

Does Competitive Business Environment Affect Entrepreneurial Activities? A Multi-Country Longitudinal Data Analysis

Rekabetçi İş Çevresi Girişimcilik Faaliyetlerini Etkilemekte midir? Çok Ülkeli Bir Panel Veri Analizi

Özge Demiral (*) (**)

Abstract

Starting from a worldwide consensus about the importance of entrepreneurship to create an inclusive business life and new job opportunities, studies have immensely attempted to clarify the environmental factors affecting entrepreneurial activities. On the other hand, policymakers have been enforcing policies to foster business competitiveness through institutional quality, advanced infrastructure, macroeconomic stability, better health and education systems, good governance, etc. at national level. Empirical studies in the related literature seem to have restricted to the determinants of either competitiveness or entrepreneurship separately, ignoring the interactions and synergies between them. Moreover, the evidence from a limited number of studies underlines the ambiguous relationship and addresses to the necessity of the consideration of industrial structures in countries while examining the nexus.

Based on the *Global Entrepreneurship Monitor's Adult Population Survey* and the *World Economic Forum's Executive Opinion Survey* pools over the period of 2006-2014, this empirical paper purposes to identify the relationships between competitiveness indicators and early-stage entrepreneurial activities using a longitudinal dataset of 28 countries that we also distinguish between innovation-driven and efficiency-driven economies.

(*) Nigde University, Faculty of Economics and Administrative Sciences, Department of Business Administration, 2/209, 51240 Nigde, Turkey.

(**) Visiting Scholar, University of Southern California (USC), Marshall School of Business, Los Angeles, California-90089, USA. odemiral@nigde.edu.tr

Findings from fixed-effect linear regression analysis reveal that competitiveness does not necessarily encourage the entrepreneurial activities in all countries and development stages of countries matter for their entrepreneurship-oriented business environments. Furthermore, the qualities of infrastructure and institutions have negative impacts in innovation-driven and efficiency-driven countries, respectively. Overall results indicate that entrepreneurial activities, in general, have country-specific and multidimensional characteristics and motivations. Therefore, countries, regardless in which development levels they are, need integrated policies harmonizing competitiveness and entrepreneurship priorities.

Keywords: Business environment, competitiveness, Porter's diamond model, entrepreneurial activities, environmental conditions

Özet

Girişimciliğin geniş tabanlı bir iş yaşamı oluşturma ve yeni iş olanakları yaratmadaki genel kabul gören öneminden yola çıkarak araştırmalar, yoğun bir biçimde, girişimcilik faaliyetlerini etkileyen çevresel faktörleri belirlemeye çalışmaktadır. Diğer taraftan, hükümetler, ulusal düzeyde rekabetçiliği artırmak için kurumsal kalite, gelişmiş altyapılar, makroekonomik istikrar, daha iyi sağlık ve eğitim sistemleri ile iyi yönetim gibi gelişmelere yönelik politikalar uygulamaktadır. İlgili literatürdeki uygulamalı çalışmaların, genel bir eğilim olarak, ayrı ayrı rekabetçilik ve girişimciliğin belirleyicilerini inceledikleri ve ikisi arasındaki etkileşimi ve sinerjiyi dikkate almadıkları görülmektedir. Ayrıca, sınırlı sayıdaki çalışmalardan elde edilen bulgular, değişkenler arasındaki ilişkinin belirsizliğine ve ilişkiyi inceleyenler, ülkelerin endüstriyel yapılarının da dikkate alınması gerektiğine işaret etmektedir.

Bu görgül çalışma, *Küresel Girişimcilik Monitörü'nün Yetişkin Nüfus Anketi ve Dünya Ekonomik Forumu'nun Yönetici Görüşleri Anketi* verilerini kullanarak, rekabetçilik göstergeleri ile yeni girişimcilik faaliyetleri arasındaki ilişkileri, ayrıca inovasyon ve etkinlik temelli olarak da gruplandırdığımız 28 ülkenin 2006-2014 dönemi panel veri seti kapsamında belirlemeyi amaçlamaktadır.

Sabit etkili doğrusal regresyon analizinden elde edilen bulgular, girişimciliğe yönelik iş çevreleri kapsamında, rekabetçiliğin tüm ülkelerde girişimcilik faaliyetlerini de teşvik ettiği anlamına gelmediğini ve ülkelerin gelişme aşamalarının anlamlı etkilerinin olduğunu ortaya koymaktadır. Üstelik altyapı gelişmeleri ve kurumsal kalite, sırasıyla inovasyon temelli ve etkinlik temelli ülkeler için negatif etkilere sahiptir. Tüm sonuçlar, girişimcilik faaliyetlerinin genel olarak ülkelere özgü ve çok boyutlu özelliklerinin ve motivasyonlarının olduğunu göstermektedir. Bu nedenle, hangi gelişme aşamasında olursa olsun, ülkeler rekabetçilik ve girişimcilik önceliklerini uyumlaştırarak bütünlüklü politikalara gereksinim duymaktadır.

Anahtar kelimeler: İş çevresi, rekabetçilik, Porter'ın elmas modeli, girişimcilik faaliyetleri, çevresel koşullar

Introduction

In a narrow view, entrepreneurship is a set of activities to create a new business organization, while in a broad sense it also embodies the formations of new business models and policies that change the directions and flows of organizational activities (Hwang & Powell, 2005; GEM, 2016). Entrepreneurship is widely accepted as one of the main engines of market-oriented business life and a way of boosting job creation. Because of spillover effects of new business start-ups over every part of the societies, now policymakers are endeavoring to spark overall entrepreneurial activities and pursuing policies to create an entrepreneur-friendly business environment.

Entrepreneurship is a multidimensional concept affected by a wide array of micro- and macro-level factors. Macro factors are the consequences of interactions between political regulations, business environments, education systems, logistics and infrastructures, financial developments, cultures, market structures, in brief, social, political and economic factors (Wennekers & Thurik, 1999; Begley et al., 2005; Welter & Smallbone, 2011; Anderson et al., 2012; Audretsch, 2012). Micro-based determinants center on the individual characteristics such as leadership, creativeness, skills/talents, capabilities, and attitudes towards entrepreneurship that together can explain individually what make people intended for setting their new businesses (Beugelsdijk & Noorderhaven, 2005; Buli & Yusuf, 2015; Lee-Ross, 2015). When considered together with innovativeness and creativity, there are also studies even indicating that entrepreneurs often outsiders or strangers (e.g. Hwang & Powell, 2005).

The composite structure of the entrepreneurship also comes from its complex dynamisms that it has individual, firm-level and country-specific characteristics with mutual interactions (Wennekers & Thurik, 1999; Busenitz et al., 2000; Ardagna & Lusardi, 2008; Veciana & Urbano, 2008). These factors also affect innovation, business sophistication and change readiness of organizations that together determine how pro-entrepreneurship business environments countries have. Finally, entrepreneurship has foci of strategy called strategic entrepreneurship, which has roots from multiple disciplines such as economics, psychology, and sociology, along with other sub-disciplines in management including organizational behavior and organization theory (Hitt et al., 2011).

Porter's diamond model (1990, 2008) suggests that national competition policies play an important role to strengthen the international competitiveness

of domestic firms, industries or nations as a whole. In this context, it is getting more important to explore the linkages between competitiveness and entrepreneurship since many countries carry out policies equipped with interchangeable instruments to promote both competitiveness and entrepreneurship simultaneously. Moreover, it is seen crucial to capture how these effects differ over the development stages of countries since industrial clusters and agglomeration matter for both national competitiveness and entrepreneurial motivations (Porter, 1998, 2008).

Because entrepreneurship has a wide range of meanings, there are many individual and country-specific factors affecting the entrepreneurship. Studies mostly investigate the effects of socio-economic factors, regulations, and institutions. Our study deals with the competitiveness channels of entrepreneurship represented by the total early-stage entrepreneurial activities (*TEA*) that comprise both nascent entrepreneurship and new business ownership for a sample of 28 countries⁽¹⁾ and a period spanning from 2006 to 2014. Differently from the related studies, in order to capture the diversification over countries and have specific results, we also classify countries into two groups by the factors driving these economies. To this end, we empirically test how competitiveness indicators such as infrastructure, macroeconomic environment, health and primary education, higher education and training, labor market efficiency, financial market development, technological readiness, markets size, business sophistication, and innovation that are adapted from the Porter's diamond model of national competitive advantages, influence the total early-stage entrepreneurial activities in the countries. The rest of the study is organized as follows. The next section presents conceptual framework together with theoretical background and different evidence in the related literature. Subsequently, the variables, dataset, and model are introduced under the empirical framework. After summarizing the method and presenting results, the study concludes with some discussions and policy implications along with several propositions for future studies.

