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The Investigation of the Predictors of Entrepreneurship of Efficiency Driven Countries: Specific Suggestions to Türkiye

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ABSTRACT

Purpose: Entrepreneurship, the trending process of generating economic growth, has both institutional and individual dimensions. The aim of this study is to analyze the impact of the predictors of entrepreneurship on entrepreneurial activities of efficiency driven countries.

Methodology/Approach: The data required for this study is derived from Global Entrepreneurship Monitor database and covers specifically efficiency driven countries. Panel data analyses are implemented in order to indicate the relationships between the entrepreneurial activity and its predictors.

Findings: Analyzes revealed that perceived opportunities, perceived capabilities, female/male ratio of entrepreneurs, internal market openness level are positively associated with entrepreneurial activity. However, financing for entrepreneurs is negatively associated with entrepreneurial activity.

Practical implications: Suggestions for Turkish Entrepreneurial Ecosystem are developed.

Originality: An inclusive study was carried out to analyze whether 8 institutional and 5 individual predictors have significant impact on entrepreneurial activities of efficiency driven countries. Additionally, some practical implications were developed in the scope of Türkiye.

Limitations: The lack of data of all efficiency driven countries in GEM database limited the study.

Keywords: Entrepreneurship, Turkish Entrepreneurial Ecosystem, Global Entrepreneurship Monitor

Verimlilik Odaklı Ülkelerde Girişimciliğin Ön Göstergelerinin İncelenmesi ve Türkiye için Öneriler Geliştirilmesi

ÖZ

Amaç: Girişimcilik ekonomik büyüme sağlaması bakımından git gide daha fazla değer verilen bir kavram olup kurumsal ve bireysel boyutlara sahiptir. Bu çalışmada verimlilik odaklı ülkelerde girişimciliğin ön göstergeleri incelenmiş bunların girişimcilik faaliyetleri üzerindeki etkisi araştırılmıştır.

Yöntem: Yapılan analizlerde kullanılan veriler için Küresel Girişimcilik İzleme (Global Entrepreneurship Monitor) Projesi'nden yararlanılmıştır. Çalışma kapsamında verimlilik odaklı ülkeler incelenmiş olup panel data analizi yapılmıştır.

Bulgular: Yapılan analizler neticesinde algılanan fırsat, algılanan kabiliyet, kadın erkek oranı, iç pazara erişim ön göstergelerinin girişimcilik faaliyetleri üzerinde pozitif etkiye sahip olduğu gözlemlenmiştir. Diğer yandan, girişimcilerin fonlanması ön göstergesinin girişimcilik faaliyetlerine negatif etkisi olduğu belirlenmiştir.

Pratik Uygulamalar: Türkiye Girişimcilik Ekosistemi için birtakım öneriler geliştirilmiştir.

Özgünlük: Verimlilik odaklı ülkelerin girişimcilik faaliyetleri üzerinde 8 kurumsal ve 5 bireysel ön göstergenin önemli etkisinin olup olmadığını analiz etmek için kapsayıcı bir çalışma gerçekleştirilmiştir. Ayrıca Türkiye kapsamında bazı pratik uygulamalar geliştirilmiştir.

Kısıtlamalar: Araştırmayı yaparken tüm verimlilik odaklı ülkelerin verilerinin Küresel Girişimcilik İzleme veri tabanında olmaması çalışmayı sınırlandırmıştır.

Anahtar Kelimeler: Girişimcilik, Türkiye Girişimcilik Ekosistemi, Küresel Girişimcilik İzleme

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1. Introduction

The term "entrepreneur" finds its roots in the French word "entreprendre," meaning "to undertake." Entrepreneurs, as defined by Merriam-Webster, are individuals who organize, manage, and embrace the risks associated with business ventures. (Merriam-Webster, 2018). Schumpeter defines entrepreneurship as a process of "creative destruction" where new innovations lead to the downfall of existing products (Schumpeter, 1962). (Wennekers & Thurik, 1999) highlighted the entrepreneur's versatile roles in addition to "innovator". They also stated that besides inventions startups and entry into new markets are in the scope of the innovative role of entrepreneurs; which at the end contribute to the economic development. Economic analysis showed that new and small ventures consistently contribute to job creation, economic development and innovation (Gelderen, et al., 2008). Entrepreneurship is also described as the trigger of economic growth by creating job (Zahra, 1999). (Basu & Virick, 2008) stated entrepreneurship create more job opportunities so it increases the opportunity rate for local communities and drew attention to its benefits to local economies. Furthermore, they also claimed that entrepreneurship generates remarkable occasions for individuals to succeed financial independence considering the possibility of converting new ideas into moneymaking undertakings. As a result of career choices have a trend towards self-employment (Gelderen, et al., 2008), entrepreneurship distinguished as a popular career preference in recent years (Obschonka, 2010).

The increase in self-employment rate is drawing attention all around the world and self-employment is assumed to be a bench mark of entrepreneurialism (Díez & Ozdagli, 2012). As a result of the increasing rates of self-employment and enterprise's demand to look for innovation within, the researchers investigate the entrepreneurial behavior and qualities leading to the process of starting a venture (Gelderen, Thurik, & Bosma, Success and Risk Factors in the Pre-Startup Phase, 2005). The definition of entrepreneurship can be divided into at least two. The first one is the *occupational notion of entrepreneurship* which attributes possessing and running a business. *Behavior notion of entrepreneurship*, the second classification, is about entrepreneurial behavior in order not to miss an economic opportunity. From this aspect, entrepreneurs do not have to be business owners, they may be inside entrepreneurs or entrepreneurs within a large firm (Sternberg & Wennekers, 2005). Entrepreneurship can be explained as an approach that highlights opportunities over threats (Krueger, Reilly, & Carsrud, 2000).

Considering this importance of entrepreneurship behavior, there are significant research developed and applied world-wide to better understand its antecedents and consequences. The Global Entrepreneurship Monitor (GEM) is maybe the most popular one, which is a research consortium and ongoing project that was initiated in 1999 by a group of academics and institutions with the goal of studying and monitoring entrepreneurship activities on a global scale. The aim of this study is analyzing the impact of the predictors of entrepreneurship on entrepreneurial activities of efficiency driven countries (Albania, Armenia, Bosnia and Herzegovina, Brazil, Bulgaria, Cape Verde, China, Colombia, Dominican Republic, Ecuador, Egypt, El Salvador, Georgia, Guatemala, Indonesia, Iran, Jamaica, Jordan, Mexico, Montenegro, Morocco, Namibia, Paraguay, Peru, Russian Federation, Serbia, South Africa, Sri Lanka, Swaziland, Thailand, Tunisia, Argentina, Chile, Costa Rica, Croatia, Hungary, Latvia, Lebanon, Lithuania, Malaysia, Mauritius, Oman, Panama, Poland, Romania, Saudi Arabia, Seychelles, Slovak Republic, Trinidad and Tobago, Türkiye, Uruguay). The data is obtained from Global Entrepreneurship Monitor for 2008-2016 years. After determining the predictors (both institutional and individual) influencing entrepreneurial activity, their impact on entrepreneurial activity will be investigated. Finally, some political suggestions will be put forward for Turkish Entrepreneurial Ecosystem. The main research questions discussed in this study are:

- RQ1: Which institutional and individual predictors are associated with entrepreneurial activities of efficiency driven countries? Are these associations negative or positive?
- RQ2: What may Turkish policy makers do in order to improve entrepreneurial ecosystem?

