511	F( 6, 114) =	27.36
Residual	7202.20949	114	63.1772763	Prob > F =	0.0000
				R-squared =	0.5902
				Adj R-squared =	0.5686
Total	17574.7401	120	146.456168	Root MSE =	7.9484

TEAkey	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
edu	4.376947	1.748212	2.50	0.014	.9137526	7.840141
finan	4.719124	1.383663	3.41	0.001	1.978098	7.46015
soph	-4.566377	1.62792	-2.81	0.006	-7.791273	-1.34148
unem	-.7888719	.2087476	-3.78	0.000	-1.202399	-.3753445
gdpgrlog	-.4842414	.2759152	-1.76	0.082	-1.030827	.0623445
HDI	116.2528	34.06986	3.41	0.001	48.76066	183.7449
_cons	-60.16771	24.24368	-2.48	0.015	-108.1943	-12.14117

Europe, Northern America and Australia

. regress TEAkey propleg infr finan soph innov unem gdpgrlog HDI

Source	SS	df	MS	Number of obs = 105		
Model	13700.0043	8	1712.50053	F( 8, 96) =	33.66	
Residual	4883.48616	96	50.8696475	Prob > F =	0.0000	
Total	18583.4904	104	178.687408	R-squared =	0.7372	
				Adj R-squared =	0.7153	
				Root MSE =	7.1323	

TEAkey	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
propleg	-3.514772	2.095821	-1.68	0.097	-7.674943	.6454
infr	5.391119	2.019615	2.67	0.009	1.382216	9.400023
finan	7.728415	1.778777	4.34	0.000	4.19757	11.25926
soph	-6.049595	1.85553	-3.26	0.002	-9.732792	-2.366397
innov	7.003533	2.972942	2.36	0.021	1.102291	12.90478
unem	-.4852541	.1767768	-2.75	0.007	-.8361533	-.134355
gdpgrlog	-.0917732	.263632	-0.35	0.729	-.6150786	.4315323
HDI	102.688	29.25861	3.51	0.001	44.61017	160.7659
_cons	-83.62411	23.03856	-3.63	0.000	-129.3553	-37.89293

Latin America

. regress TEAkey infr edu finan unem gdpgrlog HDI

Source	SS	df	MS	Number of obs = 34		
Model	1430.66392	6	238.443986	F( 6, 27) =	3.46	
Residual	1861.56439	27	68.9468294	Prob > F =	0.0115	
Total	3292.22831	33	99.7644942	R-squared =	0.4346	
				Adj R-squared =	0.3089	
				Root MSE =	8.3034	

TEAkey	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
infr	-5.610068	3.189501	-1.76	0.090	-12.15438	.9342464
edu	11.43331	4.869679	2.35	0.026	1.44155	21.42506
finan	8.688951	3.913972	2.22	0.035	.6581425	16.71976
unem	.8134909	.6853755	1.19	0.246	-.5927834	2.219765
gdpgrlog	.676547	.8175903	0.83	0.415	-1.00101	2.354104
HDI	15.0188	27.63971	0.54	0.591	-41.6932	71.7308
_cons	-22.90865	21.06697	-1.09	0.286	-66.13449	20.3172

Africa

. regress TEAkey propleg labour unem gdpgrlog HDI

Source	SS	df	MS	Number of obs =	32
Model	1477.14712	5	295.429423	F( 5, 26) =	4.87
Residual	1575.62998	26	60.6011531	Prob > F =	0.0028
				R-squared =	0.4839
				Adj R-squared =	0.3846
Total	3052.7771	31	98.4766806	Root MSE =	7.7847

TEAkey	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
propleg	-10.57052	4.403813	-2.40	0.024	-19.62269	-1.518357
labour	12.3833	5.254479	2.36	0.026	1.582568	23.18404
unem	.2841716	.3889972	0.73	0.472	-.5154236	1.083767
gdpgrlog	1.308806	.5627534	2.33	0.028	.1520499	2.465562
HDI	10.91226	19.19742	0.57	0.575	-28.54861	50.37313
_cons	24.09397	17.75806	1.36	0.187	-12.40823	60.59618

Asia

. regress TEAkey propleg infr edu unem gdpgrlog HDI

Source	SS	df	MS	Number of obs =	51
Model	4871.68658	6	811.947764	F( 6, 44) =	6.61
Residual	5407.73696	44	122.903113	Prob > F =	0.0000
				R-squared =	0.4739
				Adj R-squared =	0.4022
Total	10279.4235	50	205.588471	Root MSE =	11.086

TEAkey	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
propleg	-24.82694	6.9184	-3.59	0.001	-38.77006	-10.88382
infr	14.77905	4.297223	3.44	0.001	6.118561	23.43953
edu	13.46065	5.284709	2.55	0.014	2.810019	24.11128
unem	-2.404372	.5567031	-4.32	0.000	-3.526334	-1.282411
gdpgrlog	-.6677721	.7413131	-0.90	0.373	-2.161791	.8262464
HDI	6.556702	33.48375	0.20	0.846	-60.92537	74.03877
_cons	35.50744	20.70588	1.71	0.093	-6.222514	77.2374