(1) The countries included in the sample are Australia, Belgium, Brazil, Canada, China, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, India, Ireland, Italy, Japan, Latvia, Mexico, Netherlands, Norway, Russia, Slovenia, Spain, Sweden, Turkey, United Kingdom, and United States.

Conceptual Framework and Theoretical Background

Multidimensional Determinants of Entrepreneurship

There is a longstanding debate on whether entrepreneurial activities are based on the individual characteristics or environmental conditions. Individual factors are physical capabilities, educational backgrounds, personalities, individual or family resources, and psychological factors like intelligence, independence, need for achievement, the locus of control, innovativeness, risk-taking, etc. (Beugelsdijk & Noorderhaven, 2005; Hwang & Powell, 2005; Lee-Ross, 2015). Environmental conditions are a complex set of economic, political, institutional and cultural factors that interact reciprocally. Economic factors center on the development stages of the countries (Fogel et al., 2008). Moreover, some studies distinguish between supply-side and demand-side entrepreneurship. In this approach, the supply-side of the entrepreneurship addresses the impacts of demographic characteristics of the population, resource availability to individuals and their abilities and personal attributes towards entrepreneurship. Demand-side entrepreneurship highlights the conditions of entrepreneurial opportunities created by market dynamics, economic development, and globalization together with technological progress and innovation capabilities (Audretsch & Erdem, 2005). Therefore, it can be concluded that national competitiveness has both supply-side and demand-side influences on entrepreneurship.

Economic factors mainly indicate income level (strongly related to the development stages), unemployment rate, macroeconomic stability, capital and labor market characteristics, and income distributions. Those together explain the differences in entrepreneurial activities across countries as many studies affirm. For example, using a dataset of 15 European countries for the period of 1978-2000, Noorderhaven et al. (2004) found a negative and significant impact of per capita income on self-employment levels proxied by business ownership. Leading sociologic factors are social institution-based ones. Social institutions consist of composite interactions between traditions, beliefs, religions, values, norms and roles in a society and individuals socialize by learning these structures. Institutions have both formal (rules, laws, and regulations), and informal dynamics (culture) that affect entrepreneurship. For example, using social capital and good culture interchangeably, Percoco (2012) found that social capital is an important driver of entrepreneurship in the case of Italy.

Entrepreneurship consists of complex activities that include collecting and evaluating information about business opportunities and opportunity explorations; forecasting the possible changes and risks that new technologies and other developments bring, and using the leadership skills to organize the limited resources and manage them efficiently. In addition, active and potential entrepreneurs need to consider how many other individuals have entrepreneurship skills, intentions, and opportunity perceptions. The formal and informal institutions acknowledged by the societies affect all these personal capabilities (Shane & Venkataraman, 2000; Fogel et al., 2008). In our study, even we focus on the competitiveness that based on the formal institutional framework rather than social institutions, there is a fact that they interact mutually and influence individual capabilities. Consistently, the related literature has been enriched by studies that deal with the effects of individual characteristics (e.g. Beugelsdijk & Noorderhaven, 2005; Lee-Ross, 2015), regulations (e.g. Ardagna & Lusardi, 2008), and demographics (e.g. Blanchflower et al., 2001; Fairlie et al., 2015) on the entrepreneurship in order to explain the density differences in entrepreneurial activities among countries. Besides, there are also studies investigating the working conditions and job quality that push or pull waged-employees to set their own businesses by altering their job satisfaction and organizational commitment levels (e.g. Noorderhaven et al., 2004). Going beyond the premise that entrepreneurship is a good sign of national competitiveness, this study, examining the competitiveness origins of the entrepreneurship, aims to contribute to the debate, especially in the strategy and entrepreneurship literature, about how competitiveness indicators in national-level affect early-stage entrepreneurial activities.

Competitiveness and Entrepreneurship Linkage

Porter (1990, 2008) suggests that countries compete globally for increasing their shares in the world market as companies do in the domestic market. In this framework, the key determinant of the competitiveness is the productivity. Porter (1990, 2008) underlined the benefits of creating industries initially according to the natural and static ‘comparative’ advantages of the nations that the resource abundance determines the structures of the organizations and consequently of the nations. As the productivity increases depending on the specialization, technology adaptation, innovation, business sophistication, and outsourcing, organizations move forward to acquire dynamic benefits, i.e. competitive advantages, changing their strategies beyond the resource endowments they initially had. In his diamond

model, Porter (1990, 2008) clustered factors affecting this competitiveness-oriented transformation into six groups. The four facets of Porter's diamond model are considered major determinants that endogenously obtained: i) *Factor (input) conditions* consist of physical, administrative, information, scientific and technological infrastructures; human capital, cheap or/and skilled workforce, and natural resources. ii) *Demand conditions* are based on the domestic demand dynamisms (segmentations of the demand, supplier-buyer relations, inter- and intra-organization relations), demand effects that originate from market size, internalization of the domestic demand and having access to the foreign demand integrating into the global markets. iii) The concept of the *related and supportive industries* indicates the presence of capable, locally based suppliers and competitive related industries. These inter-organizations and inter-industry relations lead to increases in the productivity and complementarity among organizations besides the competition between them. Finally, iv) *the firm strategy, structure, and rivalry* dimension indicates to the interactions between the goals and strategies of the organizations and industrial or national circumstances. The rationale for this is the fact that as organizational goals, strategies and endowments become more consistent with the national ones, the competitiveness in both firm-level and national context increases. Moreover, vigorous competition among locally-based rivals brings better business operations. Mutual relationship networks between these conditions resemble a diamond-shaped figure as indicated by Porter (1990, 2008).

In the so-called diamond model, the other two factors, namely v) *government* and vi) *chance* are determined out of the model exogenously. Given the exceptional success paths of the Asian business model in which government policies undertook crucial functions, some studies include the government as a factor in the national diamond model. Even Porter (1990, 2008) accepts the importance of government policies to create a competitive business environment; he indicates several examples in Asia region cannot be generalized to all countries. The last factor is the chance that indicates unexpected positive (e.g. invention in a firm) or negative shocks (e.g. a sharp decline in demand for a firm's products) occurred in either national or international environments where the organizations are involved in. Porter (1990, 2008) concludes that competition policies as a dimension of national policies play an important role to strengthen the international competitiveness of domestic firms, industries, or nations as a whole. Against these premises, there is still a debate in both the business and the economic literature about the diamond model explains whether the competitiveness of the firms or

the nations in the international markets (Smit, 2010). However, there is a fact that the diamond model builds a theoretical bridge between strategic management and international economics (Davies & Ellis, 2000). Nevertheless, the World Economic Forum (WEF) constructs the national competitiveness framework on the diamond model while assessing the Global Competitiveness Indices (GCI) of countries. Consistently, supportive government policies are seen an important part of industry development and business sophistication in many developing countries, especially in those that are from the Asia region (Mitra, 2013).

Mutual interactions between the dimensions of the diamond model generate synergies that have various extensions and implications for entrepreneurship. Porter (1990) stressed that entrepreneurship is at the heart of national advantage. Therefore, the diamond model allows us to investigate the relationship between national competitiveness and entrepreneurial activities in country level. As pointed out by Wennekers and Thurik (1999) and Ozgen (2011), there are strong interactions between diamond dimensions and drivers of entrepreneurship. Factor and demand conditions both attract and create new entrants in the market while related and supportive industries together with the firm strategy, structure, and rivalry can reduce the failure fears of potential entrepreneurs setting a natural feedback mechanism within and between industries. An important aspect is that competitiveness and diamond conditions of countries matter for the density of entrepreneurial activities. Recent approaches to the entrepreneurship tend to re-integrate the entrepreneur into theories of knowledge- and innovation-driven economic development (European Union, 2014). Supporting this postulate, new ventures that have the knowledge and high-tech businesses operations tend to cluster in innovation-driven countries or regions in the same country. Again, most of the new business formations are expected to be occurring in the manufacturing sectors and therefore in efficiency-driven industrializing countries. One mechanism through which competitiveness affects nations' business structures and industrial developments is the agglomeration of entrepreneurial activities. In his business clusters theory, Porter (1998, 2008) pointed that many new businesses are formed within existing clusters rather than at isolated locations. Clusters are conducive to new business start-ups for positive externalities of the knowledge and skill spillovers together with cheaper input, advance financial institutions, positive feedback loops, etc., that consequently spark entrepreneurial intentions reducing the risk perceptions and fears of failure. These connections not only allow entrepreneurs to get benefits of established competitiveness structures but

also reveal the linked roles of companies, governments, and institutions in creating a pro-entrepreneurship business environment.