2. Literature Review

2.1. GEM Studies in Entrepreneurship Literature

GEM is currently considered the world's largest study of entrepreneurship and is conducted in numerous countries across the globe. GEM's primary purpose is to assess and measure entrepreneurship activity in various countries. It is claimed that entrepreneurship cannot be separated from the region. Regional network and policies must be taken into account in order to find out the predictors of entrepreneurship (Sternberg & Wennekers, 2005). GEM aims to provide

comparative data across different countries and regions. By doing so, it allows for cross-country comparisons to identify patterns, trends, and best practices in entrepreneurship, which can be used by policymakers, researchers, and entrepreneurs themselves to make informed decisions.

There are significant number of studies on GEM in the literature, both in Türkiye and across globe. For instance, by using GEM data, (Karadeniz & Ozdemir, 2009) investigated the relationship between entrepreneurship and its predictors such as personal perceptions and motivations, environment for entrepreneurship in Türkiye. Total early-stage entrepreneurial activities in Türkiye are not sufficient compared to other developing countries. Furthermore, tax incentives and financial support for entrepreneurs are not at satisfactory level in Türkiye. In the meantime, the number of established business entrepreneurs is comparatively higher. Additionally, market openness and positive attitudes towards entrepreneurship are remarkable and encouraging.

(Doğan, 2015) examined the relationship between entrepreneurship education and entrepreneurial intention of university students in Türkiye. The author found that success level in the entrepreneurship class has a remarkable supportive influence on entrepreneurial intentions. Furthermore, it is stated that students with self-employed father have more entrepreneurial intentions than students with not self-employed father.

Another study investigating which predictors influence entrepreneurial intention of university students is conducted by Selcuk and Turker in 2008. The authors used entrepreneurial support model (ESM) in order to identify the contextual factors on entrepreneurial intent. Educational, structural and relational supports generated a function of entrepreneurial intention. It is deduced that educational and structural encouragements have remarkable influence on entrepreneurial intention of university students (Selcuk & Turker, 2008).

After viewing the entrepreneurship related research, the trending process became more visible. Multinational studies generally benefit from GEM database. Because it is the richest database addressing to entrepreneurship and its components. Moreover, the GEM data are standardized which is an important criteria for cross-county studies. Another attractive point which is explored by some authors is the feature of entrepreneurship as generating economic growth and employment.

(Bosma, Acs, Autio, Coduras, & Levie, 2008) specified that in order to clarify the differences in entrepreneurial activities, both of institutional and individual predictors should be taken into account. Many authors such as (Lee & Wong, 2003), (Autio, Keeley, Klofsten, Parker, & Hay, 2001) focused on individual level predictors of entrepreneurship in their research. Individual level predictors of entrepreneurship include attitude predictors (fear of failure rate, perceived behavioral control etc.) and human capital factors (gender, age etc.). The entrepreneurship predictors related to industry and government are institutional level (macro environment) (Huyghe, Knockaert, & Foo, 2013). Institutional predictors have direct influence and could be very helpful in an attempt to improve entrepreneurial ecosystem (Bruton, Ahlstrom, & Li, 2010) and (Urbano & Alvarez, 2014). Institution is described as "humanly devised constraints that structure political, economic and social interaction" (North, 1990).

2.2. Theoretical Framework

Researchers adhered to the academic study of the psychology of entrepreneurial actions (Ajzen, 1991). The Theory of Planned Behavior (TPB) and Shapiro's Model of Entrepreneurial Event (SEE) are the most common and theoretical studies for investigating entrepreneurial intentions. Ajzen (1991) provided a model in order to analyze entrepreneurial intention by focusing on attitudes, perceived behavior and subjective norms (Krueger, Reilly, & Carsrud, 2000). Personal attitude could be thought as opinions of entrepreneurs (Wu & Wu, 2008).

People decide to become an entrepreneur consciously (Norris F. Krueger, Reilly, & Carsrud, 2000). The intention of being an entrepreneur is the key and forming element for performing entrepreneurial behavior (Kolvereid & Isaksen, 2006). Entrepreneurial intention is a stronger predictor of entrepreneurial activities than personal/demographical characteristics of people (Krueger, Reilly, & Carsrud, 2000).

As it is stated in literature review, entrepreneurial intention is affected by institutional predictors (Díaz-Casero, Ferreira, Mogollón, & Raposo, 2012), human capital predictor (Minniti, 2005) and individual attitudes of business opportunities (Krueger, Reilly, & Carsrud, 2000), (Sternberg & Wennekers, 2005). These predictors are interrelated and their influence on entrepreneurial intentions may be different (Thompson, 2009). It is claimed in the study of (Linan. & Chen, 2009)

the cognitive (attitude) predictors for entrepreneurial intentions are expected to be similar in different regions. (Iakovleva, Kolvereid, & Stephan, 2011) also stated that future studies would concentrate on the differences of entrepreneurial intention among different countries. Previous studies on institutional predictors (environment) mostly focus on single country. For instance, (Sadeghi, Mohammadi, Nosrati, & Malekian, 2013) analyzed the environmental predictors of entrepreneurship in the USA. Additionally, (Sesen, 2013) examined the personality and environmental predictors of entrepreneurship in Turkish students. Hence, environmental predictors of entrepreneurial intention should be examined in order to make cross-country comparison.