The competitiveness conditions of Porter's diamond model have direct and indirect influences on the entrepreneurship since, as an important step of entrepreneurial activities; the opportunity perceptions and entrepreneurial discoveries are joint function of the competitive business environment. Potential entrepreneurs scan their environments for information that may lead to entrepreneurial opportunities focusing on markets and changes in industry structure, market inefficiencies, transaction cost and property rights, etc. (Shane & Venkataraman, 2000; Ozgen, 2011).

Variables, Data, and Hypothesis Model

Starting from the differences in entrepreneurial activities across countries, recently there is an increasing effort to identify what make some nations more entrepreneurial. The major challenge to do so is defining and measuring the entrepreneurial activities in a country or region (Fairlie et al., 2015) that especially the multi-country studies in the related literature severely suffer from. Meanwhile, there are noteworthy global efforts for filling the gap. The Enterprise Surveys (ES, 2016), for example, consider and collect a wide array of qualitative and quantitative data through face-to-face interviews with firm managers and owners regarding the business environment in their countries. The aspects of the data include infrastructure, trade, finance, regulations, taxes and business licensing, corruption, crime and informality, finance, innovation, labor, and perceptions about obstacles to doing business. Besides the currently operating enterprises, the Doing Business project (DB, 2016) provides measurements of business regulations for local small and medium-sized enterprises (SMEs) in a global context that are useful for both policymakers and researchers to examine the factors affecting new start-ups. These standardized and harmonized data also allow researchers to compare countries in terms of entrepreneur-friendly business environments.

Related to the question why some countries are more entrepreneurial, the Global Entrepreneurship Monitor (GEM, 2016) also provides worldwide data within two major contexts: The entrepreneurial behavior and attitudes of individuals, and the national context called 'entrepreneurial framework conditions' that affect entrepreneurship. The GEM (2016) data also makes it possible to compare motivation and attitudes towards entrepreneurship (see Bosma, 2013,

for more about GEM data and its contributions to the entrepreneurship literature). According to the aim of the study, we use GEM data for the variable of total early-stage entrepreneurial activity that is a well representative of the entrepreneurial activities in a country. Our explanatory variables are those of the key pillars of the countries' competitiveness that the World Economic Forum (WEF, 2016) measures based on the *Executive Opinion Surveys* conducted worldwide. Variables, definitions, and sources summarized in Table 1.

Dependent Variable: Entrepreneurial Activities

We represent the density of the entrepreneurial activities by the total early-stage entrepreneurial activities (*TEA*) that comprise business start-up activities and have two elements: Nascent entrepreneurship rate and new business ownership rate. *Nascent entrepreneurship rate* is the percentage of the population aged between 18 and 64 who are currently a nascent entrepreneur, i.e., actively involved in setting up a business they will own or co-own. This business has not paid salaries, wages, or any other payments to the owners for more than three months. *New business ownership rate* is the percentage of the population aged between 18 and 64 who are currently an owner-manager of a new business, i.e., owning and managing a running business that has paid salaries, wages, or any other payments to the owners for more than three months, but not more than 42 months. Therefore, total early-stage entrepreneurial activity (*TEA*) consists of the percentage of the total population aged between 18 and 64 who are either a nascent entrepreneur or owner-manager of a new business. *TEA* data are those of the GEM's (2016) Adult Population Surveys that are globally administered to a representative national sample of at least 2,000 respondents per each country and year.

Table 1. Variables, Definitions, and Sources

Variable	Definition	Source
<i>Entrepreneurial Activities: Dependent variables</i>		
<i>TEA</i>	<i>Total early-stage entrepreneurial activity, %</i>	Adult Population Surveys (GEM, 2016)
<i>Environmental Competitiveness Conditions: Explanatory variables</i>		
<i>INST</i>	<i>Institutions</i>	WEF Executive Opinion Surveys (1-to-7 scale: 7 is the best score) and Global Competitiveness Calculations (WEF, 2016)
<i>INFR</i>	<i>Infrastructure</i>	
<i>MEEN</i>	<i>Macroeconomic environment</i>	
<i>HPED</i>	<i>Health and primary education</i>	
<i>HETR</i>	<i>Higher education and training</i>	
<i>LMEF</i>	<i>Labor market efficiency</i>	
<i>FMDE</i>	<i>Financial market development</i>	
<i>TERE</i>	<i>Technological readiness</i>	
<i>MSIZE</i>	<i>Markets size</i>	
<i>BSOPH</i>	<i>Business sophistication</i>	
<i>INNOV</i>	<i>Innovation</i>	

Explanatory Variables: Competitiveness Roots of Entrepreneurship

The independent variables are based on the 12 pillars of national competitiveness measured by the *Executive Opinion Survey* that World Economic Forum conducts globally (for some indicators the data is a mixed of the survey and the calculations of WEF. See Appendix). In 2014, over 13,000 executives from 144 countries were surveyed (Schwab, 2014; WEF, 2016).

These pillars, adapted from Porter's (1990) 'diamond model', comprise institutions, policies, and factors that determine the level of productivity in a country (Schwab, 2014). These factors are expected to directly or/and indirectly affect the entrepreneurial activities in countries but differently depending on their development stages. These 12 pillars, except 'goods market efficiency' comprise our explanatory variables. The goods market efficiency is not included in our model since it causes multicollinearity problem and its serial distribution distorts the normality assumption seriously. Consequently, we have 11 explanatory variables as follows:

i) Institutions (INST): The institutional quality has a strong contribution to competitiveness. The legal and administrative framework, in which individuals, business organizations and government interact, forms the institutional environment. Alike the other economic decisions of individuals, starting up a business is also affected by the institutional environment. WEF (Schwab, 2014) measures the institutional quality by considering numerous aspects aggregated to 21 indicators (see Appendix).

Alvarez et al. (2014) examined the effect of regulations on entrepreneurial activities, comparing developed and developing countries. They used an unbalanced panel dataset of 49 countries over the period 2001-2010 and found a positive influence of government spending and entrepreneurship legislation on entrepreneurial activity. Their results also indicate that regulations may have different impacts on entrepreneurship according to countries' development stages. For example, they found unemployment legislation promoting the entrepreneurship in developed countries, whereas the relationships were negative in other cases. One of the specific dimensions of the institutional quality is controlling the corruption, which is also an important part of the WEF's competitiveness measurement (see Appendix). Efforts for controlling of corruption are expected to increase both competitiveness and entrepreneur intentions. However, contradictorily, there are also studies empirically affirming the negative linkage that corruption somehow encourages the entrepreneurial activities. Consistently to this puzzle, using longitudinal data from 64 countries, Anokhin and Schulze (2009) found that monitoring and other transactions costs of controlling corruption could hamper productivity and investment in innovation and entrepreneurship. Again, for the transition economies of the post-Soviet Union and Central-Eastern Europe, and industrialized Western countries, Tonoyan et al. (2010) searched why entrepreneurs and small business owners are involved in corrupt deals, focusing on specifically the East-West gap in corruption. For the question, their explanations were about the lower efficiency of financial and legal institutions and the lack of their enforcements together with the close and closed relations with the bureaucrats. In addition, viewing illegal business activities as a widespread business practice provides the so-called rationale for entrepreneurs to justify their own corruption involvements. Likewise, there are other entrepreneurship researchers concluding with the evidence that many entrepreneurs tend to be rule-breaker to succeed in their venturing processes (Zhang & Arvey, 2009). This is the paradoxical part of the institutional quality based competitive-

ness and entrepreneurship nexus. Therefore, considering these different results, we can expect different relationships between institutional quality and entrepreneurship over country groups.

ii) Infrastructure (INFR): Advanced infrastructure is crucial for ensuring well-functioning business relations among the organizations in a country. Extensive infrastructure reduces the cost of the business networks between the regions in a country and the markets between countries, which consequently stimulates overall competitiveness of countries. Audretsch et al. (2015) point to the direct link that infrastructure can enhance connectivity and linkages that facilitate the recognition of entrepreneurial opportunities and the ability of entrepreneurs to realize those opportunities. Ozgen (2011) suggests that as quality of infrastructure develops, industry structure also changes and new demand- and supply-side opportunities become available for entrepreneurship.

Aside from the acknowledgment of the infrastructural progress as one of the major contributors to the competitiveness of countries, there is another challenge related to the entrepreneurship we highlight that advanced infrastructures also create a more competitive business environment and pull the multinational enterprises that spur the internal competition and even can set serious entry-barriers to especially new business start-ups. This crowding out effect can also arise from the institutional quality and other competitiveness indicators that address to the negative impacts of the competitiveness on the entrepreneurial activities. The competitiveness indicators we use are also among the variables that are pulling the multinational enterprises or more broadly foreign direct investments. Moreover, when the most part of infrastructure costs is compensated by governments, potential entrepreneurs also can predict that the taxes will increase for financing infrastructure expenditures and can be discouraged for starting a business in order to avoid paying taxes in future. The magnitude of these adverse effects can vary depending on the macroeconomic indicators that potential entrepreneurs are expected to be tracking and evaluating systematically.

iii) Macroeconomic environment (MEEN): Stable macroeconomic indicators provides predictable business climate and minimizes risks of new business and investment formations. Countries with strong macroeconomic development also have better credit ratings and access to international markets effectively that lead to an increase in overall competitiveness of countries. This is true for entrepreneurship that for example high inflation and unemployment can hinder potential

entrepreneurs to project and decide to start a new business. Entrepreneurship is also expected to contribute to the macroeconomic performance.

iv) Health and primary education (HPED): WEF (Schwab, 2014) includes this pillar considering the fact that healthy and educated employees are vital to organizations for their productivity and competitiveness. Employees who are ill become less productive and tend to be absent or work inefficiently. Moreover, the prevalence of diseases in a country worsens the quality of social life, which affects business and working life. With respect to the competitiveness, the lack of basic education can restrict the business development and cause low sophisticated or resource-intensive production practices. In a national perspective, this directs governments to invest in the education and health. There are approaches that emphasize the necessity of starting early entrepreneurship education at primary school level (Hamid, 2013). Basic understandings of creativeness and entrepreneurship acquired by children thanks to the early education (both general and entrepreneurship education) help them in having a ‘can do’ attitude which they will require and take advantage of it in the future. We include the pillar in the model for strengthening the estimation and controlling for the basic human capital characteristics that also have implications for the debate on whether entrepreneurs are born or made. The social capital theory, which is strongly connected with the health and primary education, suggests that social networks facilitate information exchange and knowledge spillover among both existing and potential business owners (Floyd & Woolridge, 1999; Ozgen, 2011). Consequently, this variable is also accepted as the measurement of the initial conditions of the entrepreneurial culture that is indirectly relative to the both supply- and demand-side factors of entrepreneurship.

v) Higher education and training (HETR): Higher education together with its complementary content, training, has a vital role in fostering the organizational and national competitiveness. Quality higher education and training spur businesses for their progress towards knowledge and innovation based organizational goals. In fact, today’s globalizing organizations need to have well-educated and trained employees who can undertake complex tasks and adapt rapidly to their changing business environments. This pillar measures secondary and tertiary enrollment rates as well as the quality of education as evaluated by business leaders. The extent of staff training is also taken into consideration because of its importance to obtain a constant upgrading of employees’ skills (Schwab, 2014).

After recognizing the fact that education not only encourages the entrepreneurship but it can also effectively improve the innovation through knowledge and skills upgrading; countries have made education and training major contents of their innovation strategies. Consistently, it is seen that countries that have replaced their traditional education systems and methods by more innovation and research-development based ones, also have created more innovative business environments (Dutta et al., 2015).

Because the entrepreneurial process comprises purposive rational actions like preparing a business plan, evaluating possible scenarios and market characteristics, arranging and managing the resources, analyzing the costs and more, entrepreneurship has relatively professional knowledge dimension. Therefore, being an entrepreneur requires a costly and time-consuming effort that education is an important instrument for it.

Given the theoretical expectations on the education and entrepreneurship nexus, the evidence in the related literature is not that clear. Some studies (e.g. Reddy, 2011) found positive relationships while other studies concluded with a negative relationship (e.g. Uhlaner & Thurik, 2004). In general, most part of studies indicates that the relationship depends on specific conditions and the contents of the education (e.g. Neck & Greene, 2011). One of the policy recommendations is promoting management education especially for developing countries (Wennekers et al., 2005). In parallel, WEF's survey (Schwab, 2014), directly asks participants how they would assess the quality of business schools in their countries.

vi) Labor market efficiency (LMEF): The contribution of efficiency and flexibility of the labor market to the competitiveness comes from the productivity that efficient labor markets let the employees work where they are most productive (Schwab, 2014). When the labor markets ensure this allocation at low cost, the risk of attempting to start a business will be relatively lower that is expected consequently leading to increases in the entrepreneurship activities. In employee level, the possibility of movement between organizations and sectors will provide more job (and organizational) satisfaction. Nevertheless, in case of the dissatisfaction, the availability and the ease of owning a business will also increase entrepreneurial activities. Within an organization, job dissatisfaction influence the choice of workers to be either self-employed or waged-employee, as indicated by Noorderhaven et al. (2004). Dissatisfaction and entrepreneurship nexus makes our expectation slightly ambiguous about the results.

vii) *Financial market development (FMDE)*: As similar to the labor market efficiency, well-functioning financial markets allocate the financial resources better according to the optimal returns of investment. Again, this productivity increases overall competitiveness of the nations. Besides the all the factors we investigate, entrepreneurship is, in fact, financial issue and about investment. When the financial markets are not efficient, some negative effects can arise that entrepreneurship decision will be dependent on personal and/or family resources, which hinder the potential entrepreneurs who are talented but do not have enough financial resources to realize the entrepreneur opportunities perceived. Furthermore, people who are wealthy but not that capable of starting a new business can anyway attempt entrepreneurial activities and consequently fail. Moreover, this failure experiences can discourage the other potential entrepreneurs. In the financial market development and entrepreneurship relation, the *Executive Opinion Survey* directly asks participants how easy it is for entrepreneurs with innovative but risky projects to find venture capital in their countries. Therefore, we expect a positive relationship between financial market development and entrepreneurial activities.

viii) *Technological readiness (TERE)*: In today's complex business networks, the ability to adopt new technologies is crucial to business organizations for their competitiveness. Firms that get the benefit of using the advanced technologies also have advantages over those counterparts using obsolete technologies within their business operations since the newer technology brings more productivity. The business environment dominated by technologically upgraded firms will be more competitive. While technology level is improving rapidly, the new business opportunities available for entrepreneurial are becoming more technology-oriented ones. Countries with high technological readiness level are expected to have more entrepreneurial activities. Consistently, WEF's *Network Readiness Indices* in all dimensions (individual, business and government readiness indices) and *Global Competitiveness Indices* we investigate are highly correlated over time and across countries.

ix) *Market size (MSIZE)*: Large markets in terms of income and population have many dynamics for competitiveness. By means of increasing globalization, national business activities expand cross-borders via global outsourcing and supply chains. Larger markets provide these businesses the resource flexibility that is an important component of the competition. Business organizations that spread their activities around many markets reduce their fragility to market-specific

shocks. Studies that establish a relationship between entrepreneurship and market size generally consider the population and income. Population and income growths are expected to have positive effects on entrepreneurship since they create new and bigger consumer markets. Wennekers et al. (2005), for example, found a positive effect of population growth on the nascent entrepreneurship for a sample of 36 countries. Consistently, we expect a positive effect of market size for all country groups.

x) Business sophistication (BSOPH): For business organizations, sophisticated business practices are conducive to higher efficiency and productivity. Countries that have sophisticated business networks connected other organizations from different regions or countries, become more competitive as earlier put forward by Porter (1990, 2008) concerning the business networks and supporting industries. The spread of the operations and strategies together with buyer-supplier relations of individual organizations are expected to create new opportunities for SMEs. This SME-oriented business climate can induce entrepreneurship culture. On the other hand, again it brings a competition-led and ‘sophisticated’ business framework that can hamper new entrances. Therefore, net effects are expected to be dependent on the other indicators and country-specific characteristics.

xi) Innovation (INNOV): Especially in terms of sustainability, entrepreneurial activities are strongly related to innovation. Hindle (2009) highlights that innovation results from the invention and entrepreneurship processes. In this context, innovation starts with new ideas that need to be transferred into outcomes, which stimulates both the competitiveness and entrepreneurial activities. WEF focuses on the technological innovation considering various aspects such as research and development, university-industry collaboration and patents.