This study focuses on institutional and individual predictors of entrepreneurship and investigates their impact on entrepreneurial activities of efficiency driven economies. Thus, our main model is:

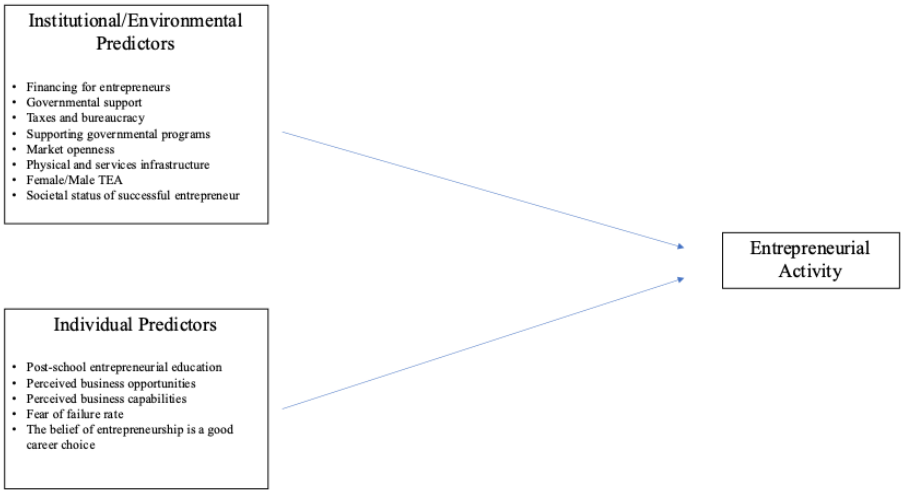

Figure 2.1. The Modal of the Research

2.3. Hypotheses Development

Entrepreneurs always react to the environment surrounding them, so the entrepreneurial environment is crucial factor in order to enhance entrepreneurship (Sadeghi, Mohammadi, Nosrati, & Malekian, 2013). Entrepreneurial intention is influenced by the institutional (environmental) predictors (Franco, Haase,

& Lautenschla¨ger, 2010). (Sadeghi, Mohammadi, Nosrati, & Malekian, 2013) specified that if environment support individuals they get encouraged to start an initiative.

(Bowen & De Clercq, 2008) and (Urbano & Alvarez, 2014) stated that government programs is one of the crucial institutional elements which have impact on entrepreneurship. Government regulates legal rules and laws (taxes etc.) in order to provide strong and healthy business environment of entrepreneurship (Díaz-Casero, Ferreira, Mogollón, & Raposo, 2012). (Bosma, Acs, Autio, Coduras, & Levie, 2008) stated that if government regulations are strict, then this situation discourage the individuals from starting a new enterprise. (Bowen & De Clercq, 2008) and (Urbano & Alvarez, 2014) mentioned that access to financial capital is another important institutional predictor related to entrepreneurship. (Bowen & De Clercq, 2008) specified that there are remarkable positive correlations between available financial capital and progress of entrepreneurship.

(Sadeghi, Mohammadi, Nosrati, & Malekian, 2013) also categorized environmental (institutional) predictors which have remarkable effects on entrepreneurship as government policies and procedures, socioeconomic conditions, financial assistance and non-financial assistance. Government policies may create an entrepreneurship friendly environment which seeks entrepreneurs' benefit and encourage them to start an initiative (Urbano & Turró, 2013). (Van Stel, Storey, & Thurik, 2012) itemized that some government regulations such as tax regime and labor regulations have negative influence on entrepreneurial intentions.

H1: The level of governmental support and policies is positively associated with individual entrepreneurial activity.

H2: Taxes and bureaucracy are negatively associated with individual entrepreneurial activity.

The policies must ensure individuals they are recompensed for their hard works in generating value to society (Stenholm & Hytti, 2014). (Sambharya & Musteen, 2014) declared that economic and market freedom are so important for entrepreneurship, encouraging market openness has remarkable influence on entrepreneurial activity.

H3: The level of market openness is positively associated with individual entrepreneurial activity.

(Souitaris, Zerbinati, & Al-Laham, 2007) performed a study in order to assess the effects of entrepreneurship programmes on the entrepreneurial behavior and intentions of engineering and science students. The results draw attention to the importance of education and show that overall entrepreneurial intention is increased as a result of the entrepreneurship programmes.

H4: Supporting governmental programs are positively associated with individual entrepreneurial activity.

(Álvarez C. A., 2014) studied the influence of regulations on entrepreneurship in both developed and developing countries. By using a combination of international databases, for the interval 2001-2010 the panel data set of 49 countries is analyzed. The authors stated that government financial support and entrepreneurship legislation have positive effects on entrepreneurial activity.

H5: The level of financing for entrepreneurs is positively associated with individual entrepreneurial activity.

(Kumar & Das, 2019) probed the relationship between institutional infrastructure and entrepreneurial predictors of entrepreneurial intention and concluded that institutional infrastructure is positively associated with entrepreneurial intention in a regional entrepreneurial ecosystem.

H6: The level of physical and services infrastructure is positively associated with individual entrepreneurial activity.

The psychological perspective of entrepreneurial intention is about an individual's attitude towards involving in entrepreneurial activities (Wu & Wu, 2008). The TPB which states that individual's attitude, perceived behavioral control and subjective norms influence entrepreneurial intentions is the main source for clarifying the psychology of entrepreneurial attitude (Linan. & Chen, 2009). Ajzen (2002) also stated that attitude effects beliefs and intentions and finally behavior of entrepreneurial activities.

(Alvarez, Urbano, Coduras, & Ruiz-Navarro, 2011) stated that an individual's ability of recognizing business opportunities provides creating a new venture. Moreover (Urbano & Alvarez, 2014) specified that opportunity recognition is one of the significant elements affecting entrepreneurial activity.

(Vidal-Suñé & López-Panisello, 2013) investigated the causal factors of the perception of business opportunities and entrepreneurial intention. GEM data

is used in this research for the period 2004-2010. The authors used a structural equation model and concluded that the perception of abilities has positive remarkable effects on both the entrepreneurial intention and perception of business opportunities. Furthermore, the perception of business opportunities has impact on entrepreneurial intention.

H7: Perceived business opportunities is positively associated with individual entrepreneurial activity.

Self-sufficiency, personal belief in capability of succeeding a mission, is an important concept for entrepreneurial activity and increased self-efficacy provides more entrepreneurial intentions (Sesen, 2013). (Wilson, Kickul, & Marlino, 2007) also specified that self-sufficiency has a remarkable role in controlling the behavior and realizing the goals of an individual. Moreover, (Turker & Selcuk, 2009) and (Malebana, 2014) also specified that self-assurance is an important asset for people in order to get success.

H8: Perceived business capabilities is positively associated with individual entrepreneurial activity.

Because most people do not like risk (Urbano & Alvarez, 2014), fear of failure rate is believed to have negative impact on entrepreneurial activity (Arenius & Minniti, 2005). If an individual is more eager to take risks, the probability of becoming an entrepreneur gets increased for him/her (Arenius & Minniti, 2005) and (Urbano & Alvarez, 2014). Urbano and Alvarez (2014) observed the impact of regulative and cultural-cognitive dimensions on entrepreneurial intentions. The study used GEM and Institute for Management and Development data for 2008. The sample is 36525 individuals from 30 countries. The authors implemented logistic regression and concluded that less procedures for startups has a favorable influence on the decision of being an entrepreneur. Additionally, when fear of failure rate decreases, the probability of being an entrepreneur increases. Finally, better entrepreneurial talents have favorable effects on entrepreneurship.

H9: Fear of failure rate is negatively associated with individual entrepreneurial activity.

Education is assumed to be a vital predictor influencing entrepreneurial activity, so many research conducted to investigate its influence (Franco, Haase, & Lautenschla¨ger, 2010); (Gelderen, et al., 2008); (Wu & Wu, 2008). (Wennekers,

Stel, Thurik, & Reynolds, 2005) claimed that education is a remarkable predictor in order to develop entrepreneurial behavior of individuals. (Turker & Selcuk, 2009) also stated that education may spur entrepreneurial activity. Wu (2008) described education as the most significant ongoing investment people make regarding to entrepreneurship and stated that higher education may change individual's attitudes towards entrepreneurship. (Franco, Haase, & Lautenschla¨ger, 2010), (Turker & Selcuk, 2009), (Wennekers, Stel, Thurik, & Reynolds, 2005) and (Wu & Wu, 2008) concluded that education has a constructive impact on improving self-efficacy. (Gelderen, et al., 2008) also deduced that after taking higher education program, individuals self-efficacy level gets higher. Higher education has positive effects on individuals' entrepreneurial abilities (Wu & Wu, 2008), also provides required knowledge and clairvoyance for potential entrepreneurs (Turker & Selcuk, 2009). (Robinson, Stimpson, Huefner, & Hunt, 1991) pointed out that with the help of education, perceptions of individuals may be changed in order to make them entrepreneurs. Wu (2008) also concluded that education improves potential entrepreneurs' managerial ability, in other words the probability of being an entrepreneur.

H10: Post-school entrepreneurial education is positively associated with individual entrepreneurial activity.

(Begley & Tan, 2001) scrutinized the socio-cultural environment for entrepreneurship in six East Asian and four Anglo-Saxon countries. In East Asian countries social status of entrepreneurship has more influence on entrepreneurial intent compared to Anglo-Saxon countries. Similarly, fear of failure rate (shame from business failure) has a significant effect on entrepreneurship in East Asian countries. Considering individual level predictors, social status has remarkable impact on entrepreneurial intention in all-inclusive sample.

H11: The level of the societal status of successful entrepreneur is positively associated with individual entrepreneurial activity.

(J.M. & S., 2022) Lomes and Gomes examined the impact of two predictors (entrepreneurship as a good career choice and perceived opportunities) on economic development of European nations. The research benefited from quantitative methodology and showed that entrepreneurship as a good career choice is antecedent of entrepreneurial activity and driver of economic development in European countries.

H12: A belief of entrepreneurship is a good career choice is positively associated with individual entrepreneurial activity.

Urban investigated woman's career intention as entrepreneurs with a survey, then benefited from quantitative measures. The results revealed that woman's perceived capabilities to become an entrepreneur is at a high degree and their preference for entrepreneurship as a good career choice is high on the list among the options (Urban, 2010). Besides, another study which was conducted by Kong and Kim scrutinized the relationship between gender predictor and entrepreneurial intention. The authors emphasized that entrepreneurial education has a positive association with entrepreneurial intention, and is stronger for women than men (Kong & Kim, 2022).

H13: Female/Male TEA is positively associated with individual entrepreneurial activity.

3. Methodology

3.1. Data Sources

The Global Entrepreneurship Monitor (GEM) data is used in this research. GEM, an entrepreneurial venture itself, is the richest database for entrepreneurship related research (Global Entrepreneurship Monitor, 2017) and a collaborative project conducted by London Business School and Babson College (Sternberg & Wennekers, 2005).

GEM was constituted in 1997 by Michael Hay and William D. Bygrave as a joint initiative by London Business School and Babson College. In 1999 only 10 countries' data was available in GEM database. The first ten attendee countries were; Canada, Denmark, Finland, France, Germany, Israel, Italy, Japan, the UK, the USA (Bosma, The Global Entrepreneurship Monitor (GEM) and Its Impact on Entrepreneurship Research, 2013). GEM project made a great progress, 65 countries' data were collected in 2016 (Global Entrepreneurship Monitor, 2017).

The objectives of GEM project are specified as; gauging the similarities and dissimilarities of entrepreneurship related activities among countries, to determine the elements of entrepreneurial operation at national level, to investigate the policies improving countrywide levels of entrepreneurship related activities (Bosma, The Global Entrepreneurship Monitor (GEM) and Its Impact on Entrepre-

neurship Research, 2013). Individual level entrepreneurial behavior and attitudes, and nationwide condition of entrepreneurship and its influence on entrepreneurial activities are the two components GEM investigates in every single country. There are two tools in order to collect data in GEM project as; the Adult Population Survey (APS) and the National Expert Survey (NES) (Global Entrepreneurship Monitor, 2018). The APS contains attitudes, activity and aspirations which are elemental constituents of entrepreneurship (Bosma, The Global Entrepreneurship Monitor (GEM) and Its Impact on Entrepreneurship Research, 2013) in order to obtain standardized data for each country's entrepreneurial preference, activities and capabilities (Sternberg & Wennekers, 2005). In NES, fourteen entrepreneurial framework data is collected such as; finance, government policy, governmental programs, entrepreneurial education and training, commercial and professional infrastructure, internal market openness, physical infrastructure etc.

Benefiting from GEM data and reports has advantages than other databases (Álvarez C. A., 2014), (Reynolds, et al., 2005), (Wennekers, Stel, Thurik, & Reynolds, 2005); because the GEM collects standardized data as a result of the same standardized survey exploration procedure across all participant countries (Reynolds, et al., 2005). Additionally, by the help of GEM database researchers and policy makers may check and compare the data for a country year by year (Reynolds, et al., 2005).

3.2. Data in This Study

This study benefits from GEM database for years 2008-2016, the entrepreneurial related data is taken from Adult Population Survey (APS) which investigates the features and motivations of individuals undertaking an initiative, in addition to social attitudes towards entrepreneurial activity; and from National Expert Survey (NES) which investigates the nationwide situation (policies, environment etc.) for entrepreneurial activity. APS is one of the main surveys in GEM project which established standardization in order to measure the level of nature of countries' entrepreneurial activity (Bowen & De Clercq, 2008). NES gathers qualitative information from selected experienced and well known experts so as to find out the entrepreneurial environment for each GEM country (Bosma, The Global Entrepreneurship Monitor (GEM) and Its Impact on Entrepreneurship Research, 2013). This study analyzes the entrepreneurial predictors and their impact on entrepreneurship, and the GEM data provides the required data. Thus

as many other scholars did, GEM data is chosen to conduct this study. The categorization of countries is taken from (Global Entrepreneurship Monitor, 2017). Only countries with data available in both APS and NES for 2008-2016 years, 23 countries, are chosen for this study.