Country Heterogeneity and Classification

All the competitiveness indicators summarized above significantly vary across countries. This heterogeneity necessitates the classification of countries. With respect to development stages that shape the industrial structures, Global Entrepreneurship Monitor (GEM) presents data across a wide range of countries by their development stages following the World Economic Forum (WEF). According to WEF’s classification, all countries are clustered into five groups by development stages based on the key factors driving their economies and the levels of income per capita. i) Factor-driven countries (stage 1), ii) countries in transition

from stage 1 to stage 2, iii) efficiency-driven countries (stage 2), iv) countries in transition from stage 2 to stage 3 and v) innovation-driven countries (stage 3). In general, it is observed that income per capita levels of the countries increase steadily as they progress towards upper stages.

Factor-driven economies are dominated by commodity-based businesses depending on natural resources and unskilled employees. In the efficiency-driven phase, countries are more competitive and more industrialized, and markets are dominated by capital-intensive large business organizations. The next progress is the innovation-driven stage where businesses become more knowledge-intensive, and the service sector expands (Schwab, 2014). These differences in development paths are expected to be consistent with the entrepreneurial activities that new start-ups tend to be centering on the services sector in innovation-driven developed countries, while manufacturing and agricultural sectors are dominant in efficiency-driven and factor-driven economies, respectively. In this context, key drivers for the resource-driven economies are institutions, infrastructure, business environment and human capital (education and health) indicators. For the efficiency-driven economies, key factors are higher education and training, market (goods, labor and financial) efficiencies, technological progress and market size while innovation-driven economies are characterized by business sophistication and innovation (Schwab, 2014). As Porter's (1990, 2008) diamond model suggests, these stages and key factors determine the competitiveness of the nations. Adapting to our case, total early-stage entrepreneurial activities in countries vary depending on which development stage they are in. We adopt this classification since it takes both industrial structure and income per capita into consideration and therefore better reflects the development stages of countries. 28 countries included in the sample are Australia, Belgium, (Brazil), Canada, (China), (Croatia), Czech Republic, Denmark, Finland, France, Germany, Greece, (Hungary), (India), Ireland, Italy, Japan, (Latvia), (Mexico), Netherlands, Norway, (Russia), Slovenia, Spain, Sweden, (Turkey), United Kingdom, and United States. In the World Economic Forum (WEF)'s classification, the nine countries in the parentheses are progressing towards the innovation-driven phase from efficiency-driven structure while the other 19 countries are mature innovation-driven countries. However, we describe the nine countries as efficiency-driven ones for a more distinctive classification. In many studies, these efficiency-driven and innovation-driven countries are usually referred to developing and developed countries, respectively (See Schwab, 2014, for detailed classification of the WEF).

Hypotheses and Model

The more entrepreneurs engage in any of the dimensions of the Porter's diamond model the more their opportunity recognitions and perceptions in entrepreneurship will be stimulated as proposed by Ozgen (2011). Extending this proposition, in our theoretical framework, total early-stage entrepreneurial activities (*TEA*) are associated with competitiveness conditions in a country. Therefore, the first hypothesis is as follows:

H1: National competitiveness indicators affect entrepreneurial activities represented by total early-stage entrepreneurial activities.

As previously mentioned, we expect the magnitudes of relationships to differ that the estimated coefficients can be insignificant or even with different signs over the development stages of countries. Therefore, we construct the second hypothesis to control this diversification:

H2: The relationship between total early-stage entrepreneurial activities and national competitiveness indicators can vary over development stages of countries.

Consistently, hypothesis 1 is modeled by a regression specification as shown in the equation 1. For the hypothesis 2, we estimate the model for three country clusters, namely all sample countries, innovation-driven countries and efficiency-driven countries, according to their development stages proxied by the structures of business activities and income levels.

$$\begin{aligned} \ln TEA_{it} = & \alpha_0 + \beta_1 \ln INST_{it} + \beta_2 \ln INFR_{it} + \beta_3 \ln MEEN_{it} + \beta_4 \ln HPED_{it} \\ & + \beta_5 \ln HETR_{it} + \beta_6 \ln LMEF_{it} + \beta_7 \ln FMDE_{it} + \beta_8 \ln TERE_{it} \\ & + \beta_9 \ln MSIZE_{it} + \beta_{10} \ln BSOP_{it} + \beta_{11} \ln INNOV_{it} + e_{it} \end{aligned} \quad (1)$$

($i = 1, \dots, 28; \quad t = 2006, \dots, 2014$)

In equation 1, all the variables are the same as previously defined. In addition, i and t stand for the countries and years respectively, while α_0 is the country-specific intercept. The composite error term, e_{it} , comprises country and time influences of all other factors not included in the model. Finally, β_i parameters ($i = 1, \dots, 11$) are the coefficients to be estimated. All variables are transformed into the natural logarithmic forms for boosting normality and homoscedasticity.

Analysis and Results

The study uses a dataset of 28 countries from all around the world over a 9-year period spanning from 2006 to 2014. Because of 33 missing values in the *TEA* series, we have a slightly unbalanced longitudinal⁽²⁾ dataset with 219 observations instead of 252. When considered a large number of individuals surveyed each year and country, this unbalanced structure is not a problem. Additionally, statistical programs we use (Stata, SPSS) efficiently adjust the missing values.

Table 2. Descriptive Statistics and Correlation Matrix

	<i>TEA</i>	<i>INST</i>	<i>INFR</i>	<i>MEEN</i>	<i>HPED</i>	<i>HETR</i>	<i>LMEF</i>	<i>FMDE</i>	<i>TERE</i>	<i>MSIZE</i>	<i>BSOPH</i>	<i>INN</i>
Mean	1.91	1.51	1.59	1.59	1.81	1.61	1.50	1.51	1.55	1.60	1.56	1.42
Median	1.86	1.52	1.62	1.61	1.82	1.64	1.50	1.53	1.60	1.63	1.57	1.41
Max.	3.17	1.82	1.89	1.92	1.93	1.83	1.75	1.85	1.83	1.93	1.79	1.76
Min.	.85	1.08	1.12	.88	1.57	1.29	1.19	1.04	1.01	1.11	1.19	1.07
Std. Dev.	.44	.19	.18	.15	.06	.13	.12	.16	.20	.19	.14	.20
Skewness	.27	-.11	-.45	-.79	-.80	-.47	-.16	-.57	-.60	-.47	-.35	.03
Kurtosis	2.68	1.67	2.08	4.54	3.60	2.14	2.31	2.96	2.30	2.63	2.10	1.62
Obs.	219	252	252	252	252	252	252	252	252	252	252	252
<i>TEA</i>	1											
<i>INST</i>	-.20	1										
<i>INFR</i>	-.34	.73	1									
<i>MEEN</i>	.00	.37	.13	1								
<i>HPED</i>	-.37	.70	.73	.22	1							
<i>HETR</i>	-.35	.83	.82	.24	.82	1						
<i>LMEF</i>	.02	.66	.48	.32	.42	.64	1					
<i>FMDE</i>	.00	.79	.46	.41	.37	.60	.60	1				
<i>TERE</i>	-.27	.78	.84	.13	.74	.90	.56	.52	1			
<i>MSIZE</i>	.12	-.01	.17	-.09	-.15	-.13	.06	.07	-.07	1		
<i>BSOPH</i>	-.26	.85	.71	.17	.59	.72	.55	.72	.72	.30	1	
<i>INNOV</i>	-.23	.87	.77	.24	.65	.82	.71	.68	.77	.26	.91	1

Note: All variables are in the natural logarithmic forms.

In order to robust the regression estimation and have reliable coefficients; first, we checked each series for normality through kurtosis and skewness val-

(2) Even the terms 'longitudinal' and 'panel' data can be used interchangeably (Wooldridge, 2002; Edward, 2004); in our methodology, we use the term 'longitudinal data' to emphasize the survey background of our panel data.

ues. For the desired normal distribution, the values of skewness and kurtosis are required to be *zero* that refers to a perfect symmetry. However, in the literature, there are different thresholds used. In a loose approach, values between 2 and 7 for skewness and kurtosis respectively, are considered acceptable tolerance (Stevens, 2009). In our sample, as shown in Table 2, the skewness values are ranging from $-.03$ to $-.80$ while kurtosis values differ between 1.62 and 4.54 that mean there are no serious deviations from the normality. The unreported histograms of the series also supported the normality assumption.

Within a longitudinal data framework, linear least square estimation can be conducted through pooled, fixed effect and random effect regression models with various tests to determine the best-fitting one (Wooldridge, 2002; Edward, 2004). The redundant fixed effects tests (the *F-test*) compare fixed effect to pooled regressions. On comparing fixed and random effects, Hausman test is commonly used. We found *F-test* and Hausman test statistics verifying fixed effect models are the most appropriate method to estimate all model specifications.