3.3. Definition of Variables

According to (Global Entrepreneurship Monitor, 2018) the definition of variables that are thought to need clarification are as follows;

- *Total early-stage Entrepreneurial Activity (TEA) (ent):* Percentage of 18-64 population who are either a nascent entrepreneur or owner-manager of a new business
- *Governmental programs (govp):* The presence and quality of programs directly assisting SMEs at all levels of government (national& regional& municipal)
- *Taxes and bureaucracy (taxb):* The extent to which public policies support entrepreneurship - taxes or regulations are either size-neutral or encourage new and SMEs
- *Internal market openness (imo):* The extent to which new firms are free to enter existing markets
- *Governmental programs (govp):* The presence and quality of programs directly assisting SMEs at all levels of government (national& regional& municipal)
- *Financing for entrepreneurs (ffe):* The availability of financial resources for small and medium enterprises (SMEs) (including grants and subsidies)
- *Physical and services infrastructure (psi):* Ease of access to physical resources at a price that does not discriminate against SMEs
- *Perceived opportunities (popp):* Percentage of 18-64 population who see good opportunities to start a firm in the area where they live
- *Perceived capabilities (pcap):* Percentage of 18-64 population who believe they have the required skills and knowledge to start a business

- *Fear of failure rate (ffr):* Percentage of 18-64 population perceiving good opportunities to start a business who indicate that fear of failure would prevent them from setting up a business
- *Post school entrepreneurial education and training (poset):* The extent to which training in creating or managing SMEs is incorporated within the education and training system in higher education such as vocational & college & business schools & etc.
- *Female/Male TEA (sr):* Percentage of female 18-64 population who are either a nascent entrepreneur or owner-manager of a new business& divided by the equivalent percentage for their male counterparts

3.4. Building the Model

The aim of this study is to analyze the impact of the predictors of entrepreneurship on entrepreneurial activities of efficiency driven countries, specifically for Türkiye. Thus, we are going to benefit from the fixed and random effects models by using panel data analysis, after that the relationship between the predictors of entrepreneurship and entrepreneurial activity will be analyzed.

3.4.1. Panel Data Analysis

Panel data, also identified as longitudinal data, can be used in statistical and econometric analysis. It is a multi-dimensional data which contains over time measurement of variables. Meanwhile, in the period of constructing the panel data set, the objects such as firms, countries or teams are fixed. Researches in the social science, econometrics etc. generally benefit from the suitability of panel data.

By the help of longitudinal data analysis; studies may involve more variability, analyses become more precise comparing to time series data, collinearity between variables decreases.

3.5. Empirical Results / Findings

In order to investigate the relationship between entrepreneurial activity and its predictors, both fixed and random effects panel data models used in our analysis. R Gee (Generalized Estimating Equations Solver for Multinomial Responses)

Package is used for constructing Fixed Effect Panel Data Model. R Lmer (Fit Linear Mixed-Effects Models) Package is used for Random Effects Panel Data Model. Before interpreting and developing suggestions to Turkish entrepreneurial ecosystem the results of the models are given as follows:

3.5.1. Results of Fixed Effects Panel Data Model

Table 3.1. Result of Significance Test

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Coefficients:
                Estimate       Naive S.E.      Naive z         Robust S.E.     Robust z
(Intercept)     -11.02584883    5.45159675     -2.02249897     7.83904720     -1.40652921
YEAR            0.47940758      0.13495793     3.55227439      0.09876008     4.85426506
perc. opp.      0.16007046      0.03828128     4.18142936      0.03148488     5.08404195
perc. cap.      0.14319730      0.04032386     3.55118002      0.06366189     2.24934105
fear of fail.   0.05473070      0.04741217     1.15435977      0.04632971     1.18133063
sex ratio       5.26703894      1.63398959     3.22342258      1.89074835     2.78569009
high status     0.05650909      0.04451170     1.26953348      0.05043264     1.12048649
good career ch. -0.02789786     0.04279028     -0.65196722     0.03662212     -0.76177623
fin. for ent.   -5.03080440     1.28101709     -3.92719539     1.99073807     -2.52710513
govern. supp.   -0.07059463     1.13501502     -0.06219709     1.63334449     -0.04322091
taxes and bur.  -0.42559879     1.20163684     -0.35418254     1.50779872     -0.28226499
govern. prog.   0.86899529      1.34291430     0.64709661      1.63638862     0.53104457
post-sch. edu.  -0.79165007     1.24214563     -0.63732468     1.68617375     -0.46949495
internal mark.  3.29953459      1.46907814     2.24598986      1.60353645     2.05766111
phy. infrast.   1.80491678      1.17861124     1.53139280      1.47887148     1.22046898

Estimated Scale Parameter:  14.19231
Number of Iterations:  17
```

At alpha =0,05 significance level, the value of robust z must be greater than or equal to 1,96 or less than or equal to -1,96 otherwise the parameters are not statistically significant. Thus, we will rebuild the model after eliminating insignificant variables. It can be concluded from the table above (Table 3.1), fear of failure rate, high status to successful entrepreneurs, entrepreneurship as a good career choice, governmental support and policies, taxes & bureaucracy, governmental programs, post school entrepreneurial education, physical and services infrastructure do not have significant effects on dependent variable i.e. entrepreneurial activity. Perceived opportunities, perceived capabilities, female/male ratio of entrepreneurs, financing for entrepreneurs and internal market openness predictors have significant effect on entrepreneurial activity. Now, some fundamental points should be checked.

3.5.2. Correlation of Variables

Now we check if there is any correlation between our re-determined variables and dependent variable entrepreneurial activity in Table 3.2.

Table 3.2. Pairwise Correlation Matrix

	country	year	entrepren.	perc. opp.	perc. cap.	sex ratio	fin. for. ent.	internal mark.
country	1.00000000	0.00000000	-0.2343805	-0.10307920	-0.22351934	-0.05795721	0.14506971	0.20768890
year	0.00000000	1.00000000	0.2237031	0.02683409	-0.06088356	0.15463596	0.09450217	0.01261097
entrepren.	-0.23438050	0.22370308	1.0000000	0.70555457	0.64294616	0.39799379	-0.23175055	0.13939721
perc. opp.	-0.10307920	0.02683409	0.7055546	1.00000000	0.68262492	0.40568302	-0.04536004	0.17831906
perc. cap.	-0.22351934	-0.06088356	0.6429462	0.68262492	1.00000000	0.14145168	-0.36341884	-0.05987842
sex ratio	-0.05795721	0.15463596	0.3979938	0.40568302	0.14145168	1.00000000	0.19914152	0.20799754
fin. for. ent.	0.14506971	0.09450217	-0.2317506	-0.04536004	-0.36341884	0.19914152	1.00000000	0.48971607
internal mark.	0.20768890	0.01261097	0.1393972	0.17831906	-0.05987842	0.20799754	0.48971607	1.00000000

If we analyze the pairwise correlation matrix, it could be seen that perceived opportunities (coefficient 0.705) is the most correlated independent variable to our dependent variable entrepreneurial activity. Perceived capabilities (0.642) and sex ratio (0.397) are the following most correlated variables to entrepreneurial activity.

(O'Brien, 2007) specified that variance inflation factor (VIF) is a tool to determine if multicollinearity among independent variable exists or not. Thus, VIF is going to be checked for our analysis as given in Table 3.3.

Table 3.3. Variance inflation factor (VIF) values of Fixed Effects Model

YEAR	Perc. Opp.	Perc. Cap.	Sex Ratio	Fin. For. Ent.	Internal Mark.
1.036	2.458	2.401	1.309	1.627	1.395

As we see from the table, all the values are smaller than 10, so there is no multicollinearity problem in our analysis.

Linearity between Dependent Variable and Covariates

So as to satisfy the requirements of our analysis, now we check the linearity between dependent and independent variables separately. The scatter plots are as follows:

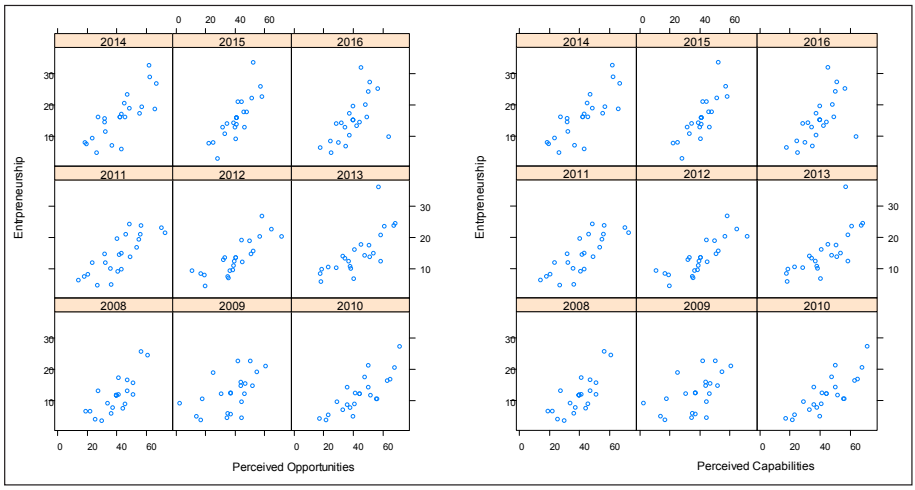

Figure 3.1. Scatter Plot of Entrepreneurship vs Perceived Opportunities; Entrepreneurship vs Perceived Capabilities

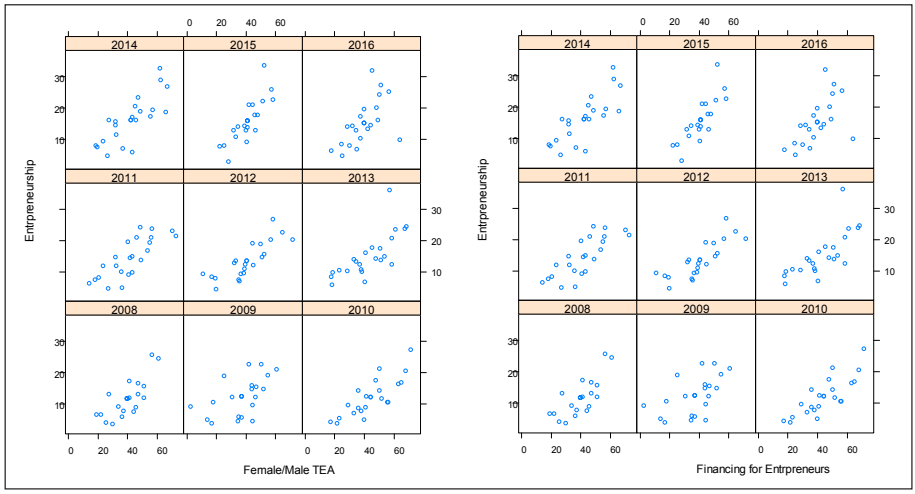

Figure 3.2. Scatter Plot of Entrepreneurship vs Female/Male TEA; Entrepreneurship vs Financing for Entrepreneurs

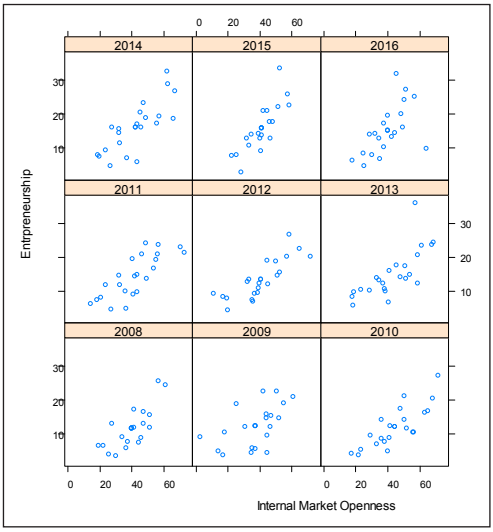

Figure 3.3. Scatter Plot of Entrepreneurship vs Internal Market Openness