While checking for robustness, Durbin-Watson (D-W) statistics, and residual test statistics detected the autocorrelation and heteroscedasticity, respectively. In order to hinder possible biases that the autocorrelation and heteroscedasticity can cause, we estimate linear regressions with panel-corrected standard errors (PCSE). The last control was about the multicollinearity problem that refers to a situation in which two or more explanatory variables are highly and linearly related. Multicollinearity can be identified by checking the variance inflation factors (Klein & Rai, 2009; Peng & Lai, 2012). The variance inflation factors (VIFs) infer whether a predictor has a strong linear relationship with the other predictor(s). Although there are not certain criteria, some studies suggest that a value of 10 is the upper threshold to worry about multicollinearity (Field, 2009, 223-224). However, some studies reduce the threshold to 3.3 (Peng & Lai, 2012). Even we expected multicollinearity since we have a wide array of related explanatory variables; we found VIF values ranging between $.06$ and 2.9 that confirm no serious multicollinearity. Finally, the results of fixed effect longitudinal least square estimation with PCSE are reported in Table 3.

Table 3. Estimated Coefficients of Competitiveness Indicators on Total Early-stage Entrepreneurial Activities

<i>Variables</i>	<i>All sample countries (28)</i>	<i>Innovation-driven countries (19)</i>	<i>Efficiency-driven countries (9)</i>
<i>lnINST</i>	.017 [.046]	1.369 [1.778]*	-2.478 [-3.397]***
<i>lnINFR</i>	-.108 [-1.209]	-.861 [-3.881]***	1.955 [6.749]***
<i>lnMEEN</i>	.416 [2.420]**	.375 [1.544]	.656 [1.878]*
<i>lnHPED</i>	.139 [.311]	1.220 [1.633]*	-.893 [-.755]
<i>lnHETR</i>	-.608 [-1.134]	-.469 [-.823]	-1.467 [-1.429]
<i>lnLMEF</i>	-.096 [-.179]	-.283 [-.572]	-.465 [-.385]
<i>lnFMDE</i>	-.111 [-.583]	-.369 [-1.102]	.088 [.154]
<i>lnTERE</i>	1.262 [7.787]***	1.408 [2.689]***	.340 [.685]
<i>lnMSIZE</i>	1.148 [1.086]	1.729 [1.755]*	.370 [.204]
<i>lnBSOPH</i>	-.237 [-.308]	-.905 [-.749]	2.352 [2.650]***
<i>lnINNOV</i>	1.181 [2.636]***	1.071 [1.915]*	2.052 [1.315]
<i>Constant</i>	-2.674 [-1.557]	-5.351 [-2.547]**	-.878 [-.257]
<i>R</i> ²	.800	.758	.816
F-stat.	18.980 (.000)	12.317 (.000)	13.077 (.000)
Effects (<i>F</i>) test	14.732 (.000)	4.895 (.000)	7.103 (.000)
Hausman test, χ^2	33.734 (.000)	28.921 (.000)	---
Observation	219	148	71

Notes: *** $p < .01$; ** $.01 < p < .05$; * $.05 < p < .10$. Probabilities are in the parentheses and *t*-statistics are in the brackets.

Significant coefficients in Table 3, in general, seem to be supporting the hypotheses. Total early-stage entrepreneurial activities (*TEA*) are significantly and positively associated with the macroeconomic environment (*MEEN*), technological readiness (*TERE*) and innovation (*INNOV*) indicators for all of 28-country sample. For this all sample countries most crucial factors are *TERE* and *INNOV*.

For the 19 innovation-driven countries, infrastructure (*INFR*) affects *TEA* negatively while institutional quality (*INST*), health and primary education (*HPED*), *TERE*, market size (*MSIZE*) and *INNOV* are found contributing to *TEA*. High and significant *constant* indicates that these advanced economies need to explore other policy instruments to incite entrepreneurship besides competitiveness-based implications. For this group of countries (*MSIZE*) is found most important determinant of *TEA*, followed by *TERE* and *INST*.

In efficiency-driven countries, *INST* negatively affects the *TEA*. This can be explained by the tendency that well-functioning institutions can discourage the potential entrepreneurs since they sometimes want to get the benefit of informality and regulation niches even corruption deals and informal business facilities as suggested by studies in the related literature. *INFR*, *MEEN* and business sophistication (*BSOPH*) are positively associated with *TEA*. Not surprisingly, *BSOPH* and *INFR* are relatively more crucial for efficiency-driven countries. Against the expectations, higher education and training (*HETR*), labor market efficiency (*LMEF*) financial market development (*FMDE*) have no significant influences on any country groups.

Discussion and Conclusion

Studies in the related literature seem to have been restricted to the determinants of either competitiveness or entrepreneurship separately, ignoring the interactions and synergies between them. Furthermore, the density of entrepreneurial activities is considered as one of the core engines of the competitiveness with a necessity of replacement of the variables that competitiveness has important mechanisms somehow influencing the entrepreneurship climate. The evidence from a limited number of studies underlines the ambiguous relationship and addresses to the necessity of considering the industrial structures of countries based on their development stages while examining the nexus. Yet, studies have not found a certain answer to the question what make countries more entrepreneurial. Ambiguous and sometimes contradictory results are seen motivating researchers to focus on the personal characteristics. Relatively new interest in the individualist approach opens doors to the debates on whether entrepreneurs are born or made. Besides the micro-level personality approaches, the macro-level studies concentrate on mainly formal and informal institutional framework, with a specific interest in the effects of the regulations. However, the results are not certain again and even contradictory with the theoretical expectations that institutional quality and deregulations are not necessarily spurring the entrepreneurship activities. Additionally, it is notably observed that competitiveness and entrepreneurship are not strongly correlated.

This empirical study aimed to test these observations and reexamine individual evidence in the literature using a longitudinal dataset of 28 countries over the period of 2006-2014, based on the Global Entrepreneurship Monitor's *Adult*

Population Survey and the World Economic Forum's *Executive Opinion Survey* pools that are aggregated from evaluations of a huge number of individual participants. Within an extended framework of Porter's diamond model and a holistic approach, some other competitiveness indicators measured by the World Economic Forum were also included in the model.

The results from the fixed-affect least square estimations for the three groups of the sample, namely all sample countries, innovation-driven countries and efficiency-driven countries, seemed to be supporting the hypotheses in general. Total early-stage entrepreneurial activities are significantly and positively associated with the macroeconomic environment, technological readiness and innovation indicators for the whole sample consisting of 28 countries. For the 19 innovation-driven countries, i.e. developed countries in broader classification, infrastructure affects total early-stage entrepreneurial activities negatively while institutional quality, health and primary education, technological readiness, markets size, and innovation are found contributing to the entrepreneurial activities. The negative effect of infrastructure can be explained by the density of competitiveness pressures that have two dimensions. The first one is about competition within the industry or country that advanced infrastructure makes easier the things for everyone. Considered the entrepreneurship is about discovering, recognizing and realizing the opportunities, better infrastructure 'for everyone' may discourage the potential entrepreneurs that are competition and risk-averse. The second one is about the interactions between deregulation and the decreasing cost of international transportation and communication that in these contexts, innovation-driven developed countries are pulling the multinational enterprises. These large firms, attracted by high competitiveness based on the innovation, can set serious entry-barrier to especially new business start-ups.

In efficiency-driven countries together with those that are in a transition towards the innovation-driven stage, so-called institutional quality negatively affects the early-stage entrepreneurial activities. This can be explained by the tendency that well-functioning institutions can discourage the potential entrepreneurs since they sometimes want to get benefits of weak protections for intellectual property rights, corruption deals, and informal business facilities. In fact, entrepreneurs initially may require being protected against the risk that business environment exposes. If the formal institutional framework does not have any concession to candidate business owners, they can involve in the informal structures that include breaking property rights, having the interest-based close relationship with

government officials and bureaucrats, irregular payments, and bribes, etc. in developing countries. In these countries, micro-policies intended for easing the procedures of rules and regulations to the entrepreneurs can encourage them to start their own businesses. Those pro-entrepreneurship implications help in establishing a positive linkage between institutional quality and entrepreneur activities. All these provide a competitive and innovation-based business environment for developing countries. Finally, the study has both managerial and policy implications for all countries. In micro approach, organizational management structures are required to be continuously innovation-based, change- and technology-ready, and rapid progression-oriented to create a sophisticated working environment. In a global perspective, overall results indicate that entrepreneurial activities have country-specific and both macro- and micro-based multidimensional characteristics. Therefore, countries, regardless in which development levels they are, require integrated policies harmonizing competitiveness and entrepreneurship priorities. Specifically, insignificant coefficients of higher education and training keep doors open to the debate on the entrepreneurial return of education. As suggested in the related literature, new and practical courses based on entrepreneurship education at all levels can stimulate overall entrepreneurship in all countries. Again, neutral impacts of labor market efficiency and financial market development indicate existing businesses-oriented market structures. This inference highlights the importance and necessity of entrepreneurship-promoting markets that may require political initiatives and new strategies of governmental institutions to be redesigned for entrepreneurship priorities.

This study offers some propositions for future researches. We classified the total early-stage entrepreneurial activities by neither gender nor formality. Further studies considering gender gap in entrepreneurial activities together with the entrepreneurship in informal sectors can capture specific evidence with respect to social inclusion. We also suggest examining certain types of indicators that will allow researchers to assess the net effect of the variables, which the studies using aggregated data tend to miss. For example, the negative effect of some sub-dimensions of institutions can be defeated because of the larger positive effects of some others or vice versa, within the same indicator. This is also true for country grouping that cautions against the aggregation biases and heterogeneity. Microscopic approaches that investigate individual countries and/or indicators will make it possible to recommend more distinctive policy implications for specific cases. Moreover, industrial classification of entrepre-

neurial activities can capture sectoral characteristics of entrepreneurship that is important for especially micro-level studies. Furthermore, besides the self-employment expression of entrepreneurial activities, new studies taking employee entrepreneurs (i.e. intrapreneurs) into consideration are to contribute to the literature since potential entrepreneurs can be hired and crowded out by large business organizations. Finally, this study used a static approach. Future studies considering both the short-run and the long-run and using time-lagged data structure can also provide more concrete evidence from dynamic relationships between the variables.

References / Kaynaklar

- Alvarez, C., Amoros, J. E. & Urbano, D. 2014. Regulations and entrepreneurship: Evidence from developed and developing countries. *Innovar*, 24 (spe): 81-89. <http://dx.doi.org/10.15446/innovar.v24n1spe.47548>
- Anderson, A. R., Dodd, S. D. & Jack, S. L. 2012. Entrepreneurship as connecting: Some implications for theorizing and practice. *Management Decision*, 50 (5): 958-971. <http://dx.doi.org/10.1108/00251741211227708>
- Anokhin, S. & Schulze, W. S. 2009. Entrepreneurship, innovation, and corruption. *Journal of Business Venturing*, 24 (5): 465-476, <http://dx.doi.org/10.1016/j.jbusvent.2008.06.001>
- Ardagna, S. & Lusardi, A. 2008. Explaining international differences in entrepreneurship: The role of individual characteristics and regulatory constraints. *NBER Working Papers*, 14012. <http://dx.doi.org/10.3386/w14012>
- Audretsch, D. 2012. Entrepreneurship research. *Management Decision*, 50 (5): 755-764. <http://dx.doi.org/10.1108/00251741211227384>
- Audretsch, D. B. & Erdem, D. K. 2005. Factors affecting entrepreneurial activity: Literature review. S. A. Alvarez, R. Agarwal & O. Sorenson (Ed.). *Handbook of entrepreneurship research*, 119-141. http://dx.doi.org/10.1007/0-387-23622-8_7
- Audretsch, D. B., Heger, D., & Veith, T. 2015. Infrastructure and entrepreneurship. *Small Business Economics*, 44 (2): 219-230. <http://dx.doi.org/10.1007/s11187-014-9600-6>
- Begley, T., Tan, W. L. & Schoch, H. 2005. Politico-economic factors associated with interest in starting a business: A multi-country study. *Entrepreneurship Theory & Practice*, 29 (1): 35-55. <http://dx.doi.org/10.1111/j.1540-6520.2005.00068.x>
- Beugelsdijk, S. & Noorderhaven, N. 2005. Personality characteristics of self-employed: An empirical study. *Small Business Economics*, 24 (2): 159-167. <http://dx.doi.org/10.1007/s11187-003-3806-3>

- Blanchflower, D. G., Oswald, A. & Stutzer, A. 2001. Latent entrepreneurship across nations. *European Economic Review*, 45 (4-6): 680-691. [http://dx.doi.org/10.1016/S0014-2921\(01\)00137-4](http://dx.doi.org/10.1016/S0014-2921(01)00137-4)
- Bosma, N. 2013. The global entrepreneurship monitor (GEM) and its impact on entrepreneurship research. *Foundations and Trends in Entrepreneurship*, 9 (2): 143-248. <http://dx.doi.org/10.1561/03000000033>
- Buli, B. M. & Yesuf, W. M. 2015. Determinants of entrepreneurial intentions: technical-vocational education and training students in Ethiopia. *Education + Training*, 57 (8/9): 891-907. <http://dx.doi.org/10.1108/ET-10-2014-0129>
- Busenitz, L. W., Gómez, C. & Spencer, J. W. 2000. Country institutional profiles: unlocking entrepreneurial phenomena. *The Academy of Management Journal*, 43 (5): 994-1003. <http://www.jstor.org/stable/1556423>
- Davies, H. & Ellis, P. 2000. Porter's competitive advantage of nations: Time for the final judgement? *Journal of Management Studies*, 37 (8): 1189-1214. <http://dx.doi.org/10.1111/1467-6486.00221>
- DB-Doing Business 2016. <http://www.doingbusiness.org/>
- Dutta, S., Lanvin, B. & Wunsch-Vincent, S. (Ed.) 2015. *The global innovation index 2015: Effective innovation policies for development*. Fontainebleau, Ithaca, and Geneva: Cornell University, INSEAD, and WIPO.
- Edward, W. F. 2004. *Longitudinal and panel data: Analysis and applications in the social sciences*. Cambridge: Cambridge University Press.
- ES-Enterprise Surveys 2016. <http://www.enterprisesurveys.org/>
- European Union. 2014. *REDI: The Regional Entrepreneurship and Development Index – Measuring regional entrepreneurship final report*. Brussels: Publications Office of the European Union. <http://dx.doi.org/10.2776/79241>
- Fairlie, R. W., Morelix, A., Reedy, E. J. & Russell, J. 2015. *2015 Kauffman index of startup activity: National trends*. Kansas City: The Ewing Marion Kauffman Foundation.
- Field, A. 2009. *Discovering statistics using SPSS*. 3rd. Ed., Thousand Oaks: SAGE Publications.
- Floyd, S.W. & Woolridge, B. 1999. Knowledge creation and social networks in corporate entrepreneurship: The renewal of organizational capability. *Entrepreneurship Theory and Practice*, 21(3): 123-143.
- Fogel, K., Hawk, A., Morck, R. & Yeung, B. 2008. Institutional obstacles to entrepreneurship. A. Basu, M. Casson, N. Wadeson & B. Yeung (Ed.). *The oxford handbook of entrepreneurship*: 540-579. Oxford: Oxford University Press. <http://dx.doi.org/10.1093/oxfordhb/9780199546992.003.0020>

- GEM- Global Entrepreneurship Monitor. 2016. <http://www.gemconsortium.org/>
- Hamid, M.A.2013. Entrepreneurship education: the implementation in Year 1 primary school curriculum in Malaysia. A case study of one district in East Peninsular Malaysia. <http://theses.whiterose.ac.uk/6141/1/Final%20-%20for%20hard%20cover.pdf>
- Hindle, K. 2009. The relationship between innovation and entrepreneurship: easy definition, hard policy. *6th AGSE International Entrepreneurship Research Exchange*. 3-6 February. Adelaide, Australia.
- Hitt, M. A., Ireland, R. D., Sirmon, D. G. & Trahms, C. A. 2011. Strategic entrepreneurship: creating value for individuals, organizations, and society. *Academy of Management Perspectives*, 25(2), 57-75.
- Hwang, H. & Powell, W. W. 2005. Institutions and entrepreneurship. S. A. Alvarez, R. Agarwal & O. Sorenson (Ed.). *Handbook of entrepreneurship research*: 201-232. http://dx.doi.org/10.1007/0-387-23622-8_10
- Klein, R. & Rai, A. 2009. Interfirm strategic information flows in logistics supply chain relationships. *MIS Quarterly*, 33 (4): 735-762.
- Lee-Ross, D. 2015. Personality characteristics of the self-employed: A comparison using the world values survey data set. *Journal of Management Development*, 34 (9): 1094-1111. <http://dx.doi.org/10.1108/JMD-06-2014-0062>
- Mitra, R. M. 2013. The information technology and business process outsourcing industry: Diversity and challenges in Asia. *ADB Economics Working Paper Series*, Mandaluyong: Asian Development Bank.
- Neck, H. M. & Greene, P. G. 2011. Entrepreneurship education: Known worlds and new frontiers. *Journal of Small Business Management*, 49 (1): 55-70. <http://dx.doi.org/10.1111/j.1540-627X.2010.00314.x>
- Noorderhaven, N., Thurik, R., Wennekers, S. & Stel, A. 2004. The role of dissatisfaction and per capita income in explaining self-employment across 15 European countries. *Entrepreneurship Theory and Practice*, 28 (5): 447-466. <http://dx.doi.org/10.1111/j.1540-6520.2004.00057.x>
- Ozgen, E. 2011. Porter's diamond model and opportunity recognition: A cognitive perspective. *Academy of Entrepreneurship Journal*, 17(2): 61-76.
- Peng, D. X. & Lai, F. 2012. Using partial least squares in operations management research: A practical guideline and summary of past research. *Journal of Operations Management*, 30 (2012): 467-480. <http://dx.doi.org/10.1016/j.jom.2012.06.002>
- Percoco, M. 2012. Entrepreneurship, social capital and institutions: Evidence from Italy. *Spatial Economic Analysis*, 7 (3): 339-355. <http://dx.doi.org/10.1080/17421772.2012.694144>