When all the scatter plots checked and it can be concluded that there exist linear correlations between entrepreneurial activity and each of the covariates. So, we can construct our fixed effects panel data model as follows:

$$Ent_{it} = ß_0 + ß_1 Year_{it} + ß_2 PercOpp_{it} + ß_3 PercCap_{it} + ß_4 SexrRatio_{it} + ß_5 FinForEnt_{it} + ß_6 IntMarkOp_{it} + u_{it}$$

where;

$$t = 0,1,\ldots,8, \qquad i = 1,2,\ldots,23, \qquad u_{it} \sim \mathrm{N}(0,\Sigma).$$

Intuitively, entrepreneurial activity is expected to be positively related to perceived opportunities, perceived capabilities, female/male ratio, financing for entrepreneurs and internal market openness level. Thus, the coefficients of all variables are expected to be positive. Now, we check whether our expectations come true or not.

Table 3.4: Coefficients of Variables

Coefficients:					
	Estimate	Naive S.E.	Naive z	Robust S.E.	Robust z
(Intercept)	-3.4739702	3.38874593	-1.025149	4.89182718	-0.710158
year	0.5322071	0.13694842	3.886186	0.09553160	5.571006
perc. opp.	0.1357932	0.03433447	3.955010	0.03009255	4.512518
perc. cap.	0.1440591	0.03430315	4.199587	0.06008849	2.397448
sex ratio	4.6259672	1.62149976	2.852894	2.04096090	2.266563
fin. for. ent.	-3.9491293	1.12152144	-3.521225	1.63616864	-2.413644
internal mark.	3.3691162	1.23381455	2.730650	1.34259728	2.509402

Estimated Scale Parameter: 15.23439
Number of Iterations: 7

As it is stated before, at alpha =0,05 significance level, the value of robust z must be greater than or equal to 1,96 or less than or equal to -1,96 otherwise the parameters are not statistically significant. All the parameters have significant impact on entrepreneurial activity now. After analyzing the coefficients, it could be stated that while perceived opportunities, perceived capabilities, female/male ratio, internal market openness level has positive significant impact on entrepreneurial activity, financing for entrepreneurs has negative impact on entrepreneurial activity.

Hence, our fixed effects panel data model is constructed as follows:

$$Ent_{it} = -3.47 + 0.53Year_{it} + 0.14PercOpp_{it} + 0.14PercCap_{it} + 4.63SexrRatio_{it} - 3.95FinForEnt_{it} + 3.37IntMarkOp_{it}$$

In order to clarify the interpretation of our model we can analyze one of the variables; if the Year variable rises one unit, the effect on entrepreneurship will be 0.53 increase (assuming other variables are constant).

According to fixed effects panel data model, Türkiye's entrepreneurial activity between 2008-2016;

Table 3.5. Türkiye's Entrepreneurial Activities Based on Fixed Effects Panel Data Model

Year	Estimated Ent.	Ent. Activity Data	The Difference
2008	10.40	5.96	-4.44
2009	12.21	12.38	0.17
2010	10.80	8.59	-2.21
2011	8.86	11.87	3.01
2012	11.55	12.22	0.67
2013	12.86	9.95	-2.91
2014	15.03	16.13	1.10
2015	15.72	15.85	0.13
2016	14.53	16.14	1.61

3.5.3. Results of Random Effects Panel Data Model

For constructing random effects panel data model, time and intercept effects need to be tested.

Without putting results, our main model for random effects panel data is as follows:

$$Ent_{it} = ß_0 + ß_1 Year_{it} + ß_2 PercOpp_{it} + ß_3 PercCap_{it} + ß_4 SexrRatio_{it} + ß_5 FinForEnt_{it} + ß_6 IntMarkOp_{it} + \alpha_{0i} + \alpha_{1i} Year_{it} + u_{it}$$

where

$$t = 0,1,\ldots,8, \qquad i = 1,2,\ldots,23, \qquad u_{it} \sim N(0, \Sigma).$$

Analyzing the results, it can be concluded that random model with respect to time effect is significant (p-value<0,001873). Furthermore, intercept and time slope values of each 23 countries are given below, so that we can construct random effects panel data model for each country separately.

Table 3.6. Results of Random Effects Model