- Porter, M. E. 1990. *The competitive advantage of nations*. New York: The Free Press.
- Porter, M. E. 1998. Clusters and the new economics of competition. *Harvard Business Review*, (November-December 1998): 77-90.
- Porter, M. E. 2008. Clusters and competition: New agendas for companies, governments, and institutions. M. E. Porter (Ed). *On competition*: 213-302. Boston: Harvard Business School Press.
- Reddy, C. D. 2011. Exploring the link between education and entrepreneurship. L. L. M. Hewitt (Ed.). *Entrepreneurship, training, education and job creation*: 101-114. Westdene, Bloemfontein: SUN MeDIA.
- Shane, S. & Venkataraman, S. 2000. The promise of entrepreneurship as a field of research. *The Academy of Management Review*, 25(1), 217-226.
- Smit, A. J. 2010. The competitive advantage of nations: Is Porter's diamond framework a new theory that explains the international competitiveness of countries? *Southern African Business Review*, 14 (1): 105-130.
- Stevens, J. P. 2009. *Applied multivariate statistics for the social sciences*. 5th Ed., New York: Routledge, Taylor & Francis Group.
- Schwab, K. (Ed.). 2014. *The global competitiveness report 2014-2015: Insight report*. Geneva: WEF.
- Tonoyan, V., Strohmeyer, R., Habib, M. & Perlitz, M. 2010. Corruption and entrepreneurship: How formal and informal institutions shape small firm behavior in transition and mature market economies. *Entrepreneurship Theory and Practice*, 34 (5): 803-831. <http://dx.doi.org/10.1111/j.1540-6520.2010.00394.x>
- Uhlaner, L. M. & Thurik, A. R. 2004. Post-materialism: A cultural factor influencing total entrepreneurial activity across nations. *Max Planck Institute Discussion Papers on Entrepreneurship, Growth and Public Policy*. <ftp://papers.econ.mpg.de/egp/discussionpapers/2004-07.pdf>
- Veciana, J. M. & Urbano, D. 2008. The institutional approach to entrepreneurship research: Introduction. *International Entrepreneurship and Management Journal*, 4 (4): 365-379. <http://dx.doi.org/10.1007/s11365-008-0081-4>
- Welter, F. & Smallbone, D. 2011. Institutional perspectives on entrepreneurial behaviour in challenging environments. *Journal of Small Business Management*, 49 (1). <http://dx.doi.org/107-125>. 10.1111/j.1540-627X.2010.00317.x
- Wennekers, S. & Thurik, R. 1999. Linking entrepreneurship and economic growth. *Small Business Economics*, 13(1): 27-55. <http://dx.doi.org/10.1023/A:1008063200484>
- Wennekers, S., Stel, A., Thurik, R. & Reynolds, P. 2005. Nascent entrepreneurship and the level of economic development. *Small Business Economics*, 24(3): 293-309. <http://dx.doi.org/10.1007/s11187-005-1994-8>

Wooldridge, J. M. 2002. *Econometric analysis of cross-section and panel data*. Cambridge: MIT Press.

WEF-World Economic Forum 2016. <http://www.weforum.org/>

Zhang, Z. & Arvey, R. D. 2009. Rule breaking in adolescence and entrepreneurial status: An empirical investigation. *Journal of Business Venturing*, 24(5), 436-447. <http://dx.doi.org/10.1016/j.jbusvent.2008.04.009>

Appendix. Key Pillars of the National Competitiveness and Evaluated Indicators

Key Pillars	Evaluated Indicators
<i>I) Institutions</i>	i) Property rights, ii) intellectual property protection, iii) diversion of public funds, iv) public trust in politicians, v) irregular payments and bribes, vi) judicial independence, vii) favoritism in decisions of government officials, viii) wastefulness of government spending, ix) burden of government regulation, x) efficiency of legal framework in settling disputes, xi) efficiency of legal framework in challenging regulations, xii) transparency of government policymaking, xiii) business costs of terrorism, xiv) business costs of crime and violence, xv) organized crime, xvi) reliability of police services, xvii) ethical behavior of firms, xviii) strength of auditing and reporting standards, xix) efficacy of corporate boards, xx) protection of minority shareholders' interests, xxi) strength of investor protection*
<i>II) Infrastructure</i>	i) Quality of overall infrastructure, ii) quality of roads, iii) quality of railroad infrastructure, iv) quality of port infrastructure, v) quality of air transport infrastructure, vi) available airline seat kilometers*, vii) quality of electricity supply, viii) mobile telephone subscriptions*, ix) fixed telephone lines*.
<i>III) Macroeconomic environment</i>	i) Government budget balance*, ii) gross national savings*, iii) inflation*, iv) government debt*, v) country credit rating*.
<i>IV) Health and primary education</i>	i) Malaria incidence*, ii) business impact of malaria, iii) tuberculosis* incidence, iv) business impact of tuberculosis, v) HIV prevalence*, vi) business impact of HIV/AIDS, vii) infant mortality*, viii) life expectancy*, ix) quality of primary education, x) primary education enrollment rate*.
<i>V) Higher education and training</i>	i) Secondary education enrollment rate*, ii) tertiary education enrollment rate*, iii) quality of the education system, iv) quality of math and science education, v) quality of management schools, vi) internet access in schools, vii) local availability of specialized research and training services, viii) extent of staff training
<i>VI) Goods market efficiency</i>	<i>Not included in the model of the study. (See Schwab, 2014, for contents of goods market efficiency)</i>
<i>VII) Labor market efficiency</i>	i) Cooperation in labor-employer relations, ii) flexibility of wage determination, iii) hiring and firing practices, iv) redundancy costs*, v) effect of taxation on incentives to work, vi) pay and productivity, vii) reliance on professional management, viii) country capacity to retain talent, ix) country capacity to attract talent, x) female participation in the labor force*
<i>VIII) Financial market development</i>	i) Availability of financial services, ii) affordability of financial services, iii) financing through local equity market, iv) ease of access to loans, v) venture capital availability, vi) soundness of banks, vii) regulation of securities exchanges, viii) legal rights index*

<i>IX) Technological readiness</i>	i) availability of latest technologies, ii) firm-level technology absorption, iii) FDI and technology transfer, iv) internet users*, v) fixed broadband internet subscriptions*, vi) internet bandwidth*, vii) mobile broadband subscriptions*.
<i>X) Market size</i>	i) Domestic market size index*, ii) foreign market size index*, iii) GDP (<i>purchasing power parity</i>)*, iv) exports as a percentage of GDP*
<i>XI) Business sophistication</i>	i) Local supplier quantity, ii) local supplier quality, iii) state of cluster development, iv) nature of competitive advantage, v) value chain breadth, vi) control of international distribution, vii) production process sophistication, viii) extent of marketing, ix) willingness to delegate authority.
<i>XII) Innovation</i>	i) Capacity for innovation, ii) quality of scientific research institutions, iii) company spending on R&D, iv) university-industry collaboration in R&D, v) government procurement of advanced technology products, vi) availability of scientists and engineers, vii) patent applications*

Notes: Indicators with asterisk (*) are based on the WEF's calculations and the others are derived from the WEF's Executive Opinion Survey. Survey scores are measured on a 1-to-7 scale (7 is the best).

Source: World Economic Forum, Global Competitiveness Report 2014-2015 (Schwab, 2014).