```
Models:
random_lmer1: ent ~ t + popp + pcap + sr + ffe + imo + (1 | country)
random_lmer2: ent ~ t + popp + pcap + sr + ffe + imo + (t | country)
              Df    AIC    BIC  logLik deviance Chisq Chi Df Pr(>Chisq)
random_lmer1  9 1098.1 1128.1 -540.07   1080.1
random_lmer2 11 1089.6 1126.2 -533.79   1067.6 12.56      2   0.001873 **


    Min      1Q  Median      3Q     Max
-2.5088 -0.5864 -0.0305  0.4497  3.1398

Random effects:
 Groups   Name        Variance Std.Dev. Corr
 country  (Intercept) 4.7546   2.181
          t           0.1722   0.415    0.08
 Residual             7.5642   2.750
Number of obs: 207, groups:  country, 23

Fixed effects:
            Estimate Std. Error t value
(Intercept) -2.75842    3.29530  -0.837
t            0.55969    0.11663   4.799
popp         0.12323    0.03046   4.046
pcap         0.11694    0.03296   3.548
sr           4.45435    1.62642   2.739
ffe         -3.19248    1.11811  -2.855
imo          3.16678    1.20287   2.633

Correlation of Fixed Effects:
     (Intr) t      popp   pcap   sr     ffe
t    -0.014
popp  0.143 -0.041
pcap -0.451  0.100 -0.566
sr   -0.168 -0.165 -0.119 -0.091
ffe  -0.386 -0.079 -0.222  0.215 -0.033
imo  -0.485  0.047  0.000 -0.020 -0.037 -0.473
```

Residual values are expected to stay between -2 and +2. Although the values are between -2.5 and 3.1 the median of them is close to 0. The differences of entrepreneurial environments in efficiency driven country set may be the cause.

As stated earlier, entrepreneurial activities of countries are expected to be positively related to perceived opportunities, perceived capabilities, female/male TEA, financing for entrepreneurs and the level of internal market openness. Table 3.6 shows except financing for entrepreneurs all of the variables have positive influence on entrepreneurial activity. By checking t values, it could be deduced that all the independent variables are significant for the model.

Table 3.7. Intercept and time slopes for 23 countries

	(Intercept)	t
1	0.13372796	-0.20261818
2	-2.33559968	0.17174542
3	0.87327445	0.17741248
4	1.60106254	0.55142553
5	3.27345066	-0.08228260
6	3.14780129	0.03451452
7	-1.63864399	-0.09122958
8	2.21408064	1.04417796
9	-0.24512104	-0.03631894
10	0.09982848	-0.18992478
11	0.83444576	-0.09486912
12	-0.90320361	-0.48204413
13	0.13920288	0.06734149
14	-1.71900132	-0.54753719
15	-1.62302008	0.19920168
16	-0.86962072	-0.27095112
17	3.41420375	0.04919207
18	-1.16033283	-0.14301524
19	-2.51631496	-0.19153817
20	-1.52160527	-0.33884496
21	1.22350318	0.24315535
22	-0.89657085	0.14556471
23	-1.52554725	-0.01255721

In order to construct a random effects panel model for a country, we need to use the estimate of fixed coefficients and random coefficients and put them into the main formula.

For instance; we can construct the random effects panel model for Türkiye (i=22) as;

$$Ent_t = -2.76 - 0.896 + (0.56 + 0.15)Year_t + 0.12Popp_t + 0.12Pcap_t + 4.45Sr_t - 3.19ffe_t + 3.17imo_t$$

According to random effects panel data model, Türkiye's entrepreneurial activities between 2008-2016;

Table 3.8. Türkiye's Entrepreneurial Activities Based on Random Effects Panel Data Model

Year	Estimated Ent.	Ent. Activity Data	The Difference
2008	9.36	5.96	-3.40
2009	11.39	12.38	0.99
2010	10.11	8.59	-1.52
2011	8.92	11.87	2.95
2012	11.57	12.22	0.65
2013	13.02	9.95	-3.07
2014	15.12	16.13	1.01
2015	15.95	15.85	-0.10
2016	15.19	16.14	0.95

As it could be seen from the results, random effects panel data model fits better than fixed effects panel data model for analyzing the relationship between entrepreneurial activity and its predictors. Almost all estimated values are equal to the original entrepreneurial activity data. However, for the years 2008 and 2013 the difference between estimated and original entrepreneurial activity data are relatively higher. Lack of data for those years is the cause of this situation. In order to manage lack of data problem, the average of entrepreneurial activity data of all 23 efficiency driven countries for that year is accepted to be that missing data.

4. Discussion and Conclusion

4.1. Interpretation of the Results

The institutional and individual predictors and their impacts on entrepreneurial activities of efficiency driven economies are analyzed in this study. Lack of data was a huge problem because only 23 out of 51 countries could be included to the research.

Total early-stage entrepreneurial activity (TEA) representing entrepreneurial activity was our dependent variable. Perceived opportunity, perceived capabilities, fear of failure rate, high status to successful entrepreneurs, entrepreneurship as a good career choice and female/male TEA were our individual level predictors influencing entrepreneurial activity. Financing for entrepreneurs, governmental

support and policies, taxes and bureaucracy, supporting governmental programs, post-school entrepreneurial education, the level of market openness, the level of physical and services infrastructure were the institutional predictors of entrepreneurial activity.

In order to examine the impacts of these predictors on entrepreneurial activity, this study benefited from both fixed and random effects panel data models.

When all the predictors checked whether they are statistically significant or not, we have observed that only perceived opportunities, perceived capabilities, female/male ratio of entrepreneurs, financing for entrepreneurs and internal market openness predictors have significant effect on entrepreneurial activty. Following to this, the pairwise correlation matrix is tested.

According to both fixed and random effects panel data models; year, perceived opportunities, perceived capabilities, female/male ratio and internal market openness level have positive impact on entrepreneurial activity. Thus, efficiency driven countries should try to establish policies in order to increase these values. Financing for entrepreneurs is not adequate for spurring entrepreneurial activity, actually it has negative effects on it. Policy makers should especially focus on increasing female/male TEA and internal market openness as they have huge impacts on entrepreneurial activity. Financing for entrepreneurs decreases the entrepreneurial activity, no easy money should be given to entrepreneurs, this financing most probably causes laziness for potential entrepreneurs.

The results also show that institutional predictors (governmental support & policies, taxes, post-school education, physical and services infrastructure), which were expected to affect entrepreneurial activity, do not have significant influence on it. For efficiency driven countries, institutional predictors are expected to have notable effects on entrepreneurial activity. This may be because of the weak trust between governments and societies or there may be fundamental problems in entrepreneurial ecosystem. Thus, policy makers should focus on ensuring the trust between society and government and convince the potential entrepreneurs that the entrepreneurial ecosystem works smoothly.

4.2. Suggestions to Turkish Entrepreneurial Ecosystem

The general interpretation and suggestions for efficiency driven countries hold for Türkiye too. From 2008 to 2016, there is an increase in entrepreneurial

activities of Türkiye. It has increased from 5.96 to 16.14 which is a remarkable progress. However, to keep this pace and even take a step further, some actions should be taken.

One of the actions to be taken in order to empower Turkish Entrepreneurial Ecosystem may be through increasing involvement of women in entrepreneurial related activities. The policy makers should put positive discrimination for females into action in order to accomplish the goal of increasing entrepreneurship. For instance, The Scientific and Technological Research Council of Türkiye (TÜBİTAK) and Small and Medium Enterprises Development Organization of Türkiye (KOSGEB) may give extra point to woman applicants during the project assessment period.

The results show that perceived opportunity has a positive impact on entrepreneurial related activities. Thus, steps taken to raise perceived opportunity will affect entrepreneurship positively. Ensuring the potential entrepreneurs be informed about opportunities and governmental supports may increase perceived opportunity. Funding governmental bodies (KOSGEB, TÜBİTAK, Development Agencies etc.) should give special attention to organizing seminars at universities, organized industrial zones and techno parks. Beside informing about opportunities, the seminars may help the potential entrepreneurs to realize their capabilities which has positive effect on entrepreneurship. Moreover, benefiting from media channels (especially social and visual media) to reach potential entrepreneurs may raise awareness about entrepreneurial opportunities.

Market openness is another important predictor for entrepreneurship. Increasing the level of market openness makes it easier to enter the market. It is crucial for new entrepreneurs to enter the market without facing difficulties and barriers. Deterring procedures and structures would damage and probably eliminate entrepreneurship before it comes about. Hence, the government should focus legislative regulations in order to make internal market more opened to new comers. Ministry of Industry and Technology, Ministry of Finance, other related ministries and governmental bodies should observe the markets closely, then optimize and ease the procedures of establishing a company. If the entrepreneurial ecosystem works better, perceived opportunities would probably automatically get higher.

The funding governmental bodies should not give easy money to potential entrepreneurs as financing for entrepreneurs (over funding) has negative impact

on entrepreneurial activities. If an entrepreneur comes with a novel and promising idea the governmental bodies of course give financial and non-financial (mentoring, infrastructure etc.) support. However, exploiting the financing support mechanisms may increase the laziness and decrease taking risks to start an initiative. In other words, being funded should not be the only income for entrepreneurs.

4.3. Limitations and Future Studies

We have faced several limitations during this study. One and the biggest problem was the lack of data. Only 23 efficiency driven economies (out of 51) could be covered in this research, because, the GEM data covers very small portion of countries before 2008. Additionally, the data of GEM are based on two different surveys, if one of the surveys does not exist for a year or country, the lack of data problem holds. Future studies are suggested to involve more economies in order to perform a more comprehensive study.

Second, this study groups countries according to their development stage and analyzes the relationship between entrepreneurial activity and its predictors. However, the notions of entrepreneurship are ignored in this research by reason of the GEM database does not supply that kind of data. Whether the entrepreneurial activity is necessity or opportunity driven does not make any difference for this study although it should be taken into consideration.

Moreover, the cultural dimensions of entrepreneurship are key factors for assessing entrepreneurial activities of countries and they might be covered in following researches for to understand the entrepreneurial attitudes and behavior of individuals better.